



EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS  
IN THE EUROPEAN UNION



April 1996

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Payment systems  
in the  
European Union

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In accordance with Community practice, countries are listed in the Blue Book using the alphabetical order of the national languages.

Data used in the Blue Book are as of end-1994 unless otherwise indicated.

Convention used in the tables:

“—” Nil

“n.a.” Not available or not applicable

“neg.” Negligible

## Foreword

In September 1992 the Committee of Governors of the Central Banks of the Member States of the European Economic Community published a descriptive guide to the payment systems in the twelve EC Member States which has come to be known as the "Blue Book". This second edition, published by the European Monetary Institute, contains revised texts and data which take into account the fundamental changes witnessed in the intervening period. Those who wish to compare this version of the Blue Book with its predecessor will realise how quickly EU payment systems are changing in order to keep up with developments, in particular:

- the entry into force of the Single European Act on 1st January 1993;
- the entry of three additional members into the European Union (Austria, Finland and Sweden) on 1st January 1995;
- the decision of the EMI Council in May 1995 to create TARGET, a system linking the domestic real-time gross settlement (RTGS) systems across the European Union, with the primary aim of enhancing the conduct of monetary policy in Stage Three of EMU; the development of TARGET is supported by the EU central banks' collective decision, taken in November 1993, to implement real-time gross settlement systems in all EU countries.

The importance of payment systems in modern economies has grown considerably over the last two decades, partly as a result of the very rapid growth in the volume and the value of payments stemming from money, foreign exchange and financial markets. Payment systems are at the heart of central

banking. Indeed, central banks face the task not only of controlling the volume of money in the economy, but also of ensuring that money circulates smoothly among economic agents. In this context, increasing attention is devoted to the potential risks associated with the functioning of payment systems and central banks are committed to contributing to the reduction of such risks.

The need for a comprehensive description of payment and securities settlement systems in the European Union is even greater in view of the advent of European Monetary Union, which will in particular require a minimum level of integration of EU payment systems in order to serve the needs of the single monetary policy. However, the Blue Book is not an instrument reserved solely for the use of central banks. Other institutions involved in discussing payment systems issues, or in establishing or using payment systems infrastructures, may also benefit from its extensive information.

This book has been produced in collaboration with the EU central banks. In this context I should like to take this opportunity to thank the EU central banks for their valuable contributions to the preparation of this source of reference.

Frankfurt, 11th April 1996



Alexandre Lamfalussy,  
President

## Introduction

The intention behind the Blue Book is to provide a comprehensive description of the principal payment and securities settlement systems operating in the Member States of the European Union (EU) on both a domestic and a cross-border basis. The range of schemes covered is not exhaustive and the selection is not intended to indicate their relative importance.

For historical reasons and due to differences in the legal, regulatory and institutional environment, the variety and structure of payment systems differ from country to country. However, there are also many similarities which, in view of the creation of monetary union, are likely to increase.

In order to allow straightforward comparison of the various payment systems, the following fifteen "country chapters" follow a commonly agreed outline.

Each one consists of four sections: the first section provides an overview of the institutional aspects which have an impact on payment systems and describes briefly the major parties involved. The second section deals with the payment media used by non-banks and recent developments in the area of retail payments. The third section focuses on the interbank exchange and settlement circuits, and the fourth section describes securities settlement systems, including the underlying institutional and market aspects.

In comparison with the previous edition of the Blue Book, the third section of each country chapter has been substantially augmented. This reflects first the growing importance attached by central banks to real-time gross settlement (RTGS) systems. In November 1993 the EU central banks publicly stated that such systems should be promoted in order to reduce systemic risks substantially in the processing of large-value payments, and made a collective decision to

implement RTGS systems in all EU countries. The development of RTGS systems accelerated following the decision to implement TARGET, which will involve the linking of the domestic real-time gross settlement systems being developed by the EU central banks in order to meet the European Central Bank's payment systems needs for the implementation of the common monetary policy. Furthermore, because EU central banks consider that their oversight duties require a good knowledge of the functioning features of all funds transfer systems, the third section of each country chapter also contains a description of retail (i.e. small-value) payment systems which is more detailed than in the previous edition.

In addition, the fourth section of each country chapter provides more detailed descriptions of the domestic and European securities settlement systems, reflecting the growing links which exist between payment and securities, such as the development of delivery versus payment mechanisms and the increasing use of collateralisation in payment systems.

Each country chapter includes a list of abbreviations and a set of statistical data. The latter are presented as time series in order to facilitate the analysis of recent developments. Where possible, these tables follow the presentation used in the report published in December 1993 by the Bank for International Settlements on "Payment Systems in the Group of Ten Countries" (the so-called "Red Book"). However, some tables have been modified and extended in order to reflect the more harmonised situation in Europe and to serve as a reference for decisions both on the further integration of EU payment systems and with regard to the single monetary policy.

In addition to the country chapters, a final chapter deals with cross-border payment

arrangements. These have undergone substantial changes in recent years, mainly driven by the wish both to reduce the risks inherent in large-value payment systems, and to meet the needs of European consumers for the more efficient execution of cross-border retail payments.

Finally, the annexes contain a methodology for the statistical data, cross-border comparative tables, a glossary and a list of members of the Editorial Group responsible for the co-ordination of this edition.

The structure and content of this second edition of the Blue Book are influenced by the analysis of a number of payment issues carried out in recent years by the EU central

banks. The results of this analysis were made available to a wider public in various reports published by the former Committee of Governors of the Central Banks of the Member States of the European Economic Community and by the EMI: "Issues of common concern to EU central banks in the field of payment systems", September 1992; report on "Minimum Common Features for Domestic Payment Systems", November 1993; report on "Prepaid Cards", May 1994; "The TARGET System", May 1995; and the annual reports on "Developments in EU payment systems". Moreover, reflecting the collaboration between the Group of Ten countries and the EMI working groups, whose membership overlaps to some extent, this volume also draws on the Red Book.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Belgium

April 1996

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**List of abbreviations**

<b>BCC</b>	Bank Card Company
<b>BELARFI</b>	Belgian Financial Architecture
<b>BELFOX</b>	Belgium Futures and Options Exchange
<b>BFC</b>	Banking and Finance Commission - <i>Commission bancaire et financière (CBF) / Commissie voor het Bank- en Financiewezen (CBF)</i>
<b>BSE</b>	Brussels Stock Exchange - <i>Société de la Bourse de Valeurs Mobilières de Bruxelles S.C. / Effectenbeursvennootschap van Brussel C.V.</i>
<b>CEC</b>	Centre for the Exchange of Operations to be Cleared - <i>Centre d'Echange d'Opérations à Compenser du Système Financier Belge / Uitwisselingscentrum van te Verrekenen Verrichtingen van het Belgisch Financieel Systeem (UCV)</i>
<b>CIK</b>	<i>Caisse Interprofessionnelle de Dépôts et de Virements de Titres SA / Interprofessionele Effectendeposito- en Girokas N.V.</i>
<b>CL-CV</b>	<i>Coopérative de Liquidation / Coöperatieve tot Vereffening</i>
<b>ELLIPS</b>	Electronic Large-value Interbank Payment System
<b>EMSS</b>	Electronic Matching and Securities Settlement
<b>EOC</b>	Euroclear Operations Centre
<b>IRG-HWI</b>	Rediscount and Guarantee Institute - <i>Institut de Réescompte et de Garantie / Herdiscontering- en Waarborginstituut</i>
<b>NBB</b>	National Bank of Belgium - <i>Banque Nationale de Belgique (BNB) / Nationale Bank van België</i>
<b>POM</b>	Public Order Member
<b>PPS</b>	Protected Payment System
<b>S.W.I.F.T.-CLR</b>	S.W.I.F.T.-Clearing
<b>SCC</b>	Securities and Coupons Centre
<b>STN</b>	Switched Telephone Network
<b>UEBL-BLEU</b>	Belgian-Luxembourg Economic Union - <i>Union Economique Belge-Luxembourgeoise / Belgisch-Luxemburgse Economische Unie</i>

## Introduction

The Belgian payment system is characterised by a very high level of automation. This particular situation is the result of efforts made by the credit institutions since the early 1970s, with a view to rationalising the treatment of payment operations. Very early on, interbank co-operation led to several standardisation agreements, on which the entire process of automation is based.

The NBB has been very closely involved in these efforts. Besides its more traditional role as settlement agent, it assumes the operational management of the interbank settlement systems.

Credit transfers and related instruments are still predominant among the means of payment. However, the use of cheques has

been steadily declining for several years. This instrument is tending to be replaced mainly by POS transactions with debit cards. The latest developments include the extension of telebanking as well as new electronic money instruments, notably the recent introduction on the Belgian market of a multi-purpose prepaid card.

The organisation of the Belgian payment system will be thoroughly modified by the forthcoming launch of a new automated system designed for the real-time gross settlement of large-value payments. This system will limit the risks involved in interbank payments and constitutes the last important stage towards the complete automation of the national payment system.

## I. Institutional aspects

### 1.1 General legal aspects

Apart from one legal text which deals with cheques (Law of 1st March 1961), there is no specific legislation concerning payment instruments or systems. There is, therefore, no specific legal provision governing other traditional payment media or electronic payment systems. Relations between credit institutions, consumers and retailers are governed by private contracts. On a more general level, the problem of authentication in systems that do not involve a manual signature is not covered by specific legislation.

A new law on the status and supervision of credit institutions was adopted on 22nd March 1993. The purpose of this law is to protect the savings of the public and to safeguard the smooth functioning of the credit system by laying down rules for the establishment and the operation of the credit institutions as well as for the supervision of the latter. This law also introduces the provisions of the Second Banking Directive of the EU.

Moreover, this law contains an important chapter pertaining to netting between credit institutions. The law seeks to guarantee the legal certainty of set-off agreements for debts between two or more credit institutions, where one of these institutions is involved in bankruptcy or in any other case of concurrent claims which is governed by Belgian law.

Until recently, the effectiveness of netting arrangements could be challenged under Belgian law, with regard to two principles of bankruptcy law: a) the prohibition of any set-off after bankruptcy, except between related debts, and b) the principle that the bankruptcy decision of the court has a retroactive effect, starting from the first hour of the day on which it was made ("zero-hour rule").

These principles were likely to prevent the participation of the Belgian banks in international interbank netting systems, thereby depriving them of the advantages which might result from the consequent reduction in settlement costs and in credit and solvency risks involved in international financial operations. Moreover, the uncertainties which existed in Belgian law on the subject of the possibility of relying upon netting agreements against third parties reduced the attraction of locating the centre of an international netting system in Brussels.

This is why express recognition is given, through Article 157 of the law on the status and supervision of credit institutions, to the legal validity of bilateral or multilateral set-off agreements for claims between credit institutions themselves and between credit institutions and a clearing house, as well as to "close-out" agreements (express termination clauses in the event of bankruptcy or other default situations). These agreements are legally binding and enforceable against third parties (including a liquidator), subject to the conditions defined in this provision. In particular, it is clear that it is no longer required that the claims to be set off should be related. The article also states that payments made by or to a credit institution on the date on which it has been declared bankrupt will be valid if they preceded the time of the bankruptcy decision or if they were made without being aware of the fact that the credit institution was bankrupt.

The financial sector is also covered by the general anti-trust regulation (Law of 5th August 1991) which forbids practices which restrict competition. The description of this concept has largely been based on Articles 85 and 86 of the EEC Treaty.

## 1.2 Financial intermediaries that provide payment services

Distinctions in the legal and supervisory framework between commercial banks, savings banks and public credit institutions have disappeared completely since the new law on the status and supervision of credit institutions came into force. With the exception of two, which have remained savings banks, they all have chosen to adopt the denomination of “bank”. Furthermore, most of the former public credit institutions are engaged in a privatisation process by selling the public participation to the private sector. The number of credit institutions in December 1994, subdivided into Belgian and foreign institutions, is given in the following table:

Total number of credit institutions	Under Belgian law	Under foreign law	
		EU	non-EU
147	107	25	15

To these should be added the Post which, as the financial department of the Postal Administration, does not have the status of credit institution. The Post has recently also been allowed to offer credit cards linked to customers’ current accounts. In addition, it has signed an agreement with the largest Belgian private bank related to the marketing of savings products through its branch network.

The credit institutions and the Post are represented by 9,595 branches, i.e. one branch for every 1,054 inhabitants.

Non-bank institutions are also represented in the payment media market, in particular companies issuing in-house cards, luncheon vouchers and travellers’ cheques (see Sections 2.2.4 and 2.2.6).

## 1.3 The role of the central bank

### 1.3.1 General responsibilities

As the issuing authority, the NBB issues banknotes on its own behalf and coin on behalf of the Treasury.<sup>1</sup> While the production of banknotes takes place in its own printing department, the minting of coin is the prerogative of the Royal Mint of Belgium, responsible to the Ministry of Finance.

Banknote distribution is carried out at the NBB’s head office in Brussels, as well as at three branches (of which one is in Luxembourg) and fifteen agencies.

Monetary policy is determined and implemented by the NBB. It also manages the national gold and foreign exchange reserves. As lender of last resort, the central bank grants credit to credit institutions only. As an agent for the Government, the NBB also handles the receipts and expenses for the Treasury, as well as the administration and accounting of government bonds. It does not carry out retail activities on behalf of its customers.

Finally, the NBB is greatly involved in the interbank clearing mechanisms with the traditional clearing house (located in Brussels and at seventeen branches and agencies of the central bank), the automated clearing house (CEC) as well as the dematerialised Securities Clearing System. It will also play a leading role in the development and management of the new ELLIPS system dedicated to the processing of large-value payments. It assumes general responsibility for the smooth functioning of payment systems and oversees the operation of these systems. It also plays a role in setting standards for the financial system.

<sup>1</sup> Within the framework of the Belgian-Luxembourg Economic Union (BLEU), Belgian coins and banknotes are legal tender in the Grand Duchy of Luxembourg, but the reverse is not the case.

*Statutory responsibility*

The NBB is governed by an organic law and by its statutes.

The main reference to the role of the NBB in the field of payment systems is made in Article 30 bis of the organic law, which cites “the promotion of the smooth operation of payment systems” as one of its tasks. The following paragraphs of the statutes are also relevant to the payment and settlement services offered by the Bank:

- Article 17, 2° allows the central bank to make current account advances and short-term loans, guaranteed by the pledging of commercial bills or loan instruments listed on a stock exchange or traded in money or capital markets;
- Article 17, 3° allows the central bank to receive deposits of sums and establish such deposits with credit institutions and the Rediscount and Guarantee Institute;<sup>2</sup>
- Article 18, 1st paragraph: “the Bank may carry out all transactions and render all services which are ancillary to or follow from its functions”;
- Article 31: “the Bank may carry out all operations designed to facilitate transfers of funds”.

*Establishment of common rules*

Since the beginning of the 1970s Belgian credit institutions have concluded various co-operative agreements in the field of information processing in order to facilitate interbank transactions. The NBB performs the administration of the Secretariat of Protocols. It is also actively involved in preparing and writing the agreements. The first so-called interbank protocol, signed on

<sup>2</sup> The Rediscount and Guarantee Institute is a semi-official market-maker in discount bills.

8th July 1970, relates to credit institution identification by establishing a uniform structure for account numbers, according to which the first three positions identify the institution.

Thirteen other agreements concerning, inter alia, the standardisation of the most commonly used payment instruments (i.e. credit transfers, cheques and direct debits) and the setting-up of an automated clearing house have since been signed.

*Supervision and audit*

The NBB is not in charge of banking supervision. The supervision of individual credit institutions is undertaken by a legally autonomous institution: the Banking and Finance Commission (BFC). One Director of the NBB has a seat on the Board of the BFC as of right. The NBB collects the periodic and annual prudential reports from the credit institutions and transmits them to the BFC. The BFC must consult the NBB before publishing regulations concerning solvency and liquidity.

The NBB oversees the Belgian payment system on the basis of Article 19 of its organic law, which stipulates that: “The Bank may carry out all operations designed to facilitate transfers of funds”. This is one of the basic missions for which the NBB is independent from the Government, according to Article 30 bis, which has been added to the organic law in enforcement of Article 107 of the Maastricht Treaty.

All the credit institutions are supervised by the BFC, except for the Post, which is under the supervision of the Minister of Finance.

The internal audit department of the NBB is concerned with the various clearing systems (Clearing House of Belgium, CEC and Securities Clearing System) to the extent that the NBB is de facto responsible for the operational organisation of these systems.

### **1.3.2 Provision of processing and settlement facilities**

#### *Provision of processing facilities*

The NBB has historically been in charge of the paper-based Clearing House of Belgium, created at its own initiative at the beginning of the century. Considering the experience gained by the NBB in this area as well as its neutral role, the financial sector decided to entrust the NBB with the day-to-day management of the CEC from the start of the system in 1974.

The Clearing House of Belgium and the CEC are located on the premises of the NBB. They are operated on the Bank's computer system by the Bank's own personnel.

#### *Provision of settlement and credit facilities*

The NBB provides settlement accounts with an overdraft facility for all members of the Clearing House of Belgium. End-of-day credit facilities are offered to the clearing banks against collateral. There is no system for explicit intraday credit.

Netted cash positions resulting from the transactions at the Securities Clearing House are settled via the Clearing House of Belgium for institutions participating in both mechanisms. For the other participants in the Securities Clearing System and for the members of the Stock Exchange and the CIK, the NBB provides sight accounts in which the cash leg of various kinds of securities transactions is settled.

Although the legal framework exists, credit institutions in Belgium are not at present subject to monetary reserve requirements; practically no balances are kept on their accounts at the central bank.

#### *Pricing policies*

The level of charges set by the Bank for the services it offers tends to be based on their effective cost.

### **1.3.3 Monetary policy and payment systems**

The primary objective of the NBB's monetary policy is price stability. The interest rate policy is guided by an exchange rate target which consists in keeping the Belgian franc firmly pegged to the Deutsche Mark. This intermediate objective, which was given explicit shape in June 1990, is justified by the high degree of openness of the Belgian economy, its sensitivity to exchange rate movements, its close integration with the neighbouring countries' economies and by the credibility of the Bundesbank's stability-oriented monetary policy. Its achievement is supported by low inflation, a sizable current account surplus and a process of fiscal consolidation.

The interest rate policy mainly consists of two elements: fixing the official rates and pursuing a liquidity policy.

On the one hand, by announcing its rates, the Bank clearly indicates the desired movement of short-term interest rates. The discount rate and the rate for collateralised current account advances "above the ceiling" (i.e. in excess of the credit line) thus have a signalling function (see Section below). However, the Bank shows the orientation of its interest rate policy mainly through the conditions applicable to the end-of-day facilities, particularly the so-called "central rate". This also applies to the periodical allocations of credit by tender.

On the other hand, the Bank can also influence money market rates by means of its liquidity management. In the absence of any reserve requirement system, it intervenes in the money market on a daily basis, covering the need for liquidity resulting from the

demand for banknotes and from its operations in the foreign exchange market. This is carried out in such a way that the NBB obtains the desired level of overall end-of-day deficit or surplus.

In order to fine tune market liquidity, the Bank can use repurchase agreements, outright open market operations, foreign currency swaps and classic interbank operations on a daily basis. All the monetary policy operations performed with the credit institutions are settled through the Clearing House of Belgium, in which the NBB participates.

The existence of a smoothly operating securities system administered by the National Bank is a necessary complement, enhancing the effectiveness of the monetary policy instruments.

The instruments for the regulation of money market liquidity are supplemented by arrangements to cover deficits and deposit surpluses with which the credit institutions may end the day. To cover their residual deficits, Belgian and Luxembourg credit institutions can have recourse to the central bank's current account advances, for which they have been granted generous individual credit lines. Each institution can fix the usable amount of its available credit as it wishes, by providing collateral. These daily end-of-day loans take the form of current account advances, with interest payable on a daily basis. The interest rates on these advances are announced by the NBB and can be adjusted every day if necessary. Advances "above the ceiling" can be granted if sufficient collateral is present, but at a much higher interest rate.

Credit institutions can deposit any cash surpluses they are left with after the close of the Clearing House with the Rediscount and Guarantee Institute (IRG-HWI), which reinvests them with the NBB.

#### ***1.3.4 Main projects and policies being implemented***

*The development of an RTGS system in Belgium*

On 25th November 1994 the Board of the Clearing House of Belgium endorsed plans for the development of an RTGS system, ELLIPS (ELECTronic Large-value Interbank Payment System), as well as for the gradual running-down of the paper-based clearing house.

The ELLIPS system will be developed and implemented by the NBB; it will be owned and managed by a non-profit-making association chaired by the Bank and established on 8th December 1995. The NBB will run the ELLIPS application on a contractual basis. This institutional framework is identical to the CEC, the automated clearing house.

The operational start of ELLIPS is scheduled for mid-1996 (see also Section 3.2).

### **1.4 The role of other private and public sector bodies**

There are five main interbank organisations operating in the payment system field:

- the Clearing House of Belgium (see Section 3);
- the CEC, founded in 1974 by the banking sector as a whole, in order to automate the exchange of payment transactions (see Section 3);
- the Banking and Finance Commission (see Section 1.3.1 - Supervision and audit);
- Banksys, a company which runs, inter alia, the national ATMs and POS network (see Section 2.2.4);

- the Bank Card Company (BCC), which is entrusted with the administration of two of the main credit card schemes (see Section 2.2.4).

Furthermore, the Belgian Bankers' Association (*Association Belge des Banques / Belgische Vereniging der Banken*), a professional

organisation, aims to promote its members' professional interests, mainly through economic studies and fiscal, legal and technical advice. The Association of Belgian Savings Banks (*Groupement Belge des Banques d'Epargne / Belgische Spaarbankenvereniging*) merged with the Belgian Bankers' Association at the end of 1994.

## 2. Payment media used by non-banks

### 2.1 Cash payments

Cash comprises banknotes in denominations of BEF 100, 500, 1,000, 2,000,<sup>3</sup> and 10,000 and coins in denominations of BEF 0.50, 1, 5, 20, 50, 250 and 500. 1994 was marked by the withdrawal from circulation of the BEF 5,000 banknote, which ceased being legal tender on 1st December 1994, and by the issue of the new BEF 2,000 banknote. Among the notes, the BEF 10,000 denomination represents the largest share of the total stock of banknotes in circulation (44% by value at end-1994), despite the growing success of ATMs, which now deliver banknotes of BEF 1,000 (accounting for 23% of the value of notes in circulation on 31st December 1994) and BEF 2,000 (accounting for 24% of the value of notes in circulation on 31st December 1994). Banknotes constitute 96% of total cash in circulation and coin the remaining 4%. The issue of coin is legally restricted to BEF 20 billion (ECU 0.50 billion). Coins are legal tender only up to a certain amount, which varies for each denomination.

It is impossible to estimate the value or number of payments made using cash. The only indication available lies in the share of cash in M1, which has recorded a marked decline over a number of years. It amounted to 29.4% at end-1994, compared with 43.7% at end-1980. The total stock of cash in circulation on 31st December 1994 amounted to BEF 431.4 billion (ECU 10.9 billion).

### 2.2 Non-cash payments

Deposit money comprises sight deposits held by non-financial economic agents with financial intermediaries legally entitled to receive such deposits (credit institutions and the Post).

There is no statutory definition of current accounts. According to the regulation<sup>4</sup> governing the financial data which the banks have to submit monthly to the central bank and to the Banking and Finance Commission, current accounts are those on which deposited money can be immediately withdrawn.

Royal Decree No. 56 of 10th November 1967 obliges businesses to hold an account to which credit transfers can be made by their customers. These are generally current accounts.

Regarding value dates, the usual practice in respect of "ordinary" customers is that accounts are debited one working day before the settlement date and credited one working day after. In the case of cheques in the process of being collected, the credit is temporarily revocable.

<sup>3</sup> Banknotes of BEF 2,000 were first issued on 22nd April 1994.

<sup>4</sup> Royal Decree of 24th November 1937.

There are no formal regulations governing these practices. Maximum time limits for crediting counterparties are not statutory. Credit institutions must execute payment orders promptly, on the basis of the general law of contract.

The principle of allowing providers of payment services to charge current account holders for such services was adopted in 1990, enabling credit institutions to charge a fixed fee of BEF 150 (ECU 3.8) for the forty-nine first transactions, and a maximum of BEF 5 (ECU 0.13) per additional debit operation.

Deposit money is rather heavily concentrated: the seven largest credit institutions account for 70% of deposits by value.

### **2.2.1 Credit transfers**

The most commonly used payment medium in Belgium is the credit transfer. The order is given by the customer making the payment to his/her bank either in paper form - handed in at his/her bank branch or sent by post - or in automated form (diskette, magnetic tape, telecommunications). An estimated 642.7 million credit transfers (including standing orders and inpayment transfers; see below and Section 2.2.5) were made in 1994, for a total value of BEF 73,984 billion (ECU 2,285 billion).

The standing order is a form of credit transfer created in order to rationalise the system for recurring payments (payment of rent, etc.). An estimated total of 61.63 million payments of this type were made in 1994 for a total value of BEF 777.12 billion (ECU 19.59 billion).

One significant development is the growing dematerialisation of payment orders transmitted by customers in parallel with the spreading of new self-banking and home banking products. More and more firms are communicating their payment orders via magnetic media or telecommunications, which

obviates the need to capture the data within the financial system. For 1994 it is estimated that 187.9 million payment orders - 29% of all credit transfers - were submitted in paperless form.

### **2.2.2 Cheques**

Up to 1992, the cheque was the second most frequently used cashless payment instrument after the credit transfer. In recent years, however, its use has been diminishing and since 1993, payments by debit and credit cards have become more important in terms of volume than payments by cheque.

By supplying creditworthy customers with cheque guarantee cards, credit institutions promoted the acceptability of the cheque to creditors. These cards serve as a guarantee that any cheque drawn will be honoured up to an amount of BEF 7,000 (ECU 176.5), whether or not the drawer's current account has sufficient cover. To make the guarantee effective, the number of the cheque guarantee card must be written on the reverse of the cheque. It is the duty of the payee to check the validity of the card and to see whether the information on the card corresponds with that written on the cheque. The cheque guarantee card generally carries an automatic overdraft facility of BEF 25,000 (ECU 630) or BEF 50,000 (ECU 1,260) on which interest is charged. The only restriction is that a permanent debit balance for more than three consecutive months is not allowed. On 31st December 1994 there were 4.66 million cheque guarantee cards in circulation (3.43 million of which were eurocheque cards), equivalent to a theoretical average of thirty-eight cards for every one hundred current accounts. In 1994, 124.1 million cheques were issued for a total value of BEF 13,693 billion (ECU 345.26 billion).

In addition to cheques issued by individual credit institutions and postal cheques, the eurocheque is commonly used within Belgium. Unlike other cashless payment instruments,

the cheque can be used for several successive payments, by means of endorsement. However, this practice is limited.

### 2.2.3 Direct debits

The direct debit is a mechanism created in 1980. Its purpose, like that of the standing order, is to simplify the execution of regular payments. In 1994 it was estimated that 100.1 million payments were executed under direct debit agreements. Direct debits are mainly used for electricity and telephone bills and for subscriptions.

The direct debit is based on a contract in which the payer authorises the payee to debit his/her account for specified claims. All signatories of the contract (payer, payee, debtor and banker of the payer) may repeal it. The revocation comes into effect at the latest ten days after the payer's banker has been informed.

### 2.2.4 Payment cards

#### *Debit cards*

Debit cards, issued by the credit institutions under their own logo associated with the logos of Bancontact and Mister Cash<sup>5</sup>, can be used at ATM and POS terminals. The debit and cheque guarantee card functions are packed on the same support. All debit cards have magnetic stripes and require the use of a personal identification number (PIN) before the services can be accessed.

A company called Banksys (see below) is entrusted with the management of the ATM-POS network. Its duties include the monitoring of bank-issued cards and the PIN mailer production for all bank cards. The Post has developed its own debit card scheme, called Postomat. Furthermore, several credit institutions offer ATM facilities to their own customers within the framework of self-banking units. Banksys participates

directly in the automated clearing house (see Section 3.4) and exchanges all the ATM and POS operations to be cleared in this system.

On 31st December 1994 there were some 6.8 million debit cards in circulation, all of which provided access to both ATM and POS terminals, thus representing a ratio of fifty-six cards to every one hundred current accounts.

The cost to the consumer of using debit cards at ATM and POS terminals in theory consists only of an average annual fee ranging from BEF 165 (ECU 4.16) to BEF 250 (ECU 6.3). However, most retail outlets charge BEF 5 (ECU 0.13)<sup>6</sup> for each POS transaction, the fee imposed on them by the interbank network.

In the last few years, the use of debit cards has gradually become internationalised. At the ATM level, there is a reciprocal agreement between the Post and its counterpart organisations abroad.<sup>7</sup> Within the framework of the Europay community, holders of Banksys cards also have access to ATMs in an increasing number of European countries, with reciprocity for foreign eurocheque card holders. Similar interconnections have been established on a bilateral basis between Banksys and other foreign networks.

#### *Credit cards*

In Belgium, most credit cards tend to be of the travel and entertainment type, the full amount having to be settled within a specified period.

Credit cards (American Express, Diners Club, Eurocard and VISA) are widely

<sup>5</sup> *Bancontact and Mister Cash are the two former ATM-POS networks that merged in 1987 to form Banksys. The Post also issues its own debit cards featuring the Postomat logo.*

<sup>6</sup> *This does not apply to Postomat.*

<sup>7</sup> *In France, Luxembourg and Spain.*

accepted in Belgium. As a result of vigorous promotional efforts by the companies concerned, the number of cards in circulation has shown a considerable increase in recent years: from some 326,000 at end-1985 to around 2,132,000 at end-1994. In 1994 28.20 million transactions were effected in Belgium for a total of BEF 111.80 billion (ECU 2.8 billion), 8.20 million of which were payments effected using foreign cards, for a total of BEF 31.25 billion (ECU 787.9 million).

BCC, in which the credit institutions are the shareholders, accounts for the distribution and processing of the majority of VISA and Eurocard cards. Banksys is entrusted with the authorisation of transactions executed using those cards on behalf of BCC.

Card issuers have recently begun automating their payment procedures. At some points of sale, authorisation takes place electronically online and details of the transaction are immediately recorded by the issuing company's computer system and a slip evidencing the transaction is printed out. The nationwide ATM network can also be accessed using credit cards (except for Diners Club cards).

Fixed liability tariffs for the loss of a credit card are laid down in the law.<sup>8</sup>

#### *Retailer cards*

Retailer cards issued by petrol companies and large retailers can, by their nature, only be used at points of sale controlled by their issuers. A distinction can be made between in-house cards meant for the issuers' own infrastructure and those which are in fact managed at the operational level by another

commercial card issuer (interbank network or credit card issuer). The latter category comprises cards issued by petrol companies. Moreover, some of these retailer cards are linked with POS terminals, whereas others can only be used manually. One of the best-known cards, issued by a large retailer, can be used either as a debit card (in which case a direct debit of the customer's bank account is initiated by the retailer) or as a credit card, the choice being made by the cardholder at the moment of purchase.

1,089,000 cards were in circulation on 31st December 1994; 16.81 million transactions were recorded for a value of BEF 33.60 billion (ECU 847 million); 96.4% of the total volume and 94.9% of the value of payments with retailer cards were made electronically.

#### *Prepaid cards*

Prepaid cards were launched in Belgium in 1979 with the RTT-Telecard (now called Belgacom-Telecard), which enables national and international telephone calls to be made from payphones. Other service providers, such as city transport companies, make use of similar cards, albeit on a smaller scale. All these cards are of the magnetic stripe-type and single-purpose oriented.

The first multi-purpose electronic purse, called Proton, was piloted in two cities at the beginning of 1995 (see Section 2.3.1).

#### *ATMs and POS networks*

Banksys manages ATM and POS terminals online on behalf of the issuing credit institutions that are the only shareholders in the company. These terminals are accessible by means of magnetic stripe cards and secret PIN codes. In addition, there are two ATMs owned by American Express and in-house ATM networks owned by several credit institutions and the Post. The latter also processes the POS transactions made by its

<sup>8</sup> Royal Decree of 24th February 1992, based on the Law on Consumer Credit of 12th June 1991, was published in the Belgian Law Gazette of 4th April 1992.

Postomat customers.

Transactions possible at Banksys ATMs are cash withdrawals, the checking of balances on current accounts and the modification of PIN codes. Each transaction triggers various immediate checks:

- blacklist (stolen cards, etc.);
- balance on current account, on the basis of the balance at the previous day's close, taking into account the total of the day's operations effected by means of the card and the amount of the daily and weekly transactions caps.

This online authorisation procedure virtually eliminates fraud and unauthorised overdrafts.

By 31st December 1994, 1,246 ATMs and 63,765 POS terminals had been installed, mainly by the Banksys network. Only fourteen ATMs had been installed at non-bank sites. This number will continue to fall due to a policy to discourage the installation of ATMs at non-bank sites. Additionally, 1,924 ATMs were installed in self-banking units at the branches of twelve credit institutions. These ATMs allow other types of transactions such as the ordering of documents (cheques or credit transfer forms) and transfers from current accounts to savings accounts.

Whereas the POS terminals installed at filling stations and large retail outlets are, like ATMs, heavyweight terminals linked via leased lines to the networks' computer centres, those installed at small retail outlets and in the other sectors involve the use of the switched telephone network (STN).

The interbank network can be accessed not only using bank debit cards but also by means of a range of in-house cards issued by petrol companies which can be used exclusively at filling stations selling their brand. These companies make use of the infrastructure of the interbank network, but

offer additional advantages such as discounts, the possibility of using the card abroad, etc. These services are specifically aimed at attracting corporate customers with fleets of vehicles.

### 2.2.5 Postal instruments

The inpayment transfer is a hybrid payment instrument offered chiefly by the Post, which enables a payment to be made to a holder of a (bank or postal) current account on the basis of a cash inpayment at a post office. This instrument is primarily intended for payers who do not have a current account. In 1994, 35.8 million inpayment transfers were made for a total value of BEF 659.5 billion (ECU 16.62 billion), giving an average of BEF 18,421 (ECU 464) per transaction. There is now a real move to discourage use of this instrument, which requires lengthy manual procedures, by applying a high fee of BEF 16 (ECU 0.4) per transaction.

The Post issues a special category of cheques, known as the postal draft. This is a payment order, sent by post, which the recipient can cash at a post office or at a credit institution at which he/she is a customer. This payment medium enables a payment to be made to a payee who does not hold a current account or whose current account number is not known by the initiator of the transaction. The draft is drawn on a postal current account, possibly with a financial institution as intermediary. The government and its various agencies make extensive use of the postal draft system, for instance for the payment of social security benefits (e.g. pensions, family allowances). In 1994 22.1 million postal drafts were issued for a value of BEF 425.2 billion (ECU 10.72 billion). The Post has recently decided to promote the use of circular cheques in order to replace the postal drafts for all operations with a value lower than BEF 100,000 (ECU 2,521).

### 2.2.6 Other payment instruments

Other instruments are also used in Belgium, the main ones being:

- the travellers' cheque;
- the luncheon voucher;
- the commercial bill.<sup>9</sup>

In 1994 200,000 travellers' cheques were sold in Belgium for a value of BEF 5.27 billion (ECU 132.88 million).

Luncheon vouchers are issued by two French-owned companies ("Le Chèque-Repas" and "Ticket Restaurant") to any firm wishing to distribute them to its employees as part of their remuneration package. Since 1st April 1994, their validity has been limited to three months and they may only be used for the payment of a restaurant bill or for the purchase of food products. Due to these strict limitations and the reduction of the tax advantages accruing to the employer and the employee under the system, use of this instrument has been falling over the past few years: 103.73 million luncheon vouchers were issued in 1994 (against 130 million in 1992) for a total value of BEF 19.07 billion (ECU 480 million), against BEF 23.05 billion (ECU 581 million) in 1992.

## 2.3 Recent developments

### 2.3.1 Proton

The first multi-purpose prepaid card, called Proton, was piloted by Banksys in two cities in February 1995. This card is designed to be

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<sup>9</sup> *It could be argued that the commercial bill and its variants are not payment instruments as such, because settlement of the transaction underlying the bill has to be in the form of another payment medium (cash or deposit money). The commercial bill can, however, be passed to a third party by means of endorsement.*

a replacement for ready cash (and small-value cheques) and is targeted at payments below BEF 500 (ECU 12.61) in local shops, vending machines, car parks, ticket machines, public transport and payphones. It can be loaded with amounts ranging from BEF 100 (ECU 2.52) up to BEF 5,000 (ECU 126.07). Electronic purses are issued only by the credit institutions, which charge an average BEF 200 (ECU 5.04).

Proton is a microprocessor card which stores monetary value as opposed to tokens or units of service (as a phone card does). It can be reloaded at cash dispensers (ATMs) using a secret code. The loading transaction is processed with verification of this code and of the available funds on the account. The payments are made in Belgian francs. It is technically possible, however, to extend the system to other currencies. Purse-to-purse transactions are not possible within the Proton scheme.

Within the scope of this project, Banksys is developing and marketing two new types of payment terminal for the service providers:

- a terminal for small shops, with two versions, fixed and portable;
- a module to be integrated into vending machines.

During a purchase transaction, money is transferred from the Proton card to the retailer's terminal. As only small amounts are involved, and for reasons of speed and ease of operation, these payments are made without using a secret code. The service provider can transfer the money into his/her bank account through a simple telephone call from the terminal (using the modem) or through a special card which he/she then unloads at an ATM or at his/her bank branch. The cardholder can consult the balance on his/her Proton card at a cash dispenser, at the terminal of the service provider or using a small personal pocket device.

Nationwide expansion is planned for the beginning of 1996 and is intended to cover the whole country before the end of 1998.

Banksys is looking into the possibility of widening the range of loading possibilities (at home by telephone or at payphones). Another possible future development would be to combine the functions of the debit card and electronic purse on a single plastic card and, consequently, to open the POS network to the electronic purse.

The Proton technology has already been adopted by several foreign countries including Australia (Quick Link) with a licence for Hong Kong and New Zealand, the Netherlands (Interpay), Switzerland (Telekurs) and, more recently, Brazil (Mitel).

### 2.3.2 *Standardisation of payment instruments*

Great efforts have been made in recent years to standardise payment instruments in order to facilitate their automated processing. In this respect several working groups have been created by the Belgian

Bankers' Association. The NBB collaborates actively with these groups. The means of payment for which a manual exchange in the clearing house remains compulsory are progressively being replaced by standardised instruments. One important example is the progressive replacement of postal drafts for an amount below BEF 100,000 (ECU 2,521) by circular cheques. This evolution is regarded as a necessary step towards the full automation of interbank exchanges.

### 2.3.3 *Phone banking and self-banking*

Phone banking is becoming increasingly successful. In 1994, 8.1 million credit transfers were made by means of phone banking, compared with 5.5 million in 1993. The number of subscribers to phone banking has risen to 1.4 million from 0.8 million in 1992.

In an attempt to reduce staff costs, several bank branches are being equipped with self-banking units. In 1994, 1,989 branches were already equipped with a self-banking unit, i.e. 25% of all branches.

## 3. **Interbank exchange and settlement systems**

### 3.1 **General overview**

There are two domestic interbank payment systems in Belgium: the Clearing House of Belgium and the CEC.

Both systems process credit transfers without any restrictions regarding their value. In practice, however, most large-value transfers pass through the Clearing House, while the CEC mainly processes retail payments.

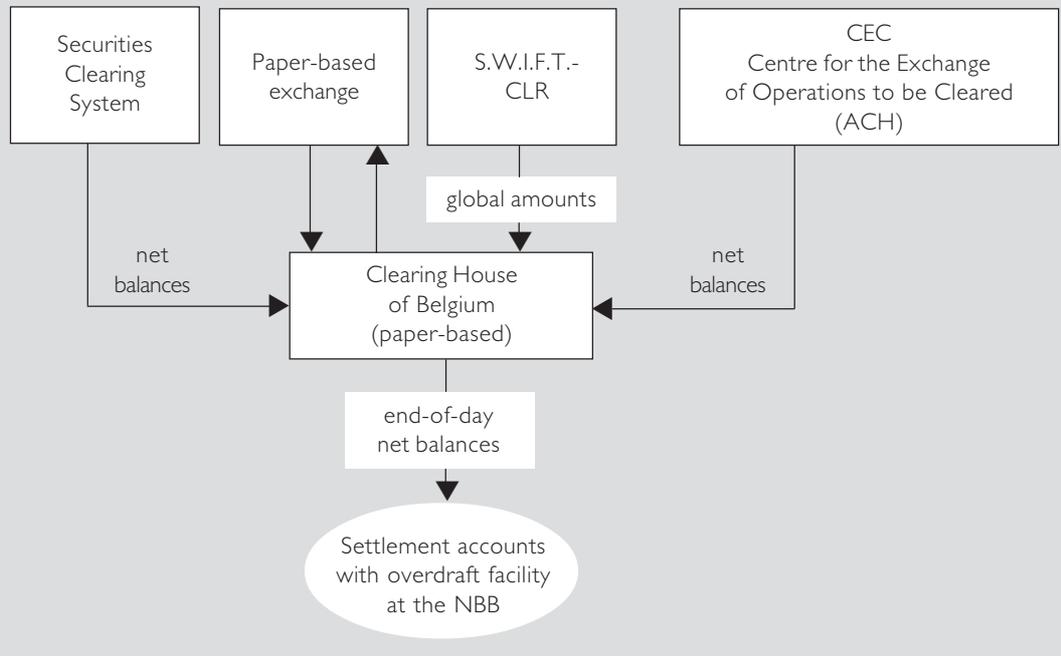
The Clearing House of Belgium, which operates from Brussels as well as from seventeen other cities in Belgium, is a paper-

based system which handles 2% of all payments to be cleared (but 93% of the total value). It also incorporates the net balances of the CEC and the Securities Clearing System, as well as the global amounts of the S.W.I.F.T.-CLR (clearing) system. The latter system calculates the bilateral global amounts to be settled at the Clearing House, while the individual payment instructions are transmitted electronically, via the S.W.I.F.T. network.

The remaining 98% of interbank transactions are handled by the CEC. These represent only 7% of the total value to be cleared.

**Chart 1**

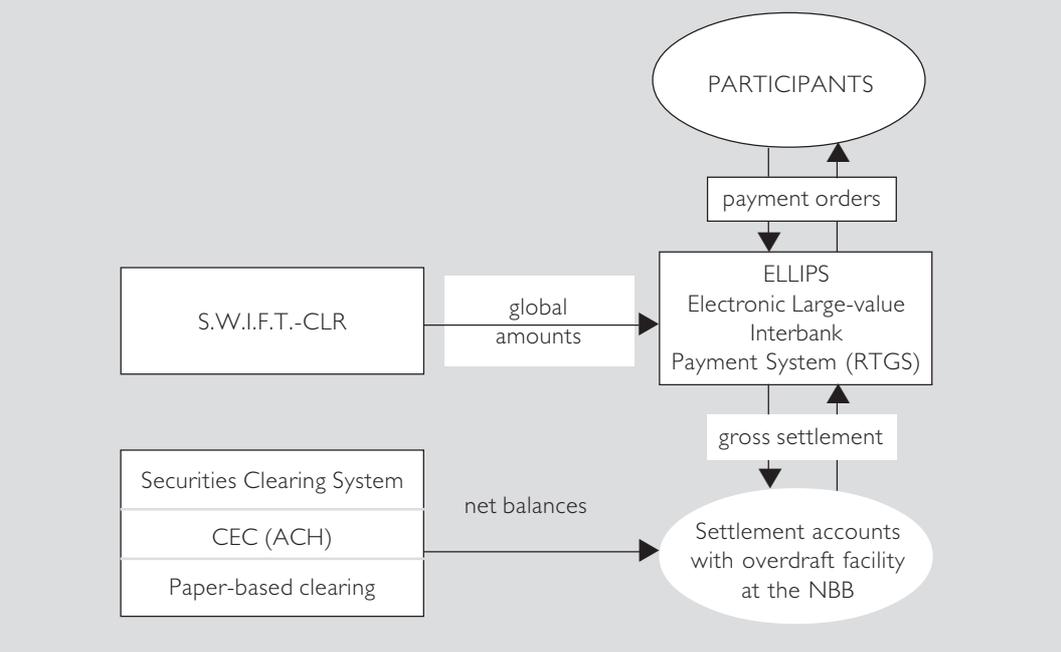
**Interbank exchange and settlement systems in Belgium (current situation)**



The implementation of ELLIPS is expected in 1996 and will lead to a complete reorganisation of the national interbank payment system. Its new structure will be as follows:

**Chart 2**

**Interbank exchange and settlement systems in Belgium (1996)**



## 3.2 Real-time gross settlement (RTGS) system: ELLIPS

### 3.2.1 Functioning rules

The non-profit-making association ELLIPS was created on 8th December 1995. The association is governed by a Board of Directors composed of representatives of the members. The NBB acts as chairman of the Board and operational manager of the system. Its functioning rules were established by the general assembly. The system is planned to be operational in mid-1996.

### 3.2.2 Participation in the system

Credit institutions operating in Belgium can participate directly if they fulfil various criteria:

- maintain an account with and be granted a credit line by the NBB;
- meet several conditions regarding the legal guarantees, solvency, operational capacity and fluidity of the payments.

The NBB is a participant by right.

An estimated twenty direct participants are expected when the system comes into operation. The other credit institutions will act as sub-members. Their transactions will be processed in ELLIPS through the participants, which will also be responsible for settlement of the operations.

### 3.2.3 Types of transactions handled

All interbank and customer credit transfers of an amount equal to or exceeding BEF 50 million (ECU 1.26 million) will be settled through ELLIPS, except for operations made between the participants and the credit institutions they represent, or between sub-participants represented by the same institution. Some specific payments for a

lower amount will also have to be transmitted through the system. Other types of credit transfers will not be prohibited but their number will be limited; transmission could be discouraged by the application of higher fees.

### 3.2.4 Operation of the transfer system

Transfers received by ELLIPS will be validated immediately. If rejected, a S.W.I.F.T. message will be addressed to the sender. Accepted orders will be treated chronologically. When validated, payments will be irrevocable.

The payment will be settled immediately if the necessary provision or credit line is available on the account of the remitting bank with the NBB. If funds are insufficient, the transaction will be placed in ELLIPS's waiting queue until sufficient funds are available to execute it. Final closure will take place at 4.45 p.m. Operations still in the waiting queue at this time will be cancelled automatically and the senders informed accordingly by specific message.

An online treasury module will provide the participants with a range of information such as the balance on their account with the NBB and the status of their payment orders sent to ELLIPS on the same day.

The system will be open from 6 a.m. to 4.45 p.m. The ELLIPS schedule will be the following:

Operations	Cut-off time
- Transfers agreed one or several days before	9.30 a.m.
- S.W.I.F.T.-CLR global amounts (see Section 3.1)	1.00 p.m.
- Customer transfers; transfers by order of or in favour of non-participating banks	3.00 p.m.
- Interbank transfers by order of or in favour of sub-members	4.30 p.m.
- Interbank transfers by order of or in favour of members	4.45 p.m.

### **3.2.5 Transaction processing environment**

Data exchanges between ELLIPS and its members will take place exclusively via telecommunication links through the S.W.I.F.T. network.

Backup facilities will be available both within the NBB and in a backup centre provided by a computer firm.

### **3.2.6 Settlement procedures**

Each transfer will be individually settled by debiting the sender's current account with the NBB and crediting the account of the beneficiary. The payment will immediately become final.

### **3.2.7 Credit and liquidity risk**

The gross settlement system has been adopted in order to minimise the liquidity and credit risks. Orders will be settled only if sufficient funds or intraday credit are available on the sender's current account. The NBB will grant fully collateralised intraday credit.

### **3.2.8 Pricing**

The costs of initial investments will be shared equally by the founders. Any participant who applies to the system after its foundation will pay a fee fixed by the Board on the basis of the total investment costs.

Each participant will pay an annual fee fixed by the Board on the basis of the fixed operating costs. The variable operating costs will be shared on the basis of the number of orders and the number of consultations of the treasury module.

### **3.3.9 Main projects and policies being implemented**

All large-value transfers will have to be processed by ELLIPS, which will become, together with the CEC, one of the two pillars of the Belgian interbank payment system.

## **3.3 Large-value payment system: Clearing House of Belgium**

### **3.3.1 Functioning rules**

There is very little specific legislation in the field of interbank payments. The credit institutions themselves determine the by-laws and rules governing the Clearing House of Belgium and the CEC. The same applies to ELLIPS which, as explained in Section 3.2, will process all large-value transfers from 1996 onwards.

The Clearing House of Belgium (an association without a specific legal structure) is governed by a Board of Directors composed of representatives of the most important member institutions and chaired by the NBB. Most of the functioning rules are determined by this Board. The statutes of the association require the approval of the general assembly in which each participant has a voting right.

### **3.3.2 Participation in the system**

Membership of the Clearing House of Belgium is granted by a decision of its general assembly. All credit institutions (plus the Post and the NBB) legally acting in Belgium may participate. As direct participants they are required to have a settlement account with an overdraft facility with the NBB for the final settlement of their operations. They may also opt for indirect participation; in this case, they are represented in the Clearing House by another financial institution. Each direct participant is held responsible for the transactions of the indirect participants it represents. At the end of 1994, the Clearing House of Belgium had

seventy direct participants and seventy-one indirect participants.

### 3.3.3 Types of transactions handled

In theory, all types of paper-based payment instruments can be handled in the Clearing House: cheques, credit transfers, commercial bills, redemptions of securities and coupon payments, and liabilities incurred in Belgian francs in respect of foreign exchange transactions (see Section 4.1). The CEC remains, however, the recommended method for transmitting the operations that can be exchanged automatically.

### 3.3.4 Operation of the transfer system

The Clearing House of Belgium handles paper-based transfer orders within the various branches of the Clearing House and between the branches (by mail or courier service). Balances resulting from the CEC and from the Securities Clearing System of the NBB are automatically added in the afternoon, after which time multilateral net balances are calculated. Payments become final the same day.

An overview of the cut-off times for transactions presented at the Clearing House of Belgium is given below:

Operations	Cut-off time
Paper-based securities and coupons	9.00 a.m.
Cheques	11.45 a.m.
Credit transfers	1.00 p.m.
CEC balances (details below)	2.00 p.m.
Debits, rectifications	2.15 p.m.
Unpaid cheques, specific credit transfers	2.30 p.m.
Operations outside Brussels with the NBB	3.30 p.m.
Balances resulting from securities clearing	4.00 p.m.
Final settlement	4.30 p.m.

Revocation of operations is not possible, unless this is bilaterally agreed. Participants with a positive net final balance are able to transfer this balance to the Rediscount and Guarantee Institute (IRG-HWI), a semi-official market-maker in discount bills. Those with a negative final net balance can borrow from the NBB on a fully collateralised basis (see Section 1.3.3).

### 3.3.5 Transaction processing environment

Paper-based payment documents are physically exchanged while the related financial data are announced on terminals, either in the Clearing House or in the head offices of member banks. Operations are confirmed electronically by the addressee after having received the payment documents. The net balances of the peripheral systems (CEC and Securities Clearing System) are automatically booked with the participants, who can consult their treasury position online. The NBB acts as manager and supervisor of the system.

### 3.3.6 Settlement procedures

The NBB is the only settlement agent. For all clearing mechanisms, finality occurs at the end of the day, when the participants' multilateral netted positions are booked on their settlement accounts at the NBB. Should a participant have a net debit position which exceeds its credit facility with the NBB, and should it also be unable to borrow from other credit institutions, all its payments would have to be unwound (see Section 1.3.3).

### 3.3.7 Credit and liquidity risk

Each participant<sup>10</sup> has a settlement account at the NBB. Overnight credit extended by

<sup>10</sup> With the exception of the Post, the net balance of which is incorporated in the accounts of the State's Cashier.

the NBB has to be fully covered by collateral.

There are no intraday arrangements or intraday controls on net debit positions. Loss-sharing rules do not exist. The unwinding of all the operations of a defaulting bank is the ultimate solution in the event of serious problems at the end of the day. This has not happened since the Clearing House was founded at the beginning of the century. Nevertheless, growing awareness of credit, liquidity and systemic risks has led the NBB to develop ELLIPS (see Section 3.2.1).

### **3.3.8 Pricing**

The cost of the Clearing House of Belgium is partially borne by the NBB. Some categories of costs (computer application and courier service), however, are recouped from the participants. There are no transaction fees.

### **3.3.9 Main projects and policies being implemented**

Achievement of the complete automation of interbank exchanges implies that the few thousand transactions which continue to be dealt with by the Clearing House on a daily basis will have to be eliminated. Several initiatives have already been taken to introduce new types of operation in the CEC and to replace the payment instruments regarded as obsolete by more modern ones. The dematerialisation of the exchange of cheques exceeding the limit allowed for cheque truncation in the CEC will probably be one of the main obstacles to the elimination of all manual procedures.

The current functioning rules of the Clearing House will be greatly modified after the launch of the ELLIPS system. The few remaining paper-based operations (mostly large-value cheques and postal drafts) will be exchanged via mailboxes installed on the premises of the NBB without the compulsory

presence of the credit institutions' representatives. The total value of these operations will be marginal compared to that of the ELLIPS transactions.

## **3.4 Retail payment system: CEC**

### **3.4.1 Functioning rules**

The CEC is a non-profit-making organisation. As in the case of the Clearing House of Belgium, the Board of Directors, made up of representatives of the members, takes most of the decisions on new rules.

The NBB acts as Chairman of the Board and operational manager of the system.

### **3.4.2 Participation in the system**

The statutory criteria for participation in the CEC are very similar to those applied to the Clearing House. All credit institutions legally entitled to operate in Belgium can make use of the services of the CEC either directly, as members, or through another participant. On 31st December 1994, the CEC comprised eighty-three members and fifty-eight sub-members. All the institutions operating in the Clearing House also have to be registered in the CEC.

### **3.4.3 Types of transactions handled**

The CEC is mainly used for exchanging data on retail payments: the average amount per operation is BEF 30,000 (ECU 756). The system is used to process sixteen different main types of operation. The main categories include credit transfers, truncated cheques for up to BEF 300,000 (ECU 7,564), unpaid cheques, direct debits, unpaid direct debits and ATM/POS transactions (see Tables 8 and 9 in the statistical annex). The latter category represented approximately one-third of the total number of operations in 1994.

The ten largest participants provided almost 93% of the total number of transactions processed in the system.

#### 3.4.4 Operation of the transfer system

The CEC transfer system operates on a round-the-clock basis, five days a week. The remitting institution generates blocks of messages to be sent under different application codes, according to their type. Data are transferred to the CEC via telecommunication, tapes, cassettes or diskettes. There is no exchange of paper payment documents (including cheques), as these are retained (truncated) by the institution which receives them from the customer. Following certain checks, the messages are sorted by addressee and sent through the selected transmission medium. The participants may inquire about their treasury position via telecommunication throughout the day. Participants cannot revoke their operations.

Operations	Cut-off time for settlement on day D	
	Teleprocessing users	Others
Direct debits and unpaid cheques	D: 8.00 a.m.	D-1:10.00 p.m.
Credit transfers	D: 12.30 p.m.	D: 1.00 a.m.
Large-value or urgent credit transfers	D: 1.30 p.m.	not allowed
Cheques and unpaid direct debits	D: 1.45 p.m.	D: 1.00 p.m.

The settlement of the data exchanged beyond the deadlines takes place on the next value date. The net balances of the CEC are regularly incorporated in the treasury position of the participants in the Clearing House.

#### 3.4.5 Transaction processing environment

Data exchange between the CEC and its members takes place via magnetic media or

by telecommunication, in the latter case with compulsory encryption of the data; 74% of input data and 79% of output data are currently handled via teleprocessing. The CEC operates with a very high degree of reliability, up to 99.99%. Immediate backup facilities exist both within the NBB as well as at an external backup centre provided by a computer firm.

#### 3.4.6 Settlement procedures

The amounts to be cleared as a result of the exchanges are calculated for each of the clearing banks and added to their treasury position in the Clearing House. All exchanged operations are settled on the same day, provided that they have been remitted before the cut-off time.

#### 3.4.7 Credit and liquidity risk

The rules of the Clearing House regarding credit and liquidity risk also apply to the CEC (see Section 3.3.7)

#### 3.4.8 Pricing

The cost of the CEC system is shared between its members on the basis of transaction volumes and the means of exchange used, so that the NBB's costs are fully covered. The direct members also have to pay an annual fee. In addition to these system costs, an interbank pricing system exists according to which every receiving bank pays a certain sum to compensate for the remitter's data exchange cost.

#### 3.4.9 Main projects and policies being implemented

In the future, the CEC will also be used to exchange data other than payment instructions. The first project relates to the automation of the direct debit contracts

between customers and their suppliers. Another project, which will start in 1996, aims to automate all transactions with regard to bills of exchange. It will link the IRG-HWI and the CEC. The circulation of bills will be entirely eliminated and data will be exchanged electronically. However, contrary to the processing principles for cheques in the CEC, bills will not be kept with the initiator, but will instead be sent to the IRG-HWI, which

will be responsible for the custody of the bills, the management of a central register and the settlement of centralised payments.

Furthermore, the CEC will specialise in the processing of all retail transactions, including those which are still exchanged in the manual Clearing House. Active participation in this system will be promoted by appropriate pricing measures.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

*Legal framework concerning financial (securities) markets*

Debt instruments can take three different forms under Belgian law: (1) dematerialised form, where securities are exclusively represented by book entries, (2) bearer form, and (3) as a registration in the ledger of the issuer. Since 1991, various legislation has been adopted to define the features of these instruments, as well as to organise the systems in which transactions in these securities are settled.

Articles 3 to 12 bis (and the subsequent amendments thereof) of the Law of 2nd January 1991 related to public securities and the instruments of monetary policy established the dematerialised form of the public debt as well as the clearing system administered by the NBB. These are inspired by the general philosophy of Royal Decree No. 62 of 10th November 1967, which defined the rules applicable to fungible securities under Belgian law.

Securities in bearer form can be deposited with a central institution, the CIK (an acronym for the *Caisse Interprofessionnelle de Dépôts*

*et de Virements de Titres SA / Interprofessionele Effectendeposito- en GiroKas N.V.*), and traded by simple book entries on or from the accounts of the affiliates held in the books of the CIK.

Originally created for the settlement of transactions on instruments of the public debt, the scope of the Securities Clearing System of the NBB was widened to include the settlement of some dematerialised private debt instruments by the Law of 22nd July 1991, and to include other types of debt instruments as a result of the new fiscal measures introduced by the Law of 6th August 1993.

Legal measures have been taken in order to protect the investors' interests, particularly against the default of the holder of a dematerialised securities account, e.g. the segregation of assets, a ban on any attachment proceedings on accounts opened in the name of agreed holders, and the recognition of the owner's right of claim, that can be exercised on the depository's own assets in the event of insufficient cover on the global customer's account.

Securities can be pledged by being booked on special pledge accounts, without the need for other formalities.

Repurchase agreements on dematerialised securities follow the rules laid down in the above-mentioned Law of 2nd January 1991, and can be concluded by financial intermediaries on the basis of the “PSA/ISMA Master Agreement”, as amended to comply with the specific features of Belgian legislation and market practices. Furthermore, bridges are established with international securities settlement systems (Cedel and Euroclear) to enable simple transfers of securities between accounts held by investors in different systems.

The Law of 6th August 1993, related to transactions on certain securities, introduces a new fiscal regime for fixed-income securities deposited in a settlement system; it also places responsibility for the collection and payment to the Treasury of the withholding tax due from certain beneficiaries of securities income because of coupon payments or of secondary market transactions with the managers of these settlement systems.

The Law of 7th April 1995 authorised the complete dematerialisation of securities submitted to the Royal Decree No. 62 (fungible assets not included in the scope of the Law of 2nd January 1991) and to the Code of Commerce (others), following rules similar to those determined by the Law of 2nd January 1991 and its subsequent amendments.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

##### ■ Statutory responsibilities

The organic law of the NBB does not assign any special role to the bank in the field of securities settlement systems. However, such a task is laid down by the Laws of 2nd January and 22nd July 1991, under which the NBB is entrusted with the management of the Clearing System for dematerialised public debt securities and some dematerialised private debt instruments.

##### ■ Establishment of common rules

The NBB supports the financial sector in the elaboration of the statutory and contractual regime applicable to securities, especially that for public debt securities.

The NBB is entrusted with the day-to-day management of the Securities Regulation Fund (*Fonds des Rentes / Rentenfonds*) which establishes the common transaction rules applicable to dematerialised public debt securities.

Moreover, the NBB retains the original of each Repurchase Agreement executed (unilaterally) by each participant in the Belgian repo market, and periodically updates a list of such signatories which is then distributed to all the signatories.

##### ■ Oversight and audit

Neither the oversight nor the audit of securities settlement systems operating in Belgium is explicitly assigned to the NBB except, of course, for the Securities Clearing System which it operates itself. The Securities Regulation Fund is, however, responsible for the supervision of the holding of the accounts of dematerialised public debt.

##### *Provision of settlement facilities*

##### ■ Securities accounts

Each participant in the Securities Clearing System of the NBB has a securities account sub-divided into sub-accounts to distinguish in particular the securities held on its own account, those held on behalf of third parties (customers) and those securities that are pledged. A participant may not hold a securities account (dematerialised securities) with another participant in the system (except for pledging or for non-BEF and non-ECU instruments).

### ■ Securities lending

The Securities Clearing System of the NBB provides an automatic bond lending facility designed to facilitate the final settlement of market transactions.

At the end of each business day, the System determines the balance of each participant for all kinds of securities. Participants who have a debit balance on their own securities account can borrow the necessary securities from a pool provided by the participants who are ready to lend the securities remaining on their own portfolio account or on that of their customers (the consent of whom is necessary).

Automatic borrowings are to be repaid the next banking day. Nevertheless, it is possible to prolong the borrowing of the same securities on a daily basis over a maximum period of ten days. This takes place automatically and is completely anonymous.

Such borrowings are only provided if the following conditions are fulfilled:

- conclusion of a specific agreement with the NBB, as the manager of the Securities Clearing System, in order for the participant to join the consortium of lenders and consequently have the right to borrow himself;
- assignment of the percentages the participant will allow the system to consider when taking securities out of its own portfolio in order to place them at disposal of the pool of lenders;
- the borrowing capacity of the participant depends on the pledge available, which is either formed beforehand or calculated automatically by the system (the pledge in market value must be equal to at least 110% of the market value of the borrowed securities).

### *Provision of operational facilities*

#### ■ Central securities depository

The NBB's Securities Clearing System effectively plays the role of central depository, not only for dematerialised public debt, but also for dematerialised commercial paper and for some bearer securities.

#### ■ Clearing House

To date, clearing has taken place on a multilateral net basis at the end of the business day. However, it should be emphasised that the Securities Clearing System does not intervene as a counterparty in the settled transactions. Settlement of the cash leg is effected through the Clearing House of Belgium or via current accounts at the NBB (see above).

### *Monetary policy operations and securities settlement systems*

See Section 1.3.3.

#### **4.1.3 The role of other public sector bodies**

##### *The Stock Exchange*

The *Société de la Bourse de Valeurs Mobilières / Effectenbeursvennootschap* organises and surveys the stock exchange markets.

The over-the-counter market of Belgian government securities has been placed under the supervision of the Securities Regulation Fund (*Fonds des Rentes / Rentenfonds*).

Transactions in equities and transactions in some public sector bonds are cleared and settled through an arrangement in which three institutions intervene:

- the CL-CV (*Coopérative de Liquidation / Coöperatieve tot Vereffening*), a company set up for the purpose of settling

transactions in the stock exchange market, ensures reciprocity of the transfers of securities and funds; it carries out a multilateral netting of securities and cash for the forward market, and a multilateral netting of funds for the cash market;

- securities are transferred by movements on the securities accounts of CIK, the central depository for fungible bearer securities;
- funds are transferred by movements on the accounts of the NBB.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

Belgian capital markets have expanded considerably with the encouragement of the authorities. Since 1989, new dematerialised instruments have been created, while a new clearing system has been launched by the central bank.

There is now a broad range of instruments in use:

- dematerialised securities (linear bonds, Treasury bills, and commercial paper): the vast majority of trades involving these types of securities are over-the-counter transactions. The NBB is the central depository body for these securities and manages the Securities Clearing System. New standard government securities (in paper form) have also been handled by the system since December 1994;
- other securities (in paper form), including standard government securities, bonds and equities issued by private bodies: the central depository for securities in paper form is the CIK;

- futures and options transactions are managed by Belfox (Belgium Futures and Options Exchange).

### 4.2.2 Basic quantitative aspects (basic statistics)

#### Secondary market: nominal amounts

Years	ECU billions	
	Treasury bills	Linear bonds
1991	176.5	100.6
1992	244.4	216.0
1993	361.3	541.5
1994	447.0	1,220.8

Since the launch of the NBB's Securities Clearing System, the number and value of transactions has grown rapidly (see Country Table 11). The increase in the value of transactions processed is partly due to the rise in the average value per transaction, but is also the result of the increase in repo transactions, especially during 1994.

It should be emphasised that the nominal amounts indicated for the secondary market should be considered as a minimum estimate since transactions between customers of one and the same participant are not recorded. These hidden transactions are probably substantial owing to the fact that, among other things, its participants include the two largest international clearing institutions, namely Euroclear and Cedel.

### 4.2.3 Financial intermediaries operating in the different securities markets

Several kinds of institutions participate in the different markets listed above: banks and savings banks, stockbroking firms, brokers (not participants in the NBB Securities Clearing System), inter-primary dealer-brokers and international clearing institutions (Euroclear and Cedel).

#### 4.2.4 Recent developments

- New fiscal environment based on two types of securities accounts (investors exempt or not from withholding tax); known as X/N accounts (X = exempt; N = non-exempt);
- new bridge with Euroclear and Cedel;
- new repo convention (PSA/ISMA convention adapted slightly to the Belgian context);
- Belarfi project agreement (a single clearing structure for all underlying instruments). This project is to be implemented in 1996.

### 4.3 Securities Clearing System of the NBB

#### 4.3.1 Major regulations

The NBB acts as the operational manager of the system and determines the rules that govern the Securities Clearing System in accordance with the law (see Section 1.1). These regulations lay down the working principles and rules applicable to this settlement system, including those relating to the types of securities and participants admitted, as well as the types of transaction settled in the system. This generally works in accordance with the rule which requires double notification for the matching of transactions.

#### 4.3.2 Participation in the system

The NBB Securities Clearing System forms the apex of a hierarchy of account holders approved by the Minister of Finance, being credit institutions and stockbroking companies established in Belgium or Luxembourg. Other

participants are the State Treasury and the central bank itself. Institutions such as Cedel and Euroclear are allowed to participate for securities denominated in Belgian francs and ECUs, but only on behalf of their foreign customers. The number of direct participants is about 200. Securities held on account by direct participants are booked directly in the books of the NBB, as manager of the system, and in the participants' books for so-called sub-participants (with a maximum of four layers in all, the NBB included). Participants and sub-participants must segregate their own assets from assets maintained in the system for their customers' accounts.

The main types of account are:

- the participant's own account, on which it keeps its own portfolio;
- two global customers' accounts<sup>11</sup> that are used for all the customers, on which the participant books those transactions that it performs for its customers. The balances on these accounts will be broken down by the participant itself for all the customers in its own books;
- one pledge account on which the participant forms a pledge of securities either on behalf of another participant (in the context of bilateral loans against pledges), or on behalf of an institution as a result of a contract that may not even concern a securities transaction. Some amounts also appear on the pledge account in the event of an automatic pledge has to be taken to secure an automatic borrowing of securities granted by the pool of lenders managed by the system.

#### 4.3.3 Types of transactions handled

In 1991 the NBB introduced a DVP system for operations in Treasury bills and linear bonds. A year later, other categories of

<sup>11</sup> X/N accounts (see Section 4.2.4).

dematerialised securities, such as bills issued by the private sector, also entered the system. Furthermore, in 1994, the system was prepared for handling securities denominated in foreign currency and new issues of standard government bonds. The system is also prepared to handle ECU-denominated securities when such instruments are issued by the Belgian Government.

The types of transactions can be subdivided into primary market transactions, secondary market transactions and other transactions.

#### *Primary market transactions*

Before submitting a bid when there is an invitation to tender, a bidder who is not a participant in the system must indicate in its application to the Treasury administration the participant or sub-participant, who must be an account holder, with whom a securities account has been opened and through whom payments will be made. On the day of tender, the Securities Clearing System receives a list of tenders awarded by the Treasury. The participant approves the direct tenders from its customers, giving authorisation for its cash account to be debited on the day of payment.

The amounts to be paid in respect of subscriptions are integrated into the cash balance of the participant's other transactions. Once the Clearing House of Belgium has closed, a tender securities account will be credited for each participant with the amount of its direct subscription. This amount is then distributed to the various sub-accounts held by the system by internal transfer. Customer tenders will be credited to the customer's account as soon as they are paid.

On the date the securities mature, the system automatically integrates the amounts to be credited in the participants' cash balance at the end of the day. On the due date for interest payments, the system automatically credits participants with a

position in the securities concerned with the amount of interest calculated on the basis of the final balances for the previous day.

#### *Secondary market transactions*

Notifications concerning transactions on the secondary market must be sent to the clearing system as soon as the transaction is concluded. Two notifications are needed for each transaction with the exception of internal transfers and conversions (see below).

The following secondary market transactions can be handled:

- outright purchases or sales: these transactions generate a movement of securities and a cash flow in the opposite direction;
- cession-retrocession (repo): the notification will state two due dates and two cash amounts. When clearing the cash leg of such a transaction, the Securities Clearing System will automatically initiate the forward transaction on the pre-arranged due date;
- securities swap: the parties exchange securities for a limited period of time. Likewise, in this case the Clearing System will automatically generate the forward part of the transaction;
- free transfer: securities can be transferred between two participants without any cash movement within the system;
- internal transfer: a single notification is needed to transfer securities from one sub-account to another held by the same participant;
- borrowing and lending of securities: for a simple loan such as a repo, the system itself automatically initiates the forward part of the loan transaction. Loans can

also be negotiated for an unlimited period. In such a case, the second part of the transaction will be generated only on the basis of the borrower's notification to settle the retrocession. Loans against pledges are also possible. The system guarantees that the pledged securities will not be released before the loan is repaid. These pledged securities are transferred from the borrower's own account to a pledged securities account. The allowance to be paid by the borrower on the due date is included in the global cash amount to be settled.

#### *Other transactions*

Any transaction can be cancelled by its sender on the basis of a cancellation notification. It is possible for a participant to correct a transaction unilaterally up to 11 a.m. If the transaction to be cancelled has already been matched, both participants concerned have to send a cancellation notification.

Securities can be pledged with the agreement of the beneficiary who may or may not be a direct participant. The pledge will only be released on the basis of written authorisation from the beneficiary.

#### **4.3.4 Operation of the transfer system**

Notifications are sent by participants via S.W.I.F.T. or by fax. After matching has taken place, the revocation of operations is no longer possible, unless bilaterally agreed. The cut-off time for same-day transactions is 3 p.m. The cash balance resulting from the final processing (including automatic bond lending) is sent to the Clearing House of Belgium or to the participant's NBB current account. If there is no default on payments, the transfers of securities and cash are final.

#### **4.3.5 Transaction processing environment**

The securities settlement system is fully computerised. In most cases (85%), the data exchange between the participants and the securities settlement system takes place via standard S.W.I.F.T. messages. The system operates with a very high degree of reliability. Immediate backup facilities exist both within the NBB as well as at an external backup centre provided by a computer firm.

#### **4.3.6 Settlement procedures**

When the settlement is being processed, securities are delivered insofar as they are available on the vendor's securities account (after automatic bond lending, see Section 4.1.2), and insofar as sufficient cash has been recorded on the buyer's account. The transactions thus processed are irrevocably and simultaneously recorded in the securities and cash account. In the event of insufficient securities the transactions are cancelled. Should a participant have a net debit position in the Clearing House which exceeds its credit facility with the NBB, and should it also be unable to borrow from other credit institutions, all of its transactions will have to be unwound.

#### **4.3.7 DVP arrangements**

The essential characteristic of the Securities Clearing System is the simultaneous net settlement of both securities and funds transfer instructions (DVP "model 3" system according to the 1992 BIS Report on "Delivery Versus Payment in Securities Settlement Systems"). The positions in securities and cash are indeed established on a net basis at the end of the day and the transfers are only final if there are sufficient securities and cash (principal risk is eliminated).

#### 4.3.8 Credit and liquidity risk control measures

No credit (either in cash or in securities) is granted without collateral. Several provisional processing cycles during the day as well as communications to the participants stating the provisional net balances (cash and securities) are intended to reduce problems at the end of the day. In the event of insufficient securities, the transaction in question is cancelled (this occurs extremely rarely because of the automatic bond lending efficiency). All operations by a cash defaulting participant would be unwound in the event of serious problems at the end of the day (but this never has happened to date).

The delivery versus payment principle applies to the settlement procedure: transactions for which there is an insufficient cash provision are not settled, thus leading to the cancellation of all the transactions of this participant or sub-participant with the same settlement date. The liquidity of the market in securities admitted to the clearing is increased by the existence of a bond lending system, in which participants can participate as lenders and/or borrowers by concluding a special bond lending agreement.

#### 4.3.9 Pricing policies

No custody fees are charged for government securities. Each notification (i.e. an instruction from a participant) gives rise to a lump-sum payment of BEF 100 (ECU 2.52). Automatic bond lending fees are calculated pro rata temporis on the nominal value of the borrowed securities. The fees payable by the borrower amount to 2%, whereas the lender receives 1.5%. With regard to commercial paper, a fee of 0.03% is due from the issuer, calculated pro rata temporis on the nominal value of the securities involved within the system.

#### 4.3.10 Main projects and policies being implemented

The Securities Clearing System plays an important role in the ELLIPS project (see Section 3.2) as manager of the collateral of the intraday credit system. At a later stage, final settlement of securities operations could take place several times a day on a trade-by-trade basis.

### 4.4 CIK

#### 4.4.1 Major regulations

The CIK (*Caisse Interprofessionnelle de Dépôts et de Virements de Titres SA / Interprofessionele Effectendeposito- en Girokas N.V.*) is a limited liability company, established according to the terms of Royal Decree No. 62 of 10th November 1967, and owned by the financial community.

The CIK currently operates two distinct clearing systems: the DVP system, which handles stock exchange transactions from the spot market as well as from the forward market, and the EMSS (see below). Three institutions are involved in the DVP system: the CIK itself for the settlement of the securities leg, the NBB for the cash leg, and the Clearing Co-operative of the Brussels Stock Exchange (BSE), which centralises and dispatches all transactions data between the seller, buyer, NBB and CIK.

Since September 1995, the CIK has also been fully responsible for maintaining a new clearing system for over-the-counter transactions. This system is called EMSS - Electronic Matching and Securities Settlement. Cash transfers are also settled by the NBB.

#### 4.4.2 Participants

The following institutions take part in the systems: credit institutions, all stockbroking companies and foreign institutions performing operations similar to those of the CIK.

*DVP system*

The CIK is in charge of the management of the securities accounts of its customers.

Participation implies the opening of two types of account: conservation accounts, which are ordinary accounts, and settlement accounts, which are transitory accounts.

*EMSS system*

An OTC account, which is closely linked with the conservation and settlement accounts, is used in the EMSS clearing system.

**4.4.3 Types of transactions handled***DVP system*

The DVP system is designed for the settlement of transactions on the stock exchange. It handles all securities listed on the spot market and the forward market. The opening of a CIK account does not imply joining the DVP system. Professionals can also settle their transactions by franco transfer.

*EMSS system*

The EMSS system handles all types of OTC transactions between the CIK participants, either as franco or DVP transactions.

**4.4.4 Operation of the transfer system***DVP system*

Notifications regarding securities transfers are addressed to the CIK by the BSE. The multilateral net positions calculated by the BSE are sent to the NBB. Only one debit or credit per participant has to be registered to their respective current accounts. The corresponding securities transfers in the

book-entry system of the CIK only become effective when sufficient cover is available.

*EMSS system*

Notifications are initiated by the seller and the buyer, who have to introduce the transaction in the system. Securities are settled on a trade-by-trade basis, on settlement day. Cash positions are netted and transferred to the NBB. The settlement module covers transfers of securities and transfers of cash positions for DVP transactions.

**4.4.5 Transaction processing environment**

The two systems are fully computerised and can be accessed via the S.W.I.F.T. network.

**4.4.6 Settlement procedure***DVP system*

## I. Spot system

On the instruction of the BSE (on D+2 before 5.30 p.m.), share movements of transactions on the cash market are transmitted to the CIK. The night before settlement, the CIK performs a "temporary" settlement: it debits trade-by-trade the conservation accounts of the sellers and credits the settlement accounts of the buyers. The securities transfer is settled if a sufficient balance is available. In the event of the default of the settlement account, the transaction is rejected.

Sellers whose transactions were rejected can deliver securities up to D+3. If their debit is eliminated in time (before 10 a.m.), their transfer orders will be taken into consideration for definitive settlement. Transfer orders are then dispatched to the BSE.

Transfer orders which are still rejected will automatically be processed with the batches on the next day.

The next step includes the adjustment of the cash position between the BSE and the NBB. The net cash position of each participant is calculated on the basis of the accepted securities positions and transmitted to the NBB.

The BSE is informed by the NBB of the settlement of cash positions. Almost simultaneously the CIK is given the order to debit the settlement accounts of the buyers and credit their conservation accounts. This final step makes the ownership of the securities official.

## 2. Forward system

The forward market is organised on fortnightly basis. All transactions are aggregated and netted on the same day for both cash and securities positions. Participants can ultimately opt to split their transactions on D+1 and decide to adjust their securities/cash positions on D+2. Settlement occurs on D+3.

Unlike the spot system, in which participants are directly credited on their respective settlement and conservation accounts, the BSE acts as an intermediary between buyers and sellers. At the end of the forward period, the BSE performs a pre-settlement operation and transfers the aggregated file to the CIK on D+2 before 5.30 p.m.

The night before definitive settlement, the CIK performs a "temporary" settlement: it debits trade-by-trade the conservation accounts of the sellers and credits the BSE, which, in turn, credits the settlement account of the buyer. The debit balances are checked. Whatever the securities position of the seller, the buyer is irrevocably credited if it is able to transfer sufficient cash to the BSE's account.

Sellers whose transactions were rejected can deliver securities up to 12 noon on D+3. From 10 a.m. to 12 noon, the guarantee in cash or

securities is temporarily pledged by the BSE. If the debit is eliminated in time (before 12 noon), the transfer order will be taken into consideration for definitive settlement. Settlement results are then dispatched to the BSE. If the seller still fails to deliver by 12 noon, the amount (i.e. the countervalue of the debit failure + 10%) is pledged in cash and transferred to a common CIK/BSE account until the seller is able to fulfil its obligations.

The next step includes the adjustment of the cash position between the BSE and the NBB. An individual cash position is calculated per participant on the basis of the accepted securities positions. The results of this netting operation are transmitted to the NBB. The BSE is informed by the NBB of the settlement of cash positions. Almost simultaneously the CIK is given the order to debit the settlement accounts of the buyers and credit their conservation accounts. This final step makes the ownership of the securities official.

If the seller has not delivered sufficient securities by 12 noon, its trade will be definitively rejected by the forward settlement system and will automatically enter the spot settlement system.

### *EMSS system*

The characteristics of the transactions are matched bilaterally. This matching procedure is based on a unique reference attributed to the transaction and to different matching fields. The provisions are checked before transferring the shares from the account of the seller to the account of the buyer. The settlement of securities implies the following movements: the debiting of the OTC account of the seller and the crediting of the OTC account of the buyer. If the seller does not have sufficient shares to settle the transaction, EMSS will recycle the transaction in the next processing cycle.

As far as the transfer of cash is concerned, the buyer has to indicate whether or not its

trade will be guaranteed. If the trade is guaranteed, shares will be transferred immediately from the OTC account of the seller to the OTC account of the buyer.

If the buyer does not guarantee its trade, the securities will be transferred from the OTC account of the seller to the OTC blocked account of the buyer. The securities will remain blocked on this special account until a proper guarantee is given. If the buyer guarantees its trade before the end of the day, the transfer will occur on the OTC account. If the seller sends a refusal of guarantee, the securities are returned online to the seller and the trade is cancelled.

At the end of the day, securities on the OTC blocked account are returned to the OTC account of the seller. The trade is not cancelled. It will be reprocessed in the first batch the following day.

Several trades can be linked in EMSS, which means that a delivery will only occur when another transaction is executed. This function was developed in order to prevent the delivery of securities reserved for another trade.

#### **4.4.7 Main projects and policies being implemented**

##### *Securities and Coupons Centre (SCC)*

The CIK has started to look into the possibility of providing the Belgian financial market with a global solution for solving the problem of the payment of dividend/capital between paying agents.

The purpose of the SCC project is to centralise within one entity the processing of paper-based coupons and to rationalise the chain of payments. Consequently, the SCC will enable the faster crediting of paying agents and reduce processing costs.

The SCC management system includes the handling and verification of coupons, the

transfer of coupon positions to an SCC account, the direct conversion of coupon positions into cash positions and, finally, the crediting and debiting of NBB accounts.

#### **4.4.8 Pricing policies**

The transfer fees are the following:

DVP transfer: BEF 10 (ECU 0.25);

EMSS transactions: BEF 100 (ECU 2.52).

### **4.5 BELFOX**

#### **4.5.1 Major regulations**

The Belgian Futures and Options Exchange (Belfox) is an integrated market for financial derivative instruments created in 1991 and subject to the new Law on Investment Services of 6th April 1995 and to the related Royal Decrees of 22nd December 1995 and 6th January 1996.

Belfox s.c. is a co-operative company governed by private law which fulfils the functions of market authority and clearing organisation. Its regulations and rules require the prior approval of the Banking and Finance Commission, which is also responsible for the prudential control of Belfox. A government commissioner, who reports to the Ministry of Finance, supervises the activities of the company.

#### **4.5.2 Participation in the system**

Different categories of members can be distinguished:

- The exchange members, including:
  - Public Order Members (POM);
  - Brokers;
  - Market-makers.

Only brokers and market-makers have access to the trading system. Brokers may execute orders either for their own account or for the account of customers, whereas market-makers deal exclusively for their own account. POMs must transact all their business through brokers.

- The clearing members

Not all members of the exchange are automatically members of the clearing system. Belfox makes a distinction between individual clearing members, clearing for their own account, and general clearing members, clearing for their own account as well as for the account of other members of the exchange.

#### 4.5.3 *Types of transactions handled*

The main instruments traded on Belfox are:

- options on stocks (eight Belgian stocks);
- options on indices (index of twenty Belgian stocks, index of stocks of South African gold mines);
- options on currencies (USD);
- options on interest rate futures (futures on notional Belgian government bonds);
- interest rate futures (on 3-month BIBOR and on notional Belgian government bonds);
- futures on indices (index of twenty Belgian stocks).

#### 4.5.4 *Operation of the transfer system*

All orders to buy or to sell, as well as all orders to exercise a right of option, given by a customer to his/her Public Order Member (POM) are registered, dated and time-stamped immediately upon receipt. The order

is transmitted by the POM to a broker of his/her choice for execution. The POM may execute the orders himself/herself if he/she also acts as a broker. The broker is informed of the execution of the order on Belfox via the negotiation system. The negotiation is anonymous (screen-based trading system). Neither the buyer nor the seller are mentioned in the received execution message.

The resulting cash positions are cleared by a clearing member representing the customer. The obligations become effective once a trade is matched in the electronic trading system.

Belfox monitors the positions of clearing members and their customers throughout the day. Positions are updated in real time from matched trade reports and are available for remargining at any time based on the latest prices. The system also monitors compliance with trading regulations on a permanent basis (quotation obligations, respect of maximum positions, etc.).

#### 4.5.5 *Transaction processing environment*

Belfox operates on an automatic trading system, already accessible to members at various locations in Belgium and Luxembourg as well as in some other countries. Backup facilities are available.

#### 4.5.6 *Settlement procedure*

Belfox s.c. has the exclusive right to clear transactions executed on Belfox. Outstanding futures positions are marked-to-market each day, after the close of trading activities. The marking-to-market is based on the final settlement prices of the contracts. In the event of large price movements, the marking-to-market can also be performed on an intraday basis. Losses and gains resulting from this marking-to-market are settled daily. Losses can only be settled in cash. Gains are credited to members' accounts with the

clearing organisation and are only paid in cash at the explicit request of the member.

Margin settlement normally occurs daily. However, under special conditions (large price movements, non-respect of position limits, etc.), the clearing organisation may decide to implement an intraday margin call. This margin has to be settled within one hour.

The daily flow of funds to and from Belfox s.c. is centralised and managed through an automated debit and credit system called the "Protected Payment System" (PPS). Each clearing member must open in-house accounts and customer accounts with a participating bank in the PPS in order to register house and customer transactions respectively. Banks must confirm or reject all payments by 10 a.m.

Clearing members are required to segregate their customers' accounts from their own. Furthermore, individual customers' accounts are also kept on a segregated basis. The netting between individual customers' accounts is not allowed.

#### **4.5.7 Credit and liquidity risk control measures**

The clearing organisation fixes minimum margin requirements. It requires margins from clearing members with respect to the positions of the exchange members and the customers. Exchange members dealing with customers also have to require margins from the latter based on the minimum margins stated by the clearing house.

In normal circumstances, margin requirements are calculated once a day, after the close of trading operations. The value of collateral is evaluated daily.

Furthermore, Belfox limits the positions of clearing members as a fixed number per contract and limits the total value of the margin they hold on the basis of their financial strength.

#### **4.5.8 Pricing policies**

An exchange fee and a clearing fee are payable. There are various levels of fees for market-makers, brokers and POMs. The Public Order Members charge a commission to their customers based on the minimum rates determined by the Board of Directors of Belfox which vary according to the type of contract.

## 5. Statistical data

**Table 1**

### Basic statistical data <sup>(1)</sup>

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	9,961	10,001	10,045	10,084	10,116
Gross domestic product (BEF billions)	6,416.3	6,733.6	7,098.4	7,268.6	7,626
Exchange rate vis-à-vis ECU <sup>(2)</sup>	42.423	42.2224	41.6062	40.4672	39.662

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**

### Settlement media used by non-banks

(end of year)

	BEF billions				
	1990	1991	1992	1993	1994
Notes and coins	413.2	417.0	414.1	424.7	396.3
Transferable deposits <sup>(1)</sup>	905.4	917.6	902.0	1,008.2	1,066.9
Narrow money supply (M1)	1,318.6	1,334.6	1,316.1	1,432.9	1,463.2
Transferable deposits in foreign currencies	n.a.	n.a.	86.2	102.7	87.3

(1) In local currency only.

**Table 3**

### Settlement media used by deposit-taking institutions

(end of year)

	BEF billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	0	0	0	0	0
Free reserves held at central bank <sup>(1)</sup>	n.a.	4.05	2.09	1.41	2.05
Transferable deposits at other institutions <sup>(2)</sup>	717.3	614.1	522.2	378.1	507.0

(1) Average of end-of-month figures.

(2) Revised figures; payment means held by Belgian credit institutions with other credit institutions (call money and sight accounts, BEF and foreign currencies, in Belgium and abroad).

**Table 4****Banknotes and coins***(total value, end of year)*

	BEF billions				
	1990	1991	1992	1993	1994
Total banknotes issued	428.5	431.5	430.2	440.6	412.2
of which:					
BEF 10,000 <sup>(1)</sup>	-	-	15.3	80.6	182.6
BEF 5,000 <sup>(2)</sup>	295.8	297.8	279.1	220.8	6.1
BEF 2,000 <sup>(3)</sup>	-	-	-	-	100.3
BEF 1,000	106.8	107.3	109.1	111.9	95.6
BEF 500	12.2	12.4	12.6	12.9	13.1
BEF 100	13.7	14.0	14.1	14.4	14.5
Coins issued	17.8	18.6	17.9	18.7	19.2
Notes and coins held by credit institutions	33.1	33.1	34.0	34.6	35.1
Notes and coins in circulation outside credit institutions	413.2	417.0	414.1	424.7	396.3

(1) Banknotes with a denomination of BEF 10,000 were first issued on 11th December 1992.

(2) The NBB started to withdraw the BEF 5,000 banknotes, which were no longer legal tender from 1st December 1994.

(3) A new banknote was issued with a denomination of BEF 2,000 on 22nd April 1994.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (BEF billions)
Central bank	1	18 <sup>(1)</sup>		0.1
Credit institutions	147	7,886 <sup>(2)</sup>	10,833	998.6
Postcheque	1	1,709	1,201	68.1
<b>TOTAL</b>	<b>149</b>		<b>12,034</b>	<b>1,066.8</b>
Branches of foreign banks	40	57		
of which EC-based	25			

(1) Five of the twenty-three branches became representation offices, in which no transactions with credit institutions take place.

(2) Non-full-size branches excluded.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993 <sup>(1)</sup>	1994
Cash dispensers and ATMs					
Number of networks	3	3	3	15	15
Number of machines	939	1,052	1,096	2,819	3,170
Volume of transactions (millions)	70.86	80.79	88.33	115.65	120.96
Value of transactions (BEF billions)	248.52	296.71	331.67	458.18	482.08
EFTPOS terminals					
Number of networks	5	6	6	6 <sup>(2)</sup>	6
Number of points of sale <sup>(3)</sup>	23,616	26,578	32,495	42,903	49,983
Volume of transactions (millions) <sup>(4)</sup>	80.34	104.06	131.44	157.81	181.96
Value of transactions (BEF billions) <sup>(4)</sup>	142.64	203.01	276.85	344.43	412.67

(1) From 1993 onwards the ATMs and transactions at ATMs which are part of a self-banking unit (and thus privately run) are added.

(2) Six companies have their own POS customers, but the transactions pass through a single network, the Banksys network.

(3) The number of machines stood at 28,253 in 1990; 32,199 in 1991; 40,627 in 1992; 52,984 in 1993; and 63,765 in 1994.

(4) Payments by credit cards at POS terminals are added.

**Table 7****Number of payment cards in circulation <sup>(1)</sup>***(end of year)*

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	6,377	6,857	7,792	8,316	8,912
Cards with a debit/credit function	6,485	6,967	7,907	8,431	8,912
of which:					
<i>cards with a debit function</i>	5,250	5,466	6,101	6,434	6,780
<i>cards with a credit function <sup>(2)</sup></i>	1,235	1,501	1,806	1,997	2,132
Cards with a cheque guarantee function	4,651	4,653	4,598	4,856 <sup>(3)</sup>	4,660
Retailer cards	688	767	913	1,002	1,089

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

(2) Most cards with a credit function are of the delayed debit type.

(3) Revised figure.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Clearing house	27.87	27.28	24.67	22.52	15.88
Securities clearing balances <sup>(1)</sup>	-	neg.	neg.	neg.	neg.
Postal drafts and money orders	2.90	2.63	2.21	2.19	3.76
FX transactions	0.07	0.03	-	-	-
Non-resident transactions	-	-	0.46	0.94	1.15
Debits	5.87	6.22	5.55	4.82	6.25
Ordinary credits	3.86	3.88	3.35	2.46	3.01
Bilaterally exchanged credits	6.92	7.61	7.65	7.16	1.71
Province <sup>(2)</sup>	8.21	6.90	5.45	4.95	-
Others	0.04	0.01	0.00	0.00	-
<b>CEC</b>	<b>610.33</b>	<b>652.12</b>	<b>695.20</b>	<b>740.25</b>	<b>784.33</b>
Direct debits	45.32	50.75	56.53	61.94	66.43
of which:					
<i>ordinary direct debits</i>	44.08	49.27	54.71	59.89	64.07
<i>refunds</i>	0.51	0.50	0.49	0.51	0.52
<i>unpaid direct debits</i>	0.73	0.98	1.33	1.54	1.84
Other debit operations	260.07	275.35	290.43	306.33	322.14
of which:					
<i>truncated cheques</i>	114.88	110.35	98.85	91.35	84.76
<i>ATMs and POS</i>	145.19	164.92	191.31	214.61	237.02
<i>unpaid cheques <sup>(3)</sup></i>	-	0.08	0.27	0.37	0.36
Credit transfers	304.93	325.94	348.08	371.21	394.64
of which:					
<i>ordinary credit transfers</i>	283.96	298.35	314.59	327.78	342.41
<i>counterparty postal</i>	4.26	3.77	3.52	3.34	2.97
<i>counterparty ATM-POS</i>	16.71	23.82	29.97	40.09	49.26
Large-value or urgent transfers	0.01	0.07	0.16	0.77	1.12

(1) In January 1991, the NBB launched a securities clearing system for dematerialised Treasury certificates and bonds.

(2) Since 1994, the volume of transactions in the province has been broken down and classified in the relevant groups.

(3) The application has been operating since 1991.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	BEF millions				
	1990	1991	1992	1993	1994
Clearing house	181,193	187,000	203,067	298,952	337,567
Securities clearing balances <sup>(1)</sup>	-	5,255	5,531	8,651	11,010
Postal drafts and money orders	41	39	43	42	67
FX transactions	14,037	11,841	-	-	-
Non-resident transactions	-	-	21,970	71,951	104,193
Debits	20,820	18,465	18,482	18,632	16,862
Ordinary credits	115,828	137,951	149,278	191,255	205,305
Bilaterally exchanged credits	162	295	250	234	130
Province <sup>(2)</sup>	9,451	5,833	6,518	8,174	-
Others	20,854	7,321	995	13	-
CEC	9,529	12,334	15,928	21,827	24,512
Direct debits	259	299	341	367	407
of which:					
<i>ordinary direct debits</i>	248	286	324	350	387
<i>refunds</i>	4	4	5	5	5
<i>unpaid direct debits</i>	7	9	12	12	15
Other debit operations	1,548	1,627	1,699	1,787	1,830
of which:					
<i>truncated cheques</i>	1,161	1,170	1,158	1,166	1,148
<i>ATMs and POS</i>	387	455	541	610	671
<i>unpaid cheques <sup>(3)</sup></i>	-	2	7	11	11
Credit transfers	7,474	8,298	9,322	9,733	10,255
of which:					
<i>ordinary credit transfers</i>	7,047	7,806	8,746	9,091	9,553
<i>counterparty postal</i>	49	46	44	43	39
<i>counterparty ATM-POS</i>	378	446	532	599	663
Large-value or urgent transfers	248	2,111	4,566	9,940	12,020

(1) In January 1991, the NBB launched a securities clearing system for dematerialised Treasury certificates and bonds.

(2) Since 1994, the volume of transactions in the province has been broken down and classified in the relevant groups.

(3) The application has been operating since 1991.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>BNB Clearing</b>	<b>198</b>		
Banks	119	Yes	Yes
Stockbrokers	74	Yes	Yes
ICSD (Cedel / Euroclear)	2	Yes	Yes
Others:			
- Ministry of Finance	1	Yes	Yes
- Public bodies	2	Yes	Yes
<b>CIK</b>	<b>206</b>		
Banks	82	No	Yes
Stockbrokers	101	No	Yes
Others:			
- CSD (F, CH, NL, DE)	5	No	Yes
- Local custodian for Luxembourg CIK customers	1	No	Yes
- Others	17	No	Yes
<b>BELFOX</b>	<b>44</b>		
Banks	21	Yes	No
Stockbrokers	23	Yes	No

**Table 11****Transfer instructions handled by securities settlement systems:  
volume of transactions**

	1990	1991	1992	1993	1994
BNB Clearing <sup>(1)</sup>	-	53,349	80,287	147,180	188,258
CIK (millions) <sup>(2)</sup>	269.3	260.8	253.1	566.0	664.2
BELFOX <sup>(3)</sup>	-	13,369	419,263	1,408,683	1,915,483

(1) The securities clearing system of the National Bank of Belgium was launched in January 1991.

(2) These figures relate to the number of shares and not to the number of transactions.

(3) Total number of contracts (options and futures).

**Table 12****Transfer instructions handled by securities settlement systems:  
value of transactions**

	BEF billions				
	1990	1991	1992	1993	1994
BNB Clearing <sup>(1)</sup>	-	10,989	18,261	35,805	66,148
CIK	319.2	290.0	315.6	494.4	553.8
BELFOX <sup>(2)</sup>	-	-	0.5	1.7	4.4

(1) The securities clearing system of the National Bank of Belgium was launched in January 1991.

(2) Premium turnover (options).

**Table 13****Nominal values registered by securities settlement systems  
(end of year)**

	BEF billions				
	1990	1991	1992	1993	1994
BNB Clearing <sup>(1)</sup>	-	1,880	3,870	4,781	6,450
CIK	n.a.	n.a.	n.a.	n.a.	n.a.
BELFOX	n.a.	n.a.	n.a.	n.a.	n.a.

(1) The securities clearing system of the National Bank of Belgium was launched in January 1991.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1)</sup>	206.2	193.8	186.4	139.1	124.1
Payments by debit and credit cards <sup>(2)</sup>	95.5	119.3	144.7	169.2	190.9
Paper-based credit transfers	5.6	5.2	4.6	3.4	3.0
Paperless credit transfers <sup>(3)</sup>	495.9	506.6	524.0	586.9	642.7
Direct debits	65.9	73.2	81.3	88.5	100.1
Others	-	-	-	-	-
<b>TOTAL</b>	<b>869.5</b>	<b>898.1</b>	<b>941.0</b>	<b>987.1</b>	<b>1,060.8</b>

(1) Postal drafts included; until 1992 the figures partly included data relating to cheques used to obtain cash.

(2) Payments by retailer cards included.

(3) In-payment transfers included.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	BEF billions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1)</sup>	12,179	9,937	12,460	13,246	13,693
Payments by debit and credit cards <sup>(2)</sup>	205	262	331	388	443
Paper-based credit transfers	122,389	141,592	153,511	196,896	205,305
Paperless credit transfers <sup>(3)</sup>	27,654	32,808	35,284	58,709	73,984
Direct debits	374	430	485	787	1,568
Others	-	-	-	-	-
<b>TOTAL</b>	<b>162,801</b>	<b>185,029</b>	<b>202,071</b>	<b>270,026</b>	<b>294,993</b>

(1) Postal drafts included; until 1992 the figures partly included data relating to cheques used to obtain cash.

(2) Payments by retailer cards included.

(3) In-payment transfers included.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	63	72	76	68	73
of which:					
members	33	36	35	33	34
sub-members	28	35	39	33	36
participants	2	1	2	2	3
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
members	1,812	1,963	2,074	2,103	2,412
sub-members	1,469	1,607	1,738	1,802	2,023
participants	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	15,297,042	16,567,543	18,097,152	19,828,726	21,233,594
of which:					
category I	5,222,108	5,347,697	5,751,632	6,145,021	6,331,292
category II	4,187,387	4,698,968	5,030,069	2,697,142	5,350,057
sent/received to/from domestic users	2,355,072	2,524,657	2,920,427	2,488,985	3,907,203
Total messages received	12,619,118	13,868,647	15,086,640	17,234,167	18,910,023
of which:					
category I	-	-	5,171,658	3,614,711	5,835,044
category II	-	-	3,596,967	1,518,477	4,198,073
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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## List of abbreviations

<b>BEC</b>	A computer centre used by Danmarks Nationalbank - <i>Bankernes EDB-Central</i>
<b>CSE</b>	The Copenhagen Stock Exchange - <i>Københavns Fondsbørs</i>
<b>Dankort</b>	The joint Danish debit card scheme
<b>DN</b>	Danmarks Nationalbank
<b>FUTOP</b>	Futures and options
<b>KFX</b>	The Danish Stock Index - <i>Københavns Fondsbørs Index</i>
<b>PBS</b>	Danish Payment Systems Ltd. - <i>Pengeinstitutternes BetalingsSystemer A/S</i>
<b>VP</b>	The Danish Securities Centre - <i>Vaerdipapircentralen</i>

## Introduction

A key feature of the Danish payment system is the high degree of co-operation within the financial sector on its technical infrastructure. This co-operation has resulted in unified systems for cheque truncation as well as for the fast growing electronic payment media (debit cards, direct debit and credit facilities). Another important result of this co-operation

is the advanced - and unified - system for the handling of securities in book-entry form.

The payment system is largely based on agreements. The central function of Danmarks Nationalbank (the central bank) is to provide settlement facilities and, in general, to act as the common central counterparty to banks.

## I. Institutional aspects

### 1.1 General legal aspects

The Danish payment system is only to a limited extent regulated by laws. The general principles for the use of notes, coins, cheques and payment cards are stipulated in legislation. The Cheque Act of 1932 is based on the Geneva Convention of 1931 and covers rules on the issuing and design of cheques and legal issues in relation to the transfer of cheques, etc. The Payment Cards Act is primarily concerned with the protection of the cardholder (debit or credit cards). The Act determines, among other things, the sharing of responsibility between the card issuer and the cardholder in cases of misuse. The monitoring of compliance with the Act - as well as the compliance of the payment system with the legislation on marketing - is solely a matter for the consumers' ombudsman.

There are no specific laws governing the organisational and technical aspects of handling payments. The payment system is to a large extent based on agreements entered into between members of the Danish Bankers' Association, some of which also involve Danmarks Nationalbank.

### 1.2 Financial intermediaries that provide payment services

#### 1.2.1 The banks

Permission to perform banking activities in Denmark is granted under the Commercial Banks and Savings Banks Act of January 1991 by the Danish Financial Supervisory Authority (*Finanstilsynet*). This body, which is under the control of the Ministry of Business and Industry, is responsible for the supervision of the whole financial sector.

Traditionally banks have been divided into commercial banks (incorporated as limited

companies), savings banks (organised as independent institutions) and credit co-operatives. At the end of 1993 the latter only accounted for 0.5% of all deposits.

The inclusion, in 1975, of commercial banks and savings banks under one consolidated act put commercial banks and savings banks on an equal footing in terms of allowable activities, solvency requirements, etc. With a revision of the Act in 1988, savings banks were given the opportunity to incorporate as limited companies. This opportunity has so far only been taken by the largest savings banks. Savings banks are allowed to use the term "savings banks" in their name even if they convert to limited companies.

As the legislation is identical in all important areas, the distinction between commercial banks and savings banks is no longer of any significance. Thus from a customer's point of view there is, in principle, no difference between holding an account with a commercial bank or holding one with a savings bank. The term "bank" is, therefore, used in this chapter to refer to both commercial banks and savings banks.

In 1990, six of the largest banks merged to form two banks, "Den Danske Bank" and "Unibank". The result is a marked concentration of the banking sector. By the end of 1994, the two large banks together accounted for just over 50% of all Danish banks' deposits. The twelve largest banks together accounted for about 85% of all Danish banks' deposits.

By the end of 1994 there were 178 banks in Denmark with about 2,400 branches, the branches of the GiroBank not included. The number of branches has fallen considerably since the mid-1980s. At that time the banks had about 3,600 branches. The number of deposit accounts amounted to almost 11 million by the end of 1994, which is almost

two accounts per capita. Nearly 100% of the population has at least one bank account.

Among the 178 banks which are Danish institutions, there is only one subsidiary of a foreign bank. On the other hand, seven foreign banks have a branch in Denmark. All of them have headquarters in another EU Member State.

### **1.2.2 The PBS**

Except for home and office banking systems, nearly all electronically based payment media available to Danish bank customers, i.e. direct debit and credit facilities and card systems, are operated by one company, the "PBS". The PBS is jointly owned by all Danish banks (commercial banks, including GiroBank since mid-1991, and savings banks) and was established as a result of early recognition by the banks that there are no advantages to be gained from competing in the technological development of basic infrastructure for payments.

The development of the PBS started in the late 1960s, when the banks formed a joint company with the purpose of developing and operating a common computer-based wage payment system for the banks' corporate customers. In the early 1970s a new joint company was established, creating an interbank transfer centre to develop direct debit systems for all bank customers. This was followed in the late 1970s and early 1980s by the formation of joint companies to develop and maintain a common debit card system, including ATMs and point-of-sale terminals (EFTPOS). All these jointly owned companies were merged in 1986 into one company, the PBS.

### **1.2.3 The GiroBank**

In June 1991 the Postgiro, an independent enterprise within the wholly state-owned National Postal and Telegraphic Services

Group, was converted into GiroBank Ltd. Stocks are listed on the Copenhagen Stock Exchange and at present the central government retains a stake of 49%, whilst the remaining 51% has been sold to private investors. In November 1995 GiroBank and Sparekassen Bikuben, the third-largest bank in Denmark, announced that the two banks will merge. In this connection the central government has decided to sell its shares in the merged bank.

The legal framework of the former Postgiro was an executive order under the Postal Act, in which the activities of the Postgiro were defined as the performance of postal giro business (without further definition of this concept), while at the same time obliging all government agencies and institutions to use the Postgiro for payment services to the largest extent possible. Traditionally, the main function of the Postgiro has been the handling of payments via Postgiro deposit accounts. These accounts were in principle similar to bank sight accounts, with the exception that all transactions on Postgiro accounts had to be effected via post offices, written correspondence with the Postgiro on pre-printed forms or automatically via direct debit facilities.

Throughout the 1980s, the almost complete separation of the Postgiro system from the banking system was relaxed somewhat. As a result, the rapid development of banks' electronic payment facilities, in particular the pre-authorised direct debit system of the PBS, encouraged the Postgiro to develop a similar product for use in relation to Postgiro accounts. An agreement between the banks and the Postgiro ensured that account holders could join either the PBS or the Postgiro direct debit scheme, irrespective of whether the account was held with a bank or with the Postgiro. At the same time, it became feasible for the banks' common debit card, the DANKORT, to be linked to a Postgiro account and to be used in the PBS's ATMs and EFTPOS terminals.

The conversion from Postgiro into GiroBank Ltd. in mid-1991 came about as a result of increased competition from traditional banks in the area of payment services. As electronic payment systems developed rapidly within the banking sector, the Postgiro wanted to enlarge its range of activities in order to compete on equal terms with the banks, and this led to the foundation of GiroBank Ltd.

Today, GiroBank is a full-scale commercial bank authorised under the Commercial Banks and Savings Banks Act. All the former Postgiro accounts are now bank accounts. The GiroBank is a member of the Danish Bankers' Association, as well as the PBS, and has signed all agreements relating to payment systems activity. Accordingly, the Postgiro system has become fully integrated into the banking system.

To a large extent, the unabridged domination of the Danish paper-initiated crediting system was maintained by the GiroBank after the conversion of the Postgiro. Today, however, the product range has been enlarged to encompass all traditional banking products just as the paper-initiated payment services have been supplemented by electronic payment facilities. The GiroBank co-operated closely with the state-owned postal authority, Post. On this basis, 1,300 local post offices continue to make up the branch network of the GiroBank. In addition to the postal branch network, the GiroBank has established its own regional centres for business customers.

#### ***1.2.4 The handling of central government payments***

Central government institutions (such as the tax authorities) hold accounts with Danmarks Nationalbank. However, with some exceptions, disbursements from and payments to central government institutions to or from the non-governmental sector (for example pensions and tax payments, respectively) were until 1991 handled via the Postgiro.

Thus funds were transferred from accounts with Danmarks Nationalbank to the relevant institutions' Postgiro accounts prior to disbursement and, conversely, payments to central government institutions were transferred from the institutions' Postgiro accounts to the accounts with Danmarks Nationalbank upon receipt, either automatically or on a specific request from the relevant institution.

When the Postgiro was granted the status of a bank (the GiroBank) there was no longer any legal provision singling it out as the choice of provider of payment services for the central government. Since late 1991 - subject to some transitional rules - all banks (including GiroBank) have therefore had the opportunity to offer themselves as payment intermediaries between the central government and the non-governmental sector, as the central government institutions have an obligation to put out for public tender. However, the GiroBank still provides a large part of the payment services for the central government institutions.

### **1.3 The role of the central bank**

#### ***1.3.1 General responsibilities***

Danmarks Nationalbank is the central bank of Denmark. Danmarks Nationalbank is organised as a self-governing institution. However, the Bank's profits after allocation to reserves are transferred to the government. Its legal framework is laid down in the National Bank of Denmark Act of 1936.

The Royal Bank Commissioner - the Minister of Economic Affairs - constitutes the formal link between Danmarks Nationalbank and the government and monitors the Bank's observance of its obligations under the Act. However, the Board of Governors is in charge of the execution of monetary policy and the choice of instruments. Thus, it is in practice independent of the government.

According to the Act, the overall objectives of Danmarks Nationalbank are to maintain a safe and secure currency and to facilitate and regulate the circulation of money and the extension of credit.

Danmarks Nationalbank performs the banking functions of the central government. Traditionally, payments to and from the government's accounts with Danmarks Nationalbank have passed through the Postgiro. After the conversion of the Postgiro into GiroBank Ltd., this system was revised (see above). Some large-value transfers of the central government have always been handled directly by Danmarks Nationalbank. Furthermore, a minor part of the central government's payments to and from abroad are handled by Danmarks Nationalbank.

Danmarks Nationalbank has the sole right to issue notes as legal tender.

In terms of audit and supervision, Danmarks Nationalbank's functions are limited to the Bank's own systems, including banks' current accounts and the agreements between Danmarks Nationalbank and the banks. Danmarks Nationalbank has no supervisory or auditing function in relation to the PBS or to the banks' computer centres. The general supervision of the financial sector is the responsibility of the Danish Financial Supervisory Authority.

### *1.3.2 Provision of processing and settlement facilities*

Another key function of Danmarks Nationalbank in the payment system is the provision of settlement facilities and a funds transfer service for banks and investment firms. Of particular relevance to Danmarks Nationalbank's role in the interbank settlement system is the Act's stipulation that among the central functions of the Bank is the taking of deposits on current accounts. Thus, besides a general objective and an obligation to receive deposits from banks,

Danmarks Nationalbank has no specific statutory responsibility for the settlement system. However, as a consequence of the general objective, Danmarks Nationalbank has an obvious interest in the smooth functioning of the system. Furthermore, since Danmarks Nationalbank is the only institution with which all Danish banks hold accounts, it is natural for Danmarks Nationalbank to accept the role of central counterparty to banks in the clearing. There is no fee to hold a current account with Danmarks Nationalbank.

In order to reduce its credit risk, Danmarks Nationalbank recently decided to reduce the banks' access to uncollateralised daylight credit on their current accounts with Danmarks Nationalbank over a three-year period. Furthermore, the access to daylight credit in the future is conditional on the fact that the banks and the investment firms are connected to the DN Inquiry and Transfer System (see Section 3.2.8).

Danmarks Nationalbank is not involved in the processing of retail payment transactions other than individual retail payment transactions routed through the Bank on behalf of the government or governmental organisations. However, the size of these operations is very limited and declining. Danmarks Nationalbank does not charge a fee for these transactions.

### *1.3.3 Monetary policy and payment systems*

The present set of monetary policy instruments were introduced in April 1992. One of the main features of this system is the regular operations in central bank certificates of deposit. The certificates will normally have a maturity of two weeks and are sold on the last banking day of every week. The certificates of deposit are registered in book-entry form at Danmarks Nationalbank. They may only be traded between the banks and with Danmarks Nationalbank and cannot be pledged as collateral. In contrast to

transactions in securities, settlement will take place on the day of the transaction. The interest rate on certificates of deposit serves as Danmarks Nationalbank's key rate for managing the decisive money market rates.

Danmarks Nationalbank supplies liquidity on a regular basis by offering banks access to enter into repurchase agreements in government securities on the penultimate day of every week with liquidity impact the next day. Repurchase agreements are settled at The Danish Securities Centre (see Section 4.3). Maturity and interest rate are the same as those for certificates of deposit. Danmarks Nationalbank will buy certificates of deposit from the market to supply liquidity when needed for fine-tuning purposes.

### ***1.3.4 Main projects and policies being implemented***

As mentioned above, Danmarks Nationalbank has decided to reduce the banks' access to uncollateralised daylight credit over a three-year period ending on 1st July 1998. Subsequently, it will only be possible for banks to obtain daylight credit by providing collateral (see Section 3.2.8)

## **1.4 The role of other private and public sector bodies**

No other private or public sector body is of importance in this area.

## **2. Payment media used by non-banks**

### **2.1 Cash payments**

Danmarks Nationalbank is permitted to put notes into circulation according to demand. The Coinage Act (1988) authorises Danmarks Nationalbank to control the administration of minting coins, while the overall responsibility for the mint remains with the Ministry of Business and Industry. Coins are legal tender up to a maximum of 25 of each denomination in circulation in connection with a single payment transaction.

The printing of notes takes place on the premises of Danmarks Nationalbank, while the minting of coins is done at the Royal Mint. Besides Danish notes, Danmarks Nationalbank also prints notes with the same values, but a different design, for separate circulation in the Faroe Islands.

Notes and coins are circulated by Danmarks Nationalbank via the banks according to public demand. Eighteen cash depots in banks throughout the country ensure a

continuous supply and have rendered the remaining branches of Danmarks Nationalbank superfluous. The last two Danmarks Nationalbank branches were closed in 1989. In 1995 notes were circulating in denominations of 1,000, 500, 100 and 50 kroner, and coins in denominations of 20, 10, 5, 2, 1 kroner, and 50 and 25 øre.

### **2.2 Non-cash payments**

#### ***2.2.1 Credit transfers***

##### *Paper-initiated credit facilities*

Before the development of the direct debit system (see below), most bills in Denmark were paid through paper-initiated credit transfers to the creditors' accounts with the Postgiro. The debtor could pay either by cash or by cheque at any post office or by ordering on pre-printed forms a transfer from his own account with the Postgiro.

After the conversion of the Postgiro to GiroBank in mid-1991, the paper-initiated credit system changed from a postal system to a generalised bank system with the introduction of banks' standardised paper-initiated crediting orders, on which payments can be made at any bank. However, the GiroBank continued to operate its own paper-initiated credit transfer system for transfers between accounts within the GiroBank and in relation to cash payments made at post offices.

In spite of the introduction of direct debit systems, the paper-initiated credit transfer systems are still widely used for non-recurrent payments and for debtors who do not want to enter any automated debit system.

#### *Direct credit*

As early as the 1960s it became common to pay wages directly into bank accounts. The first of the predecessors of what later became the PBS was, therefore, an agreement among the banks to co-operate on the technical handling of wage payments.

Today, the direct credit system of the PBS handles the large majority of account-to-account transfers in connection with payments of wages and pensions and other recurrent crediting.

The recipient of wages or pensions is free to choose the bank account to be credited.

In the credit system, the PBS receives from the debtor, which can be a public or a private sector employer, electronically readable information on the wage and pension transfers to be made. If the employer so desires, the PBS also offers services for calculating the net wages to be paid after deduction of tax, etc. In 1994 around 68 million transfers were made within the direct credit system.

Furthermore, some banks offer direct credit services in their own name for use in office

banking systems to employers. The banks' share of the total number of direct credit transfers has increased rapidly over the past years and will, in all probability, continue to do so in the future.

#### **2.2.2 Cheques**

The widespread use of bank accounts for wage payments has meant wide ownership of bank accounts in Denmark for many years. As the cheque has until relatively recently been the major means of payment readily available to bank customers, it has traditionally been the most important non-cash medium of payment in Denmark.

A landmark in the intensive co-operation between the banks on technological development was the implementation in the early 1980s of complete cheque truncation in Denmark. Since then all cheques have been retained by the bank by which they were collected, with clearing and bookkeeping being carried out electronically.

The cheques have individual designs according to the bank on which they are drawn, though there are standard requirements regarding the size of the cheques as well as the inclusion of certain data on the cheques and in particular regarding the attached code line (CMC-7) containing information required to identify the drawee bank and the account holder by electronic reader-sorters.

The cheque system is regulated by several agreements within the banking sector, e.g. covering the opening of a cheque account and the cashing of cheques.

During most of the 1980s the number of cheques issued annually was stable at around 200 million, which is equivalent to 40 cheques per capita. Since 1986 the use of cheques has fallen year by year, to 108 million in 1994 (21 per capita), reflecting the rapid development of the debit card-based EFTPOS system.

Sight deposit accounts with cheques generally bear a near-zero rate of interest if there is no limit attached on the number of cheques used. It is possible to obtain a higher rate of interest on a cheque account, but subject usually to a ceiling on the number of cheques which the customer may issue without penalty, e.g. 25 per year with a fee payable per cheque issued beyond this maximum.

The agreements between the banks on the handling of cheque payments and withdrawals, described further in Section 3, operate with a maximum guarantee for the drawee bank. In cases where there is no reason to believe that a cheque is forged when a cheque payment or withdrawal is made, the drawee bank must always honour the cheque if it is below DKK 1,000 (ECU 133), whether or not there are funds on the customer's account. Cheques above DKK 1,000 are received by retailers or banks at the recipient's own risk, if there turns out to be no cover.

### 2.2.3 Direct debit

Since the mid-1970s the banks have operated a system of pre-authorised direct debits with the name Payment Service (*Betalingservice*) under the auspices of the PBS. The system is for private customers with frequent and recurrent payments. A creditor joins the scheme by instructing the PBS to arrange for automated payments. The PBS then links up with the creditor and provides him with a creditor's code. The creditor then advises his debtors that it is possible for them to have all payments automatically transferred from their respective bank accounts, if they wish to join the scheme. When a debtor joins the scheme, he must issue a payment authorisation to his bank allowing the transfers in question. Accordingly, the bank will register him as a debtor in the system.

At the end of each month the debtor receives a list of payments to be made during the subsequent month with a list of creditors, the time of payment and the amounts, the

latter being solely determined by the creditor. Any time before the seventh banking day of the following month, the debtor is entitled to cancel the payment.

The regular information to debtors and creditors as well as data on account transfers to the banks are provided by the PBS.

The system of pre-authorised direct debits is free of charge for the debtor, whereas the creditors are charged according to the number of transactions. There are no formal rules limiting the types of payments which can be handled in the direct debit system. The system is entirely based on agreements.

In 1994 74 million transfers were made within the PBS system, which is equivalent to around 14 per capita. At the end of 1994 2.6 million people, or half of the total population, were registered as debtors in the system.

PBS operates a largely similar system of pre-authorised direct debits for corporate customers under the name Supplier Service (*Leverandørservice*). The account of the recipient is automatically debited when goods are received, subject to permission from the debtor. As distinct from the monthly notification in the case of private customers, notifications are circulated prior to each payment. Notification is given by the creditor or, on his behalf, by the PBS.

In 1994 1.6 million transfers were made within this system.

### 2.2.4 Payment cards

#### *Debit cards, ATM and POS networks*

Despite the highly developed system for truncation, cheques are expensive for banks to handle. As part of their technological co-operation banks therefore began in the late 1970s to consider the possibility of replacing cheques with a general card system. This led to the introduction in 1983 of the

joint bank debit card, DANKORT (Dancard), to be issued by all banks. It took some years for the DANKORT to break through, particularly due to disagreements between retailers and the banks on the sharing of costs, etc., but since 1987, which is considered as the year of breakthrough for the DANKORT, there has been a strong annual growth in the use of the card, resulting in the aforementioned reduction in the use of cheques.

The card is linked to the cardholder's bank account, though not online. While the card is standardised in terms of the magnetic stripe and DK-logo on the reverse, the drawee bank is identifiable by its logo on the front of the card, together with the name and account number, etc., in embossed printing, the signature and a photograph of the holder, enabling the use of the card in imprinters and as an ID card (also for payments with cheques). The retailer is responsible for checking the ID and whether the card is blocked when an imprinter is used. When used at ATMs and EFTPOS terminals, identification is based on PIN codes which are checked by way of an online connection to the banks' joint company, PBS.

Usually there is no maximum limit on the number of payment transactions made free of charge with a DANKORT, even if the card is linked to one of the banks' higher-interest-bearing deposit accounts. However, cash withdrawals made at an ATM which is managed by a bank other than the cardholder's are usually subject to a small fee. As in the case of cheques, any overdraft facility is subject to negotiation between the cardholder and the bank.

By the end of 1994 there were 2.55 million DANKORT in issue (0.5 per capita) for use at about 1,700 ATMs and 24,000 EFTPOS terminals. Today all of the ATMs are owned and managed by the banks.

The development in the use of DANKORT has been very rapid. In 1986 only 3 million payment transactions were made with the

DANKORT. In 1994 208 million payments were made, of which 162 million at EFTPOS terminals (PIN-based) and the rest by way of imprinters. This is nearly twice the volume of cheques issued that year. In 1990 this relation was the opposite.

When paying with the DANKORT at EFTPOS terminals, the transaction is reported directly to the PBS. There is no balance check in this connection but the amount is debited from the cardholder's account the next banking day. Imprinter vouchers are sent to the banks by the retailers and are truncated in the same way as cheques.

As is the case for cheques, the agreements between banks on the handling of cash withdrawals using the DANKORT also operate with a guarantee given by the drawee bank up to a maximum amount.

The rules applying to the DANKORT are somewhat more attractive to retailers (or the bank providing cash) than the rules for cheques. The maximum guaranteed by the drawee bank is DKK 1,000 (ECU 133) for imprinter transactions, DKK 2,000 for withdrawals at banks or ATMs, and DKK 3,000 for payments at EFTPOS terminals. Furthermore, compared with cheques, the maximum amount remains covered by the drawee bank in the case of payments above the maximum. Thus, for example, for a payment at an EFTPOS terminal amounting to DKK 4,000, the retailer's maximum risk is DKK 1,000. If the same payment transaction is made with a cheque the risk for the retailer is the whole amount, i.e. DKK 4,000, if there is no cover on the customer's account.

#### *Credit cards, travel and entertainment cards and retailer cards*

Through the PBS the banks offer to customers the possibility of attaching a VISA facility to the DANKORT, thus making it possible to use the card as a debit card abroad. Among the 2.55 million DANKORT in issue at the

end of 1994, 0.53 million were combined VISA/DANKORT. Foreign VISA and eurocheque cards as well as Eurocards/MasterCards can be used at ATMs.

The PBS offers separate Eurocards and eurocheque cards to more frequent travellers. Furthermore, some banks offer MasterCards to their customers with the bank's own logo. In 1994 8.65 million payment transactions with Eurocards/MasterCards were effected in Denmark for a total of DKK 5.6 billion (ECU 0.74 billion), 4.8 million of which were payments by foreign cards (for DKK 3.1 billion (ECU 0.41 billion)).

Generally the market for cards in Denmark is dominated by the systems operated by the banks via the PBS. Of the major international card systems, Diners Club is active in Denmark. In addition, Danish department stores, petrol companies, etc. operate their own retailer card systems.

#### *Prepaid cards*

In June 1991 the company DANMØNT (Dancoin) was established for the actual development and implementation of the prepaid card system. KTAS, now TELE DENMARK (the public telephone company), and PBS each contributed half of the share capital.

In the period from 1st September 1992 to 1st March 1993 the DANMØNT system was tested in the town of Næstved. The trial period was successful and after its conclusion the nationwide extension of the system commenced. At the end of June 1995 the DANMØNT system was available in forty-nine towns, including Copenhagen, and can be used for a total of just over 500 individual services, e.g. in card phones, parking meters, laundries and different kinds of vending machines.

Approximately 308,000 DANMØNT cards had been issued for a value of just over

DKK 32 million (ECU 4.24 million) at the end of June 1995. The nominal values available at the moment are DKK 100 (ECU 13.26), 200, 250 and 300. So far, all DANMØNT cards have been memory cards which cannot be recharged, but the rechargeable processor card is due to be introduced in the near future.

DANMØNT cards are distributed by commercial banks, savings banks, post offices and telephone companies. However, the float is held by DANMØNT, which, in this respect, has the role of the issuer. The DANMØNT system is under the technical supervision of the Danish Financial Supervisory Authority.

The DANMØNT system's security standards are very high. For example, DANMØNT keeps a register of all DANMØNT cards in circulation on the basis of individual card numbers. The register contains information on the balance outstanding on each card and is updated on an ongoing basis. The register will disclose any counterfeit cards used or if an existing card is used for a total amount exceeding the original nominal value. It should be noted that registration is made on the basis of card numbers so that each prepaid card remains completely anonymous.

The system operator, the DANMØNT company, is responsible for the functionality of the overall DANMØNT system, including monitoring system security, and for clearing and settlement between card issuers and service providers.

It is planned that the DANMØNT company will be subject to legislation which will regulate issuers of multi-purpose prepaid cards and certain other deposit-taking institutions.

Furthermore, several limited-purpose prepaid-card schemes for use in closed systems are widely used in Denmark, e.g. phone cards, cards for public transport and cards for use in laundries.

### 2.2.5 Postal instruments

As is apparent from Section 1.2.3 and Section 2.2.1, specific postal instruments no longer exist in Denmark.

### 2.2.6 Other payment instruments

No other payment instruments play an important part in the Danish payment system.

## 2.3 Recent developments

As mentioned above, a rechargeable DANMØNT card will soon be introduced.

## 3. Interbank exchange and settlement systems

### 3.1 General overview

All transfers of funds between credit institutions in Denmark take place via their accounts with Danmarks Nationalbank.

All credit institutions have the option of linking up to the RTGS system, through which they are able to make real-time funds transfers from their current account with Danmarks Nationalbank to that of any other credit institution via a terminal at their own headquarters. The RTGS system, referred to below as “the DN Inquiry and Transfer System” (*DN-Forespørgselsservice*), is used for most large-value funds transfers between credit institutions during the day. The RTGS system is described in Section 3.2 below.

Some large-value transfers are initiated by payment instructions via the S.W.I.F.T. network. Danmarks Nationalbank does not distinguish between these transfers and ordinary RTGS transfers as they are all settled in real time. Transfers on the basis of S.W.I.F.T. instructions are therefore not described separately below.

Retail payments are processed for clearing through the circuit referred to below as the “Retail Clearing” (*Sumclearingen*). The Retail

Clearing is a multilateral netting system. The calculation of the net net amounts (i.e. the final net credit or debit position for each direct participant), as well as the final settlement, is performed by Danmarks Nationalbank. The Retail Clearing is described in Section 3.3 below.

### 3.2 DN Inquiry and Transfer System

In 1978 the three largest Danish banks asked Danmarks Nationalbank if it was possible for them to have access to provisional account statements via their own terminals. This facility would help the banks when monitoring their current accounts during the day and thereby reduce the need for telephone contact between the banks and Danmarks Nationalbank. The inquiry facility was implemented in 1979.

Following the implementation of the inquiry facility, some banks suggested that the established network between the banks and Danmarks Nationalbank could also be used in order to transfer funds between the banks' current accounts. In the spring of 1981 Danmarks Nationalbank discussed with the banks the prospects of a transfer facility. In the light of these discussions Danmarks

Nationalbank decided to develop such a facility to be incorporated in the existing inquiry facility. The transfer facility was put in operation in September 1981.

With the implementation of the transfer facility the Danish banks were in fact linked up to one of the very first RTGS systems, called the DN Inquiry and Transfer System.

### **3.2.1 Functioning rules**

The DN Inquiry and Transfer System is owned and managed by Danmarks Nationalbank and operated by Danmarks Nationalbank's computer centre, the BEC.

There is no legal framework governing the RTGS system. Before being linked up to the system a participant has to sign an agreement with Danmarks Nationalbank. Guidelines for using the RTGS system are described in the "Handbook for the DN Inquiry and Transfer System". Danmarks Nationalbank is in charge of defining the rules and guidelines for the participants, but traditionally this is only done after having consulted the participants.

Danmarks Nationalbank has the right to close any account with Danmarks Nationalbank. If an account is closed, the account holder will consequently no longer be entitled to participate in the RTGS system.

### **3.2.2 Participation in the system**

There are no specific access criteria for participating in the RTGS system. However, since having an account with Danmarks Nationalbank is the prerequisite for participating in the RTGS system, the access criteria for opening an account have to be met by the participants. Thus, all account holders with Danmarks Nationalbank are in principle potential participants in the system.

Current accounts with Danmarks Nationalbank can be held by credit institutions

and investment companies. Danmarks Nationalbank permits remote access to a current account provided that the account holder is domiciled in another EU or EEA country. Besides the holders of current accounts, the government holds several accounts with Danmarks Nationalbank.

The DN Inquiry and Transfer System is a one-tier system with no indirect participants.

As of end-August 1995, ninety-six account holders participated in the RTGS system. Eighty-five of these were credit institutions, of which six were branches of institutions from other EU countries. The remaining eleven accounts were held by six investment companies and five public agencies. All the investment companies are supervised by the Danish Financial Supervisory Authority. There were no remote participants in the system.

### **3.2.3 Types of transactions handled**

The RTGS system is not exclusively used for certain types of transactions. In practice, almost all large-value transactions (and other urgent transactions) are handled by the system, as using the system is the only way to get same-day value. It is only possible to make credit transfers in the system. There are no limitations regarding the transactions handled.

In 1994 the average daily volume of payments processed through the RTGS system was about 1,400. The value of payments was DKK 95 billion (ECU 12.6 billion) per day on average. The average amount per transaction was DKK 70 million (ECU 9.3 million).

### **3.2.4 Operation of the transfer system**

The DN Inquiry and Transfer System is a screen-based online system which enables the participants to make balance inquiries and to transfer funds from their own accounts with Danmarks Nationalbank via a terminal situated in their own headquarters.

The system is (as mentioned above) operated by the BEC, to which each participant must have a direct line (normally via their own computer centres). For each participant a number of users are authorised to make transfers and/or inquiries.

The system is open for balance inquiries between 8 a.m. and 6 p.m. on banking days. Transfers can be made between 9 a.m. and 3.30 p.m.

There is no queuing mechanism in the RTGS system. If there is not sufficient cover for a transfer order, the transfer is rejected.

### **3.2.5 Transaction processing environment**

From a technical point of view, the RTGS system is a link to Danmarks Nationalbank's real-time accounting system. Transfers made via the system may also be made manually by Danmarks Nationalbank at the request of the account holders.

A participant in the RTGS system has to enter the transfer orders manually since there is no automated input from internal systems. It is only possible to enter the account number of the receiving bank, the amount of the transfer and an eight-digit identification number. Thus, only the information absolutely necessary for the bookkeeping at Danmarks Nationalbank is entered into the RTGS system. All other information has to be exchanged bilaterally outside the system. This exchange of information is normally done via S.W.I.F.T. or telephone.

### **3.2.6 Settlement procedures**

All transfers between current accounts are final and irrevocable when settled.

The debit and credit transactions of an RTGS transfer are carried out simultaneously with

no time-lag. The duration of the end-to-end process does not normally exceed one second.

### **3.2.7 Credit and liquidity risk**

Until recently the banks had access to uncollateralised daylight credit on their current accounts with Danmarks Nationalbank up to 100% of each bank's own funds. In order to reduce its credit risk, Danmarks Nationalbank decided to reduce the access to uncollateralised credit over a three-year period (for those banks which had access to uncollateralised daylight credit on 1st April 1995). As of 1st October 1995 the maximum level of daylight credit on an uncollateralised basis was reduced to 40% of each bank's own funds. From 1st July 1997 the level will be further reduced to 20% and from 1st July 1998 there will no longer be access to uncollateralised daylight credit.

Credit transfers within the DN Inquiry and Transfer System are automatically suspended if they result in an overdraft beyond the limit. Until 1st October 1996 the retail and securities clearing will always be carried out, irrespective of the resulting excess overdrafts of a bank. In this case, the banks are requested to find cover for the excess amount immediately.

The intraday overdraft facility is available between 9 a.m. and 3.30 p.m. Participants with a debit position at 3.30 p.m. are contacted by Danmarks Nationalbank. The participants are requested to cover their overdrafts immediately and have to pay a penalty fee of 0.02% of the amount, with a minimum of DKK 1,000 (ECU 133).

### **3.2.8 Pricing**

The RTGS system is developed and operated by the BEC, which is a privately owned company.

The initial development costs and the costs of later improvements have all been paid by Danmarks Nationalbank and have not been recovered from the participants.

The running costs are covered by different fees, which are all paid by the participants directly to the BEC. Although Danmarks Nationalbank is not involved in the charging of fees, the BEC consults Danmarks Nationalbank before the fees are changed.

The main fees paid by the participants are an entry fee of DKK 1,500 (ECU 199), a quarterly fee per account of DKK 1,200 (ECU 159), a quarterly fee per user of DKK 140 (ECU 19) and a fee per transaction of approximately DKK 1. Besides these costs, the participants have to pay themselves for the required hardware and for the links to the BEC.

### **3.2.9 Main projects and policies being implemented**

Danmarks Nationalbank plans to modernise the RTGS system during 1996. In developing the modernised system, Danmarks Nationalbank will take into account proposals from the users.

## **3.3 Retail Clearing**

The Retail Clearing is the only Danish system for clearing and settlement of retail payments. The Retail Clearing was originally a system for the manual clearing of cheques, but today all types of non-cash retail payments are cleared through the system. Since the early 1980s the Retail Clearing has been fully automated.

### **3.3.1 Functioning rules**

There is no legislation covering the clearing and settlement processes. The system is based entirely on agreements.

All direct participants in the Retail Clearing must sign and follow the rules of the "Clearing Agreement", which is a bilateral agreement between each participant and Danmarks Nationalbank. The Clearing Agreement obliges the direct participants to link up to the DN Inquiry and Transfer System, to sign all relevant agreements between members of the Danish Bankers' Association on clearing and to respect the relevant technical requirements, including time limits. The Agreement further stipulates that the costs of the clearing are to be covered jointly by the direct participants.

Both direct and indirect participants must sign the "Document of Agreement on Truncated Clearing". The document stipulates the basis for the sharing of risks and responsibilities between participants and refers to three other papers forming an integral part of the agreement: first, the "Handbook for the Handling of Payments", which defines the technical standards, etc., for the system; secondly, an agreement on the collection of cheques, etc.; and last, the Clearing Agreement (see above). Thus, by signing the Document of Agreement, participants are also obliged to sign the other agreements (except the Clearing Agreement if a participant does not choose to be a direct participant).

Besides the above-mentioned agreements a number of agreements exist between members of the Danish Bankers' Association. These agreements focus on specific issues related to the clearing system (debit card payments, paper-based credit orders, interbank fees, etc.).

### **3.3.2 Participation in the system**

All Danish banks may participate in the Retail Clearing. However, there are only sixty-seven direct participants (including Danmarks Nationalbank), while the remaining (smaller) banks participate indirectly. Four of the direct participants are branches of banks from other EU countries.

The access criteria to the Retail Clearing are formulated by the Danish Bankers' Association. Access to the system requires either membership of the Association or payment of a one-time fee covering sunk costs. For direct participation there is the additional requirement from Danmarks Nationalbank that direct participants are linked up to the DN Inquiry and Transfer System.

The participants' computer (bookkeeping) centres play an important role in the clearing process. All participants are linked up to a computer centre. Only the very large participants operate their own, whereas the smaller participants share computer centres. In total, there are six computer centres in Denmark, covering all participants.

### **3.3.3 Types of transactions handled**

As the Retail Clearing is the only Danish system for the clearing of retail payments it includes all types of non-cash retail transactions (cheques, card transactions, direct debits, direct credits and paper-based credit transfers).

There is no maximum amount per transaction and the Retail Clearing does therefore not necessarily involve small payments only. However, as the Retail Clearing does not offer same-day settlement, there is an incentive not to use this system for very large payments.

### **3.3.4 Operation of the transfer system**

The Retail Clearing processes payments from different sources. Some of the payments (e.g. cheques, paper-based credits, some card transactions and some direct credits) are entered into the system by the individual participants (branches of banks and savings banks), some payments (e.g. direct debits and some direct credits) are entered by the PBS on the basis of standardised agreements,

and some payments (card transactions) are entered by the PBS on the basis of information from EFTPOS terminals and ATMs.

After the payments are entered into the Retail Clearing, the clearing and settlement procedures involve only the computer centres (including the PBS) and Danmarks Nationalbank.

### **3.3.5 Transaction processing environment**

There are fundamentally two different channels through which retail payments are processed, both of which result in the same final settlement on the participants' current accounts with Danmarks Nationalbank.

One channel starts as a bilateral clearing, in which each participant reports transactions involving account holders of other participants to its computer centre. Every evening, data are collected in each computer centre to be exchanged bilaterally with the other computer centres. At the same time the total claims of each participant on each of the other participants are transmitted from the computer centres to Danmarks Nationalbank's computer centre.

The other channel is, in effect, a central clearing. The PBS processes a part of the transactions made on payment media operated by the PBS. Every evening, the PBS provides the detailed clearing information to each participant through its computer centre. Furthermore, the PBS reports to Danmarks Nationalbank's computer centre the net claims to be settled between the participants (multilateral netted positions).

### **3.3.6 Settlement procedures**

During the night, Danmarks Nationalbank's computer centre receives information on the net credit or debit positions of all participants vis-à-vis each other from the various computer centres (including the PBS). Under

normal circumstances the information is received at 4.30 a.m. at the latest. Danmarks Nationalbank's computer centre validates each transmission and returns a receipt to the computer centres, indicating whether or not the transmission has been accepted. If all data have been received, the net settlement position of each participant including the bilateral as well as the central clearing is calculated. These positions are released for settlement by Danmarks Nationalbank at about 8.30 a.m. The settlement takes place at 9 a.m., after which the settlement is valid (legally binding), and the participants get access to information on the outcome of the Retail Clearing via the DN Inquiry and Transfer System. In the event of delays or errors the entire time schedule may be changed.

As described in Section 3.2.8, until 1st October 1996 the retail clearing will always be carried out, irrespective of the resulting excess overdrafts of a bank.

### **3.3.7 Credit and liquidity risk**

The Retail Clearing involves risks both for the participants and for Danmarks Nationalbank.

As the individual retail payments are exchanged between the participants and settled on the customers' accounts before the final settlement of the Retail Clearing takes place, the participants face the risk that the settlement will be rejected by Danmarks Nationalbank (e.g. owing to the default of a participant). In this case the other participants might not be able to reverse the retail payments from the defaulting participant, although they have not received the funds in the final settlement.

For Danmarks Nationalbank the Retail Clearing represents a risk as Danmarks Nationalbank's commitment to settle net

positions is unlimited in principle. The net positions of the participants are not known by Danmarks Nationalbank until just before the settlement. By settling the net positions Danmarks Nationalbank takes over the credit risk as the positions are settled on the participants' current accounts.

### **3.3.8 Pricing**

No fee is paid for participating in the Retail Clearing. However, as mentioned above, there exists an agreement between members of the Danish Bankers' Association concerning the interbank fees in connection with withdrawals (with cheques or DANKORT) in banks other than the drawee bank. The agreement also includes paper-initiated credit transfers and some direct credit transfers. The agreement stipulates a fee to be paid per transaction by the drawee bank to the bank providing cash or the credit transfer.

### **3.3.9 Main projects and policies being implemented**

With effect from 1st October 1996 Danmarks Nationalbank has decided not to agree to settle a net debit position which exceeds the individual participant's maximum for intraday overdrafts.

The Danish Bankers' Association and Danmarks Nationalbank have discussed different measures to reduce the risks involved in the Retail Clearing. It is likely that the clearing and settlement will be changed so that the net settlement at Danmarks Nationalbank takes place before the settlement of the retail payments on the customers' accounts. It is also likely that a maximum amount per transaction in the Retail Clearing will be imposed. This maximum might be fixed individually by the participants.

## 4. Securities settlement systems

### Introduction

The Danish system for trading, settlement and registration of securities is characterised by a high degree of centralisation. The present infrastructure is provided for by three institutions, the Copenhagen Stock Exchange, CSE, the Danish Securities Centre, VP (*Vaerdipapircentralen*), and the FUTOP Clearing Centre.

Securities listed on the CSE are normally held in book-entry form and registered on accounts with the VP. Unlisted Danish securities and foreign securities may also be registered with the VP. Guaranteed contracts on options and futures are registered with the FUTOP Clearing Centre.

The settlement systems are an integral part of the VP and the FUTOP Clearing Centre, respectively, with Danmarks Nationalbank acting as provider of cash settlement accounts to participants in both systems.

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

The Act on Securities Trade constitutes in combination with the Act on the Commercial Banks and Savings Banks, the Act on Mortgage Credit Institutions and the Act on Investment Firms the general legislative framework for financial markets. Provisions of EU Council Directives on Investment Services and Capital Adequacy respectively have been incorporated in these Acts as of 1st January 1996.

Of particular relevance is the Act on Securities Trade. It governs among other things clearing and settlement organisations and the registration activities of central securities depositories, which according to the provisions are subject both to authorisation

and supervision by the Danish Financial Supervisory Authority (*Finanstilsynet*).

The Act on Securities Trade also contains provisions that allow for multilateral netting in authorised payment and securities settlement systems as well as bilateral netting agreements among parties covering foreign exchange trades and trades in securities.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

Danmarks Nationalbank has a general responsibility towards the maintenance of a safe and secure currency system and to facilitate and regulate payment flows and the extension of credit.

Although not legally empowered to issue regulations, Danmarks Nationalbank has, by virtue of its general responsibilities, a de facto role as overseer of payment and securities settlement systems that operate through cash settlement accounts held with Danmarks Nationalbank.

Danmarks Nationalbank has no direct role in the supervision of securities settlement systems, which is the responsibility of the Danish Financial Supervisory Authority.

##### *Provision of settlement facilities*

Funds transfers related to trades in derivatives and securities are settled on accounts held with Danmarks Nationalbank to which credit institutions and licensed investment firms have access.

Danmarks Nationalbank provides account holders with unlimited intraday credit facilities against collateral.

Securities accounts are not available at Danmarks Nationalbank.

#### *Provision of operational facilities*

Danmarks Nationalbank participates through its representation on the Executive Boards of the VP and the FUTOP Clearing Centre in the formulation of overall policy guidelines, but has no operational functions with respect to either of them, except for providing cash settlement accounts to participants in the two settlement systems.

#### *Monetary policy operations and securities settlement systems*

Danmarks Nationalbank conducts open market operations through weekly tenders of repurchase agreements based on securities issued by the Danish government and through weekly sales or extraordinary purchases of certificates of deposit issued by Danmarks Nationalbank.

The repurchase agreements are settled through and are registered with the VP (see Section 4.3.1). Settlement of repurchase agreements with Danmarks Nationalbank takes place one day after the trading day (T+1). Repurchase agreements are recorded as spot sales and forward purchases (sell/buy back repurchase agreements) with no other legal requirements applying.

Sales or purchases of certificates of deposit issued by Danmarks Nationalbank are settled in real time via the DN Inquiry and Transfer System and recorded on accounts held with Danmarks Nationalbank (see Sections 1.3.3 and 3).

#### *Main projects and policies being implemented*

The risk management policies of Danmarks Nationalbank are currently being reviewed with the aim of further reducing risks related

to payment and securities settlement systems, including in particular systemic risks.

So far, the review has resulted in a decision to extend credit only on a fully collateralised basis. Transitional arrangements applying to credit institutions that at present have access to uncollateralised credits will expire on 1st July 1998 (see Section 3.2.8).

In addition, Danmarks Nationalbank is in the process of drawing up guidelines to be complied with by payment and securities settlement systems that settle funds transfers on accounts held with Danmarks Nationalbank. The guidelines will be formalised in agreements with the system operators and will encompass risk control measures. The agreements are expected to come into force during the second half of 1996.

### **4.1.3 The role of other public sector bodies**

#### *The Danish Securities Council*

The Danish Securities Council is empowered to issue regulations concerning overall conditions in the securities markets, including rules governing the institutions of securities markets such as stock exchanges, clearing and settlement organisations and central securities depositories.

In contrast to the Danish Financial Supervisory Authority, which is primarily concerned with the supervision of solvency, the main focus of the Danish Securities Council is market supervision and regulation.

The Danish Securities Council is composed of representatives of market participants and Danmarks Nationalbank.

#### *Financial Supervisory Authority*

The Danish Financial Supervisory Authority (*Finanstilsynet*) is responsible for the

authorisation and supervision of market participants, e.g. credit institutions and investment firms, and market institutions (in practice the CSE, the FUTOP Clearing Centre and the VP).

#### **4.1.4 The role of other private sector bodies**

##### *The Danish Securities Centre, VP*

The VP is a private, independent non-profit-making institution jointly established by issuers of securities, custodians, stockbrokers, investors and the government with the aim of registering the issuance of, ownership of and other rights to dematerialised securities.

##### *The FUTOP Clearing Centre*

The FUTOP Clearing Centre is a private institution established jointly by market participants, e.g. credit institutions and investment firms, and Danmarks Nationalbank.

The FUTOP Clearing Centre registers, settles and guarantees trading in futures and options.

##### *The Copenhagen Stock Exchange, CSE*

The CSE is the only stock exchange operating in Denmark. With the coming into force of the Act on Securities Trade on 1st January 1996, the CSE's former monopoly was abolished. As a consequence the CSE will be transformed into a private limited company by 1st July 1997 at the latest.

Trading on the CSE is based purely on electronic trading systems and covers listed securities as well as futures and options. Credit institutions and licensed investment firms are eligible for membership of the CSE.

## **4.2 Summary information on securities markets**

### **4.2.1 Main features of different securities markets**

The Danish securities markets comprise bonds, equities and derivatives markets. In terms of both outstanding volume and turnover the bond market, inter alia for government debt instruments, e.g. Treasury bills and government bonds, and mortgage credit bonds, is by far the dominant market segment.

All listed Danish bonds were dematerialised in 1983 and in 1988 also Danish equities, mutual fund paper, etc., were dematerialised.

A key feature of the Danish securities markets is the centralisation and integration of market institutions - the CSE, the FUTOP Clearing Centre and the VP - which are electronically interconnected.

Trades in listed securities in either market segment and in standard derivatives contracts may be executed either through the trading systems of the CSE or over the counter (OTC).

Settlement of securities transactions is effected by and ownership rights registered in book-entry form on accounts held with the VP.

The FUTOP Clearing Centre settles, registers and guarantees transactions in standard derivatives contracts. Contracts entered into outside the CSE must be reported to the FUTOP Clearing Centre in order to be covered by its guarantee.

### **4.2.2 Basic quantitative aspects**

The market value of outstanding Treasury bills and government bonds was DKK 55.6 billion (ECU 7.37 billion) and DKK 558.8 billion (ECU 74.08 billion) respectively at the

end of 1994. Turnover during 1994 amounted to DKK 241.6 billion (ECU 32.03 billion) and DKK 4,120.1 billion (ECU 546.19 billion) respectively.

Outstanding mortgage credit bonds at the end of 1994 amounted to DKK 775.4 billion (ECU 102.79 billion) at market value, with turnover during the year totalling DKK 1,849.2 billion (ECU 245.14 billion).

At the end of 1994 the market capitalisation of companies listed on the CSE amounted to DKK 330.9 billion (ECU 43.87 billion). Turnover for the year as a whole was DKK 160.6 billion (ECU 21.29 billion).

In 1994 the number of derivatives contracts that were settled and guaranteed by the FUTOP Clearing Centre totalled 1.44 million, with turnover amounting to DKK 994.9 million (ECU 131.89 million). Futures based on government debt instruments accounted for the largest share of turnover.

#### **4.2.3 Financial intermediaries operating in different securities markets**

Credit institutions and licensed investment firms are permitted to operate in the Danish securities markets. Foreign companies with a licence from their home authorities have access to the Danish securities markets without a requirement to be domiciled in Denmark, and are eligible for membership of the securities markets institutions on the same terms as those applying to Danish credit institutions and investment firms.

#### **4.2.4 Recent developments**

Securities markets legislation (see Section 4.1.1) has been reformed, effective as of 1st January 1996, with the main aim of establishing a framework conducive to a market-based evolution of securities markets and institutions. Among the instruments chosen to enhance competition and efficiency are

abolition of the monopolies formerly held by the CSE and the VP and, as part of the implementation of the EU Council Directives on Investment Services and Capital Adequacy, the opening up of the Danish securities markets to foreign participation.

### **4.3 The Danish Securities Centre (Vaerdipapircentralen, VP)**

#### **4.3.1 Major regulations**

The activities of the VP, inter alia the operation of the securities settlement system and the registration of ownership rights and other rights to securities, are governed by the Act on Securities Trade.

In safeguarding holders of dematerialised securities, the provisions governing central securities depositories stipulate that the VP shall be liable within certain limits for damages in the event of any loss resulting from errors in connection with the registration of securities, even if errors are accidental. A similar provision applies to errors caused by authorised institutions, e.g. institutions holding accounts with the VP on behalf of customers with the entitlement to make registrations on VP accounts.

The Danish Financial Supervisory Authority is responsible for the supervision of the VP.

#### **4.3.2 Participation in the system**

Subject to the signing of a membership agreement, licensed investment firms, credit institutions, large bond issuers and Danmarks Nationalbank have, apart from the VP itself, the exclusive right to become authorised institutions and to make registrations on securities accounts held with the VP either by themselves or by private individuals and companies.

Access to direct participation in the settlement of cash balances at Danmarks Nationalbank

is restricted to licensed investment firms and credit institutions.

#### **4.3.3 Types of transactions handled**

The VP settles and registers transactions in government bonds, Treasury bills, mortgage credit bonds, equities and mutual fund paper, including securities denominated in foreign currencies.

#### **4.3.4 Operation of the transfer system**

The transfer system is operated by the VP. Securities transactions are matched on the basis of information received directly from participants. Securities transfers with payments are at present processed in one settlement cycle during the night. Transfers of funds are effected on settlement accounts at Danmarks Nationalbank based on cash balances calculated by the VP.

#### **4.3.5 Transaction processing environment**

The VP operates on the basis of a fully computerised system. During the opening hours (which differ among institutions, but most are open between 9 a.m. and 5 p.m.) the authorised institutions have online access to the VP via computer screens, thereby enabling the VP continuously to receive information on executed trades to be settled.

#### **4.3.6 Settlement procedures**

Securities trades executed on the CSE as well as off-exchange trades are reported directly by participants to the VP for settlement. Trades in securities can be settled either with or without payment, e.g. securities transfers from one account holder to another with payment being made bilaterally between the parties outside the securities settlement system.

Securities transactions with payment are at present processed in one settlement cycle during the night before settlement day. The delivery versus payment principle is strictly adhered to insofar as settlement is only effected if securities will become available during the settlement cycle, and if at the same time sufficient funds are available on the cash settlement accounts of participants held with Danmarks Nationalbank.

Trades in securities are usually settled three days after the trading day (T+3), whereas money market trades based on securities, such as repurchase agreements, are settled one and two days after the trading day (T+1 and T+2).

As an exception to the delivery versus payment principle, real-time or same-day settlement of securities transactions is currently handled without payment.

#### **4.3.7 DVP arrangements**

The settlement system of the VP is operated in accordance with the DVP model 3 of the Parkinson Report, e.g. positions in both securities and cash balances are netted before settlement.

Following the initial netting of securities positions, the resulting net cash balances of each individual participant are held up against the availability of funds on settlement accounts, which are reported to the VP on the evening before settlement by Danmarks Nationalbank. Funds may consist of cash deposited, lines of uncollateralised credit (only credit institutions with transitional arrangements) and credit against collateral.

If the clearing and settlement process results in net debit positions which exceed participants' available funds in Danmarks Nationalbank, the VP will, prior to settlement, exclude transactions to the extent necessary

to bring the participants' resulting cash balances within the predetermined credit limits.

Settlement of securities transactions becomes final and irrevocable during the night before settlement day.

#### **4.3.8 Credit and liquidity control measures**

Principal risks are eliminated by means of delivery versus payment combined with settlement in cash balances held with Danmarks Nationalbank. On the day preceding settlement day, the VP provides each individual participant with an updated statement containing information on securities and cash positions. This gives the participants an opportunity to cover eventual shortages. Also, intraday credit is extended by Danmarks Nationalbank which (with the exception of some transitional arrangements expiring in 1998) has to be fully collateralised.

#### **4.3.9 Pricing policies**

The VP applies full-cost pricing to all services provided to market participants.

#### **4.3.10 Main projects and policies being implemented**

The VP is in the process of implementing several additional features to the securities settlement system.

The overnight processing cycle will be divided into three independent settlement cycles all of which will be processed during the night leading up to settlement day, and with finality in each cycle. This will facilitate cross-border trades being settled through the link between the VP and Euroclear and enables settlement of back-to-back trades across the two systems with the same value date.

Also, the VP is developing one (or two) daytime settlement cycle(s) and a real-time gross settlement facility that will enable the VP to handle same-day and real-time trades in securities with intraday finality on a DVP basis.

These projects are expected to be finalised and become fully operative on 16th August 1996.

## **4.4 The FUTOP Clearing Centre**

### **4.4.1 Major regulations**

The clearing and settlement activities of the FUTOP Clearing Centre are governed by the Act on Securities Trade.

The Danish Financial Supervisory Authority is responsible for the supervision of the FUTOP Clearing Centre.

### **4.4.2 Participation in the system**

Membership of the FUTOP Clearing Centre is, subject to approval by the board, granted to licensed investment firms and credit institutions, including foreign companies.

The FUTOP Clearing Centre has four different categories of membership: handling agent, broker, direct clearing member and general clearing member. A general clearing member may also choose handling agent as an additional affiliation category. Only credit institutions may become general clearing members.

The different affiliation categories offer investment firms the opportunity to specialise in different forms of futures and options trades and to minimise membership fees and capital investments accordingly.

The categories of affiliation offer various opportunities for trading and settling FUTOP contracts. An investor may trade with handling

agents, brokers or direct clearing members. However, contracts can only be settled through a general or direct clearing member.<sup>1</sup> A direct clearing member may both enter into and settle client contracts, whereas general clearing members may settle client contracts, but not enter into them.

Thus, an investor may be registered as a client entitled to deal with more than one member and settle contracts through one direct or general clearing member. This category of trading is referred to as "give-up trades". Before entering into "give-up trades" the investor is required to obtain acceptance from the relevant clearing member.

At present all members of the FUTOP Clearing Centre are able both to trade and to settle contracts for clients, as they are affiliated either as general clearing members and handling agents or as direct clearing members.

#### 4.4.3 Types of transactions handled

The CSE is the official market-place for listed futures and options contracts. Trades in listed futures and options may be concluded outside the CSE, but trades concluded both on and outside the CSE must be reported to the FUTOP Clearing Centre for registration in order to fall within its guarantee scheme.

The product groups of the FUTOP Clearing Centre include instruments on Danish money market interest rates (CIBOR), medium and long-term Danish government bonds, long-term Danish mortgage credit bonds, the KFX Stock Index and selected Danish stocks. All types of contracts are at present settled on a cash basis.

#### 4.4.4 Operation of the transfer system

Only affiliated members may report contracts to the FUTOP Clearing Centre for registration. The balances due to or payable

by the clients of an affiliated member are settled via members performing clearing functions, i.e. direct or general clearing members. Balances between clearing members and the FUTOP Clearing Centre are settled via accounts kept with Danmarks Nationalbank using the same settlement system as the VP.

Clearing members must post cash on margin accounts with Danmarks Nationalbank before 3.45 p.m. Collateral in the form of bonds must be transferred to accounts of the FUTOP Clearing Centre before 3.00 p.m. The FUTOP Clearing Centre processes the clearing, and payment instructions to Danmarks Nationalbank are generated by 5.00 p.m. The payments are authorised at 9.00 a.m. on T+1 by Danmarks Nationalbank.

#### 4.4.5 Transaction processing environment and DVP arrangements

All transfers between clearing members and the FUTOP Clearing Centre are made electronically. Trades may be executed on the electronic trading systems of the CSE or in the telephone market. Trades executed outside the exchange must be reported (price and quantity) to the exchange within 90 seconds - these reported trades are part of the online price dissemination of the exchange (the ticker-tape).

Irrespective of the trading mechanism, trades must be reported by the parties to the FUTOP Clearing Centre within 5 minutes. Trades entered into between two members are matched and registered when both members have sufficient collateral to cover the recalculated margin requirements. Customer trades are registered when the clearing member has sufficient collateral to

<sup>1</sup> Contract settlement encompasses the brokerage firm's role as an agent who holds the investor's collateralisation on trust, plus incoming and outgoing payments made during the term of the appropriate contracts.

cover the recalculated margin requirement. When trades are registered, the FUTOP Clearing Centre is legally bound by contract. The contracts may only be reversed in case of an agreed-upon erroneous registration. Reversal in these cases may be traced in the records of the clearing system.

For trade registration cash settlement is effected online but payouts are carried out in connection with the daily settlement procedure. For the daily settlement of futures and recalculation of margins due to new prices, the settlement is processed on a daily basis. In extraordinary circumstances, i.e. in the event of large price fluctuations, the settlement can be carried out more than once a day, if demanded by the FUTOP Clearing Centre. The extraordinary intraday settlement procedures are identical to the standard daily procedure.

#### **4.4.6 Settlement procedures**

The settlement of payments in connection with transactions in futures and options guaranteed by the FUTOP Clearing Centre, including the adjustment of the balances on margin accounts, is handled via the same channels as the clearing and settlement of payments in connection with securities transactions. Margin account facilities are provided by Danmarks Nationalbank. In the event of large price fluctuations, an extra clearing of margin accounts may be demanded by the FUTOP Clearing Centre as part of an extraordinary intraday settlement. In contrast to the securities settlement accounts, interest is paid on the margin accounts at the rate for banks' current account deposits with Danmarks Nationalbank.

#### **4.4.7 DVP arrangements**

See also description in Section 4.4.5.

#### **4.4.8 Credit and liquidity risk control measures**

The FUTOP Clearing Centre's clearing and settlement system is of the risk-based (SPAN-like) type. The system is based on the same principles as the SPAN system developed by the Chicago Mercantile Exchange. The system calculates margins on futures and options related to the same underlying instrument, or classes of related instruments, as a margin on a portfolio.

The members' own positions and all clients' individual positions are registered in the central system. Margins are checked online before new contracts are registered.

Margins are calculated and required for own positions and all clients' positions (gross). Clearing members post required margins on accounts with Danmarks Nationalbank. Deposits of required margins from clients and non-clearing members are guaranteed, according to the guarantee function of the FUTOP Clearing Centre.

The contracts and margins are marked-to-market daily. Intraday marking-to-market takes place in special situations. Margin cover from clearing members must be available the same day.

Margin parameters are set for a number of risk elements and according to estimated costs of liquidation on a "worst case" basis.

#### **4.4.9 Pricing policies**

The full costs of running the FUTOP Clearing Centre are covered by fees payable, by the investor and members, on each contract.

#### **4.4.10 Main projects and policies being implemented**

No major change in the securities settlement system is expected in the foreseeable future.

## 5. Statistical data

**Table 1**

Basic statistical data <sup>(1)</sup>

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	5,140	5,154	5,170	5,189	5,205
Gross domestic product: (DKK billions)	799.1	827.9	851.3	873.2	933.2
Exchange rate vis-à-vis ECU <sup>(2)</sup>	7.8561	7.9082	7.8119	7.5916	7.5435

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**

Settlement media used by non-banks

(end of year)

	DKK billions				
	1990	1991	1992	1993	1994
Notes and coins	23.62	24.24	24.97	25.78	28.95
Transferable deposits <sup>(1)</sup>	202.76	224.72	218.45	246.40	244.54
of which held by:					
households <sup>(2)</sup>	<i>n.a.</i>	<i>n.a.</i>	106.99	113.48	115.84
corporate sector <sup>(3)</sup>	<i>n.a.</i>	<i>n.a.</i>	98.15	117.34	113.92
other (public sector)	<i>n.a.</i>	<i>n.a.</i>	13.31	15.58	14.78

(1) Sight deposits held by residents in DKK and in foreign currencies.

(2) Non-business sector.

(3) Business sector.

**Table 3**

Settlement media used by deposit-taking institutions

(end of year)

	DKK billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	0	0	0	0	0
Deposits on current accounts	<i>n.a.</i>	14.39	3.35	3.39	2.82
Transferable deposits at other institutions	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>

**Table 4****Banknotes and coins***(total value, end of year)*

	DKK billions				
	1990	1991	1992	1993	1994
Total banknotes issued	24.45	25.57	25.39	26.88	29.71
<i>of which:</i>					
DKK 1,000	13.17	14.03	14.16	15.39	17.29
DKK 500	3.69	3.85	3.81	3.98	4.69
DKK 100	6.54	6.67	6.40	6.50	6.65
DKK 50	0.59	0.63	0.62	0.67	0.70
DKK 20	0.20	0.14	0.12	<i>n.a.</i>	<i>n.a.</i>
DKK 10	0.10	0.10	0.10	<i>n.a.</i>	<i>n.a.</i>
Other <sup>(1)</sup>	0.15	0.14	0.17	0.34	0.38
Coins issued	2.53	2.65	2.63	2.78	2.98
Notes and coins held by credit institutions	3.36	3.98	3.05	3.88	3.74
Notes and coins in circulation outside credit institutions	23.62	24.24	24.97	25.78	28.95

(1) Special banknotes in circulation in the Faroe Islands. From 1993 the figure also includes DKK 20 and DKK 10 banknotes.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (DKK billions)
Central bank	1	0	0	0
Commercial banks and savings banks	177	2,422	<i>n.a.</i>	<i>n.a.</i>
Co-operative and rural banks	28	28	<i>n.a.</i>	<i>n.a.</i>
Post office (Giro Bank)	1	1,275	<i>n.a.</i>	<i>n.a.</i>
<b>TOTAL</b>	<b>207</b>	<b>3,725</b>	<b>9,105<sup>(1)</sup></b>	<b>244.54<sup>(1)</sup></b>
Branches of foreign banks	7	7	<i>n.a.</i>	<i>n.a.</i>
<i>of which EC-based</i>	7	7	<i>n.a.</i>	<i>n.a.</i>

(1) Includes commercial and savings banks, the Girobank, co-operative banks, and branches of foreign banks.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals**  
(end of year)

	1990	1991	1992	1993	1994
Cash dispensers and ATMs					
Number of networks	1	1	1	1	1
Number of machines <sup>(1)</sup>	n.a.	370	525	561	741
Volume of transactions (millions)	n.a.	n.a.	26.79	n.a.	n.a.
Value of transactions (DKK billions)	n.a.	n.a.	17.90	n.a.	n.a.
EFTPOS terminals					
Number of networks	1	1	1	1	1
Number of points of sale <sup>(2)</sup>	15,804	19,289	22,411	21,778	24,066
Volume of transactions (millions)	61.54	85.68	110.11	134.32	161.83
Value of transactions (DKK billions)	27.48	37.54	39.25	42.60	52.54

(1) Estimated

(2) Number of machines.

**Table 7****Number of payment cards in circulation <sup>(1)</sup>**  
(end of year)

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	2,022	2,266	2,463	2,709	2,825
Cards with a debit/credit function	2,022	2,266	2,463	2,709	2,825
of which:					
<i>cards with a debit function</i>	1,807	2,104	2,299	2,543	2,658
<i>cards with a credit function</i>	152	162	164	166	167
Cards with a cheque guarantee function	240	199	180	132	106
Retailer cards	1,323	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
DN Inquiry and Transfer system	0.400	0.349	0.356	0.379	0.347
DN Retail Clearing	331.895	354.762	396.761	460.329	518.646
Cheques	126.370	109.754	100.669	91.234	85.868
Direct debits	55.224	56.287	62.496	68.554	75.285
Paperless credit transfers	65.186	73.092	86.521	122.785	143.619
Payments by debit cards					
<i>By EFTPOS</i>	61.542	85.675	110.105	134.321	161.833
<i>By paperslip</i>	19.640	25.588	31.985	37.931	45.889
Payments by credit cards	3.933	4.366	4.985	5.504	6.152

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	DKK billions				
	1990	1991	1992	1993	1994
DN Inquiry and Transfer system	13,115	12,571	16,340	25,238	24,153
DN Retail Clearing	2,106	2,050	2,272	2,553	2,831
Cheques	1,557	1,245	1,119	1,128	1,155
Direct debits	157	212	223	180	197
Paperless credit transfers	351	540	793	1,185	1,403
Payments by debit cards					
<i>By EFTPOS</i>	27	38	39	43	53
<i>By paperslip</i>	11	12	14	13	18
Payments by credit cards	3	3	4	4	5

**Table 10**

Participants in securities settlement systems

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
VP			
Banks	64	156	156
Stockbrokers	7	7	7
Cedel / Euroclear	1	1	1
Mortgage credit institutions	2	16	2

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
VP					
Government securities	4.2	3.5	3.3	3.8	3.9
Bonds	)	)	)	)	)
Shares	)	)	)	)	)
CDs	n.a.	n.a.	n.a.	n.a.	n.a.
Futures	n.a.	n.a.	n.a.	n.a.	n.a.
Options	n.a.	n.a.	n.a.	n.a.	n.a.
Others	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	DKK billions				
	1990	1991	1992	1993	1994
VP					
Government securities	4,326	5,087	7,793	15,452	17,478
Bonds	)	)	)	)	)
Shares	68	60	63	70	76
CDs	n.a.	n.a.	n.a.	n.a.	n.a.
Futures	n.a.	n.a.	n.a.	n.a.	n.a.
Options	n.a.	n.a.	n.a.	n.a.	n.a.
Others	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	DKK billions				
	1990	1991	1992	1993	1994
VP					
Government securities	1,174	1,285	1,343	1,553	1,543
Bonds	)	)	)	)	)
Shares	56	62	67	68	74
CDs	n.a.	n.a.	n.a.	n.a.	n.a.
Others	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	156.3	134.6	124.3	117.6	107.5
<i>of which truncated</i>	<i>156.3</i>	<i>134.6</i>	<i>124.3</i>	<i>117.6</i>	<i>107.5</i>
Payments by debit and credit cards	85.1	115.6	147.1	177.8	213.9
Paper-based credit transfers	0	0	0	0	0
Paperless credit transfers	n.a.	n.a.	n.a.	n.a.	n.a.
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank/large-value</i>	<i>0.4</i>	<i>0.3</i>	<i>0.4</i>	<i>0.4</i>	<i>0.3</i>
Direct debits	55.2	56.3	62.5	68.6	75.3
<b>TOTAL</b>	<b>297.0</b>	<b>306.8</b>	<b>334.3</b>	<b>364.4</b>	<b>397.0</b>

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	DKK billions				
	1990	1991	1992	1993	1994
Cheques issued	2,158	1,585	1,472	1,437	1,473
<i>of which truncated</i>	<i>2,158</i>	<i>1,585</i>	<i>1,472</i>	<i>1,437</i>	<i>1,473</i>
Payments by debit and credit cards	41	53	57	60	76
Paper-based credit transfers	0	0	0	0	0
Paperless credit transfers	n.a.	n.a.	n.a.	n.a.	n.a.
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank/large-value</i>	<i>13,115</i>	<i>12,571</i>	<i>16,274</i>	<i>25,238</i>	<i>24,153</i>
Direct debits	157	212	223	180	197
<b>TOTAL</b>	<b>15,471</b>	<b>14,421</b>	<b>18,026</b>	<b>26,915</b>	<b>25,899</b>

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	42	40	40	38	35
of which:					
members	36	35	34	32	30
sub-members	6	5	6	6	5
participants	-	-	-	-	-
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
members	1,812	1,963	2,074	2,103	2,412
sub-members	1,469	1,607	1,738	1,802	2,023
participants	63	78	91	99	188

DK

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	5,883,857	5,931,152	6,263,619	6,527,033	6,586,912
of which:					
category I	1,156,766	1,297,143	1,592,838	1,751,452	2,021,197
category II	2,381,197	2,192,747	2,228,596	2,206,205	2,087,615
sent/received to/from domestic users	1,021,310	850,211	900,143	990,036	1,002,745
Total messages received	5,056,348	5,010,850	5,397,400	5,744,866	5,911,734
of which:					
category I	n.a.	n.a.	1,693,453	1,776,326	1,928,935
category II	n.a.	n.a.	1,097,959	1,307,152	1,331,041
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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## List of abbreviations

<b>Abrechnung</b>	Daily local clearing system
<b>AZV</b>	Cross-border payments procedure - <i>Auslandszahlungsverkehr</i>
<b>BAWe</b>	Federal Securities Supervisory Office - <i>Bundesaufsichtsamt für den Wertpapierhandel</i>
<b>BOSCA</b>	Bundesbank Operational Safe Custody Account - <i>Bundesbank Dispositionsdepot</i>
<b>BSE</b>	Paperless procedure for cheque collection - <i>Belegloser Scheckeinzug</i>
<b>BZS</b>	<i>Bank für Zahlungsservice GmbH</i>
<b>DKV</b>	German Central Securities Depository - <i>Deutscher Kassenverein AG</i>
<b>DTA</b>	Paperless exchange of data media - <i>Belegloser Datenträgeraustausch</i>
<b>DTB</b>	German Options and Futures Exchange - <i>Deutsche Terminbörse</i>
<b>DWZ</b>	German Securities Data and Service Centre - <i>Deutsche Wertpapierdatenzentrale GmbH</i>
<b>EAF/EAF 2</b>	Electronic clearing Frankfurt - <i>Elektronische Abrechnung Frankfurt</i>
<b>EIL-ZV</b>	Express electronic credit transfer system - <i>Eiliger Zahlungsverkehr</i>
<b>ELS</b>	Electronic counter - <i>Elektronischer Schalter</i>
<b>EZÜ</b>	Conversion of paper-based credit transfers into data records and their processing - <i>Elektronischer Zahlungsverkehr Überweisung</i>
<b>GSE</b>	Large-value cheque collection procedure - <i>Großbetrag Scheck-Einzugsverfahren</i>
<b>GZS</b>	<i>Gesellschaft für Zahlungssysteme mbH</i>
<b>IBIS</b>	Integrated Stock Exchange Trading and Information System - <i>Integriertes Börsenhandels- und Informationssystem</i>
<b>MAOBE</b>	Machine-optical voucher reading - <i>Maschinell-optische Beleglesung</i>
<b>MVS</b>	Multiple Virtual Storage (= mainframe operating system)
<b>OCR</b>	Optical character recognition
<b>Platzüberweisungsverkehr</b>	Express paper-based local credit transfer system
<b>POZ</b>	Point of sale (POS) without bank guarantee of payment - <i>POS ohne Zahlungsgarantie des Kreditgewerbes</i>
<b>RTS</b>	Real-time settlement (of securities and funds)
<b>SDS</b>	Same-day settlement (of securities and funds)

## I. Institutional aspects

### 1.1 General legal aspects

Under the Banking Act of 1961 (last amended in 1995), “the provision of cashless payment and clearing operations (giro business)” is a banking activity. This requires a licence from the banking supervisory authority, the Federal Banking Supervisory Office. Hence, non-banks are not allowed to handle cashless payment transactions. Under the terms of the Banking Act, “Banks are enterprises conducting banking business, if the scale of such business calls for a commercially organised business undertaking”.

The responsibilities and powers of the central bank in Germany are laid down in the Deutsche Bundesbank Act (1957), which inter alia requires the Bundesbank to promote the smooth and professional functioning of domestic and cross-border payments. This includes the authorisation to provide payment services by the Bundesbank itself.

There are no specific laws governing the organisational and technical aspects of payment services. The provisions of the Civil Code (1896) are generally applicable, in particular those concerning the law of agency. In addition, the provisions of the Cheques Act (1933) must be observed in connection with the collection of cheques.

Within the limits set by German anti-trust legislation, the credit institutions (e.g. savings banks), joined together in their respective central associations, co-ordinate organisational and technical procedures together with the Bundesbank to ensure a cost-effective, rapid and secure payment system. As a result of this co-ordination, a series of agreements have been reached to standardise the handling of interbank and customer payments.

Of particular significance for the implementation of electronic payment processing are the agreements concerning

the conversion of paper-based items for the paperless processing of credit transfers, cheques and direct debits. These agreements have been consistently developed further by modifying the amount ceilings and - in some cases - by introducing a conversion requirement.

In respect of credit transfers, for instance, as from 27th September 1994, credit institutions have been subject to a general requirement to convert all paper-based credit transfers of DEM 1,000 (ECU 520<sup>1</sup>) or more into data records and route them in paperless form (EZÜ requirement); the EZÜ requirement will be extended to all payments as from mid-1997. For the efficient paperless collection of direct debits a general conversion requirement was agreed as from 18th November 1993.

In the paperless cheque collection procedure (BSE procedure) cheques for amounts of less than DEM 5,000 (ECU 2,598) are converted on a voluntary basis by the credit institutions or the Bundesbank and settled in a paperless procedure. Within the framework of the large-value cheque collection procedure (GSE procedure) introduced in November 1994, only the Bundesbank also converts cheques of DEM 5,000 (ECU 2,598) or more into data records, although the original cheques continue to be transmitted in parallel with the paperless collection procedure.

Under the Act for the Prevention of Restraints on Competition (1966) any agreement to standardise payment services (whether contractual or not) must be reported to the Federal Cartels Office through the Federal Banking Supervisory Office with a statement of reasons. These agencies must ensure that the agreement has no undesirable implications

<sup>1</sup> ECU amounts on the basis of average annual exchange rates are rounded.

from the banking supervisory point of view, does not unduly restrict competition, and, in particular, does not place other participants in the payment system (especially bank customers) at an unfair disadvantage. Any such agreement that is not notified is null and void.

The relationship with bank customers is regulated by the general terms of business of the banks and the central bank and by special regulations, notices and standardised forms.

## 1.2 Financial intermediaries that provide payment services

### *Giro networks*<sup>2</sup>

In Germany the responsibility for supplying the economy and the public with cash and for performing cashless payment operations lies with the credit institutions and the central bank. At the end of 1994 the credit institutions managed a total of around 79 million giro accounts for domestic non-banks. In addition, the credit card companies engage in credit card business.

Most of the 3,729 credit institutions (at end-1994, with around 49,020 branches, excluding the central bank) are actively involved in the provision of payment services. Within the framework of the existing universal banking system all but a few of them belong to one of the following four banking groups,

of which each provides one or more own giro networks based on internally agreed exchange and settlement procedures:

- commercial banks, many of which have set up an extensive giro network linking their branches;
- savings banks, whose operations are restricted to a particular municipality or region. The 643 savings banks and their thirteen central institutions form their own giro network;
- co-operative banks, whose markets are likewise geographically restricted. The 2,660 co-operative banks and their four central institutions form their own giro network;
- publicly owned banks, of which the Postbank<sup>3</sup> has its own giro network.

The Bundesbank's giro network, which comprises different large-value and retail payment systems, is an important link for payments traffic passing between the networks of the banking industry. In 1994, a total of 2,836 million credit transfers, cheques and direct debits were transmitted via the Bundesbank's payment facilities, representing about 25% of the payment orders received by the credit institutions from their customers. The credit institutions themselves are free to decide whether and to what extent they route payments via the Bundesbank instead of through their own systems. The Bundesbank can regulate the extent to which the credit institutions use its facilities through its charges and conditions. The central bank's payment systems are the only means available to the smaller private sector credit institutions which do not have their own giro network to execute payments to other credit institutions on behalf of their customers without having to depend on their competitors.

Another link between the different giro networks of the banking industry for retail payments is provided by the so-called "garage clearing".<sup>4</sup> In the garage clearing, data media

<sup>2</sup> The term "giro network" includes all payment procedures used within one banking group or within the branch network of a single institution. Settlement is carried out by one or more central institutions of the banking group.

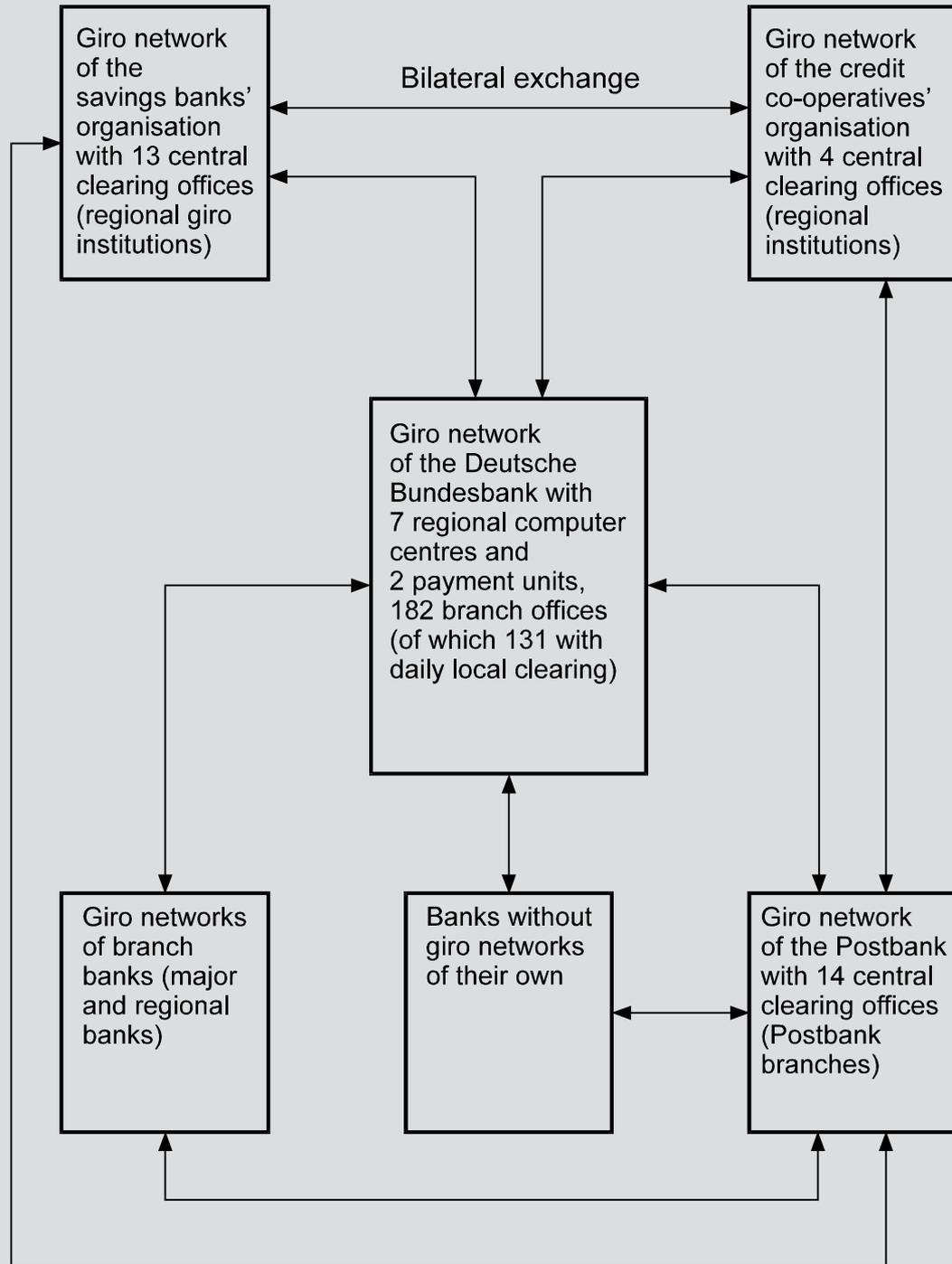
<sup>3</sup> Authorisation to conduct banking business was granted to the Postbank by the Banking Supervisory Office with effect from 1st January 1995. The Postbank thus became a credit institution within the meaning of the Banking Act. The special status it had enjoyed hitherto was abolished as of that date.

<sup>4</sup> The expression "garage clearing" refers to the fact that the data media are exchanged between bank clerks outside the Bundesbank, e.g. in an underground garage.

**Chart I**

Giro networks in the Federal Republic of Germany  
(for credit transfers, cheques and direct debits)

↔ **Bilateral exchange of payment instruments**



as at end-1994

DE

are exchanged directly between the central institutions of the banks in major financial centres on a bilateral basis. Only the total is settled via the accounts at the Bundesbank.

#### *The bank code number*

Bank branches providing payment services are identified by bank code numbers under an agreement between the Bundesbank and the banking industry. The bank code number is usually also the account number with the Bundesbank. Cashless payments processed in the Bundesbank's payment systems are passed to the account indicated by the bank code number except where another routing (e.g. to a central institution) has been agreed with the Bundesbank, as is possible in some cases.

#### *The credit institutions' pricing policy*

The pricing policy of the credit institutions is based on free market principles, with competitive considerations and the institutions business policy playing a role. The terms offered to corporate customers may also depend on the business relations with the individual customer.

In general, efficient procedures (e.g. submission of orders in paperless form, the use of cash dispensers and other self-service systems) lead to lower charges. For cashless transactions, there are usually charges for orders presented as well as account-keeping charges.

Banks charges for standard services are subject to the regulation on price information and must be notified to customers accordingly.

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<sup>5</sup> Only the processing of incoming and outgoing payments takes place at the payment units; the data processing is carried out at a remote computer centre.

## **1.3 The role of the central bank**

### **1.3.1 General responsibilities**

#### *Statutory responsibility*

Under Section 3 of the Deutsche Bundesbank Act, the Bundesbank is required to regulate the amount of money in circulation and of credit supplied to the economy, and - as already mentioned above - to promote the smooth and professional functioning of domestic and cross-border payments.

To meet the demand for currency, i.e. to provide the economy with banknotes and coin in the denominations required, the Bundesbank is vested with the sole right of note issue, and is responsible for producing, supplying and regularly renewing banknotes, replacing damaged notes, calling in notes and checking the currency in circulation for counterfeits. The Bundesbank does not, however, operate its own note-printing works. The right to issue coin (the minting prerogative) lies with the Federal Government (Ministry of Finance), from which the Bundesbank acquires the coin needed for circulation at face value.

The Bundesbank fulfils its statutory obligation to promote the smooth and professional functioning of domestic and cross-border payments, apart from a more general oversight function, by providing the credit institutions of the various banking groups with its giro network that has a neutral impact on competition and by offering Bundesbank account holders its cashless payment services via its 182 branch offices, seven computer centres and two payment units<sup>5</sup> (December 1994). The central bank also exerts a certain influence on the banks' terms for the provision of payment services through its own terms of business, handling procedures, debiting and crediting terms and pricing policy, since all banks are free to choose payment services provided either by bank-owned giro networks or by the Bundesbank.

In addition to the clearing and settlement function it performs for the banking industry, the Bundesbank acts as banker to the Federal Government and, to a limited extent, to the Länder.

#### *Establishment of common rules*

The Bundesbank co-operates closely with the German banking industry in order to co-ordinate the organisational and technical procedures for payment transactions. It participates in the discussions of the central associations of the banking industry and is itself a signatory to most of the agreements on payment transactions (see Section I.1).

#### *Supervision and audit*

The Banking Act forms the legal basis for banking supervision. The purpose of the Act is to safeguard the viability of the banking industry and to safeguard depositors by monitoring the creditworthiness and liquidity of the banks. The Act seeks to achieve this objective while respecting free market principles.

According to the Banking Act, the responsibility for banking supervision is assigned to the Federal Banking Supervisory Office, which, however, co-operates closely with the Bundesbank. The Bundesbank is involved mainly in the day-to-day surveillance of the banks, primarily through the analysis of the credit institutions' regular reports.

Independent of banking supervision is the surveillance of the payment systems (the oversight function), which is performed by the Bundesbank and derives from its responsibility to promote the smooth functioning of the payment system. The Bundesbank's intensive dialogue with the banking industry is one concrete part of this oversight function.

### ***1.3.2 Provision of processing and settlement facilities***

#### *Provision of processing facilities*

The Bundesbank, continuing the tradition of the former Reichsbank, itself actively executes payments and provides all credit institutions with payment facilities for settling large-value and retail payments that are neutral in their impact on competition. Against the background of the close relationship between the implementation of monetary policy and the execution of payments via the central bank, the Bundesbank's particular attention is focused on the promotion of large-value payments. For the execution of large-value payments it operates an electronic real-time gross settlement system, the EIL-ZV. Since January 1992 it has been possible to access the EIL-ZV electronically by means of telecommunication or diskettes via the electronic counter (ELS).

The electronic counter is part of the Bundesbank's programme for broadening electronic access to its services. This programme also includes the electronic net settlement system, the EAF. In the first quarter of 1996, the EAF was replaced by a new procedure, the EAF 2. In order to reduce the credit and liquidity risk inherent in the net settlement procedure of the original EAF, the EAF 2 incorporates typical features of a gross settlement system. The EAF 2 is offered exclusively to credit institutions in Frankfurt am Main.

Besides these electronic large-value systems, account holders may use (within certain limits) the paper-based systems *Platzüberweisungsverkehr* and *Abrechnung* (the latter only operated in those Bundesbank branches where there is a demand by the credit institutions).

Finally, the Bundesbank offers two procedures specially designed for the processing of retail payments (credit transfers, direct debits and

cheques): the automated, paper-based MAOBE and the paperless DTA procedures.

(The main features of the Bundesbank's payment systems are presented in Section 3.)

In addition to the systems for domestic payments the Bundesbank also provides a system (*Auslandszahlungsverkehr, AZV*), through which cross-border payments can be executed. Since March 1995 it has been possible for credit institutions to use the electronic counter in order to send and receive cross-border payments in the international S.W.I.F.T. format through the Bundesbank's network of correspondent banks. The AZV uses the technical components of the EIL-ZV procedure for domestic execution. It will be used for the connection of the Bundesbank to the future TARGET system (on the TARGET system, see Chapter 16).

#### *Provision of settlement accounts*

In order to use the Bundesbank's cashless payment services, credit institutions must open accounts in its books. The Bundesbank holds accounts for credit institutions and public authorities and, to a limited extent and with limited services, for business enterprises. These accounts are held decentrally at the Bundesbank's branches.

Accounts at the Bundesbank do not bear interest and in accordance with the cover principle laid down in the Deutsche Bundesbank Act the balance must always remain in credit; debit balances at the end of the day are not permitted. As a result, the Bundesbank may only execute payments to the extent that sufficient cover is available. In order to prevent a delay in the payment process in the course of the day: i) cheques and direct debits credited subject to collection can be used by the Bundesbank as cover for credit transfer orders; ii) the account may be overdrawn in the course of the day within the limits of unused lombard giro overdraft

facilities, for which securities are lodged as collateral.

In order to comply with the cover principle, all payments to be entered in the automated accounting system are subject to a cover check which takes into account credit balances on the account together with unused lombard giro overdraft facilities. Orders for which there is insufficient cover are placed in a queue and not entered until cover is received, or are returned if no cover has been obtained by the end of the business day.

In addition to the settlement of payments routed via the Bundesbank's payment systems, the accounts are also used for the settlement of the banks' positions resulting from clearing procedures outside the Bundesbank like the "garage clearing" (see Section 1.2).

#### *Provision of credit facilities*

In order to smooth the settlement process, credit institutions can use a lombard giro overdraft facility. To this end, the credit institution authorises the Bundesbank to arrange a lombard credit on its behalf to cover an unanticipated debit balance on its account at the end of the business day.

Lombard loans are granted by the Bundesbank against the pledging of securities (e.g. bonds and bills of exchange). Credit institutions can also use assets pledged for normal lombard credit to secure lombard giro overdrafts. As a rule, the Bundesbank only makes use of this facility if accounts show a debit balance at the close of the business day. In the course of the day unused lombard giro overdraft facilities can be used as intraday credit on a non-interest-bearing basis. The account may be overdrawn during the day within the limits of these unused facilities.

Interest on lombard credit is calculated on the debit balance outstanding at the close of the business day, for at least one day. The credit institution can also give the Bundesbank

a blanket authorisation to reduce a lombard giro overdraft using incoming funds on its account to repay the credit (lombard giro overdraft with automatic repayment). Most banks make use of this possibility since it minimises their interest costs.

#### *Pricing policies*

Like all Bundesbank policy decisions, policy with respect to cashless payments is determined by the Central Bank Council.

Until 1991 the Bundesbank charged only for special services associated with cashless payments (e.g. the telegraphic execution of a credit transfer), but now it charges for nearly all its payment services. The charges imposed are intended to cover the Bundesbank's costs and at the same time promote efficient procedures, e.g. by placing the more labour-intensive paper-based traffic at a relative disadvantage. In addition, the Bundesbank aims to limit to an appropriate level the proportion in particular of collection items passed through its retail payment systems. The provision of accounts to credit institutions continues to be free of charge; other private account holders pay an administrative fee of currently DEM 30 (ECU 16) per month (more information on pricing is provided in Section 3).

#### **1.3.3 Monetary policy and payment systems**

In the interests of price stability the Deutsche Bundesbank endeavours to keep the supply of money to the economy as short as possible, i.e. to limit the money stock. Its monetary policy is mainly designed to influence the banks' lending policy and the demand for money and credit in the economy indirectly through changes in bank liquidity and through the interest rate mechanism in the financial markets. A range of liquidity and interest rate policy instruments are available to it for this purpose under the Deutsche Bundesbank Act.

The implementation of monetary policy and the execution of payments, and specifically large-value payments, by the Bundesbank are closely related. The use of the monetary policy instruments presupposes an efficient and secure large-value payment system for distributing funds through the money market.

Conversely, in order to ensure the smooth functioning of the large-value payment system, sufficient intraday liquidity must be available. By means of the liquidity policy instrument of the minimum reserve requirement (which requires credit institutions to keep credit balances determined as a proportion of various customer deposits on accounts with the Bundesbank), the Bundesbank ensures that credit institutions normally have sufficient working balances available for payments. The minimum reserve requirement has to be met only on a monthly average basis, so that banks can make very flexible use of the balances they hold on a non-interest-bearing basis for minimum reserve purposes in order to process payments. The execution of payments is furthermore - as mentioned above - facilitated by the lombard giro overdraft which the Bundesbank makes available to credit institutions against the pledging of securities (see Section 1.3.2).

In designing the conditions for its payment systems the Bundesbank must take into account the interaction between the payment system and monetary policy and avoid undesirable monetary policy effects. For example, non-corresponding crediting and debiting conditions potentially give rise to an active or passive float, which - in particular in the event of unexpected fluctuations - makes monetary policy fine-tuning difficult. Until recently, the Bundesbank's former paper-based cheque collection procedure for large-value items of DEM 5,000 (ECU 2,598) or more gave rise to a substantial interest-free loan (active float) due to the fact that the proceeds were credited on the working day following submission, but collection in some cases required two working days. In November 1994, therefore, in

agreement with the banking industry, the Bundesbank introduced a special large-value cheque collection procedure (GSE procedure), in which cheques are now cleared electronically with separate transmission of the original cheques in a twenty-four-hour cycle, thereby eliminating the float.

#### ***1.3.4 Main projects and policies being implemented***

The future development of payment services at the Bundesbank will be shaped primarily by the decline in the processing of paper-based items, the ongoing extension of electronic access and the extensive internal use of telecommunication.

With the introduction of the EAF 2 and the envisaged technical reorganisation of the RTGS system EIL-ZV (on the new EIL system see Section 3.2), the years until 1997 will see the implementation of major steps in the further development of large-value payment systems. At first, the new central EIL system will put the execution of urgent transfers on a new technical basis. Urgent transfers will no longer be processed decentrally on computers at Bundesbank branches, but centralised on two high-availability computers, which will increase the capacity and availability of the system. Subsequently, execution of

telegraphic transfers, processing of cross-border payments and account management will also be included in the new central computer system. In addition, in the longer term it is planned to provide the banks with electronic access to comprehensive information on account movements, account balances and queues.

#### **1.4 The role of other private and public sector bodies**

Since 1982 the German banking industry has had a national payments organisation in the form of the *Gesellschaft für Zahlungssysteme mbH* (GZS), which concerns itself primarily with the Eurocard and eurocheque card systems and their further development and also with the cross-border collection of eurocheques. The commercial banks and the savings banks each hold 40% and the co-operative banks 20% of the capital of the GZS.

The function of the German national Automated Clearing House (ACH) in the context of the European ACH linkages for the execution of cross-border retail payments (see Chapter 16) has been performed since January 1995 by the *Bank für Zahlungsservice GmbH* (BZS), a wholly owned subsidiary of the GZS.

## 2. Payment media used by non-banks

### 2.1 Cash payments

Currency in circulation consists of banknotes in eight denominations (DEM 5, 10, 20, 50, 100, 200, 500 and 1,000) and federal coins also in eight denominations (1, 2, 5, 10 and 50 Pfennig and DEM 1, 2 and 5). There are also small quantities of DEM 10 coins, but these are principally collectors' items and are rarely used in payment transactions. Banknotes and coin are legal tender, although coins need not be accepted above a certain amount (viz. coins denominated in Pfennig above an amount of DEM 5 and coins denominated in DEM above an amount of DEM 20). At end-1994 total currency in circulation - including cash in bank vaults - amounted to DEM 251 billion (ECU 130 billion), with banknotes accounting for DEM 236 billion (ECU 123 billion) (94%) and coin for DEM 15 billion (ECU 8 billion) (6%). Cash in bank vaults amounted to DEM 25 billion (ECU 13 billion).

### 2.2 Non-cash payments

In Germany cashless payments are effected by means of credit transfers (49% of the total number of transactions in 1994), cheques (8%) and direct debits (40%). Other payment instruments, such as special payment orders via the Postbank, and payments using credit or debit cards are relatively unimportant, accounting for only about 3% of transactions.

#### 2.2.1 Credit transfers

The credit transfer traditionally predominates in Germany, although its share in total payments is lower than it used to be, since other, more appropriate payment methods are used, particularly direct debits.

Customers can also give their banks standing orders for regular payments to specific payees

(e.g. rent to the landlord). The bank then undertakes to execute a credit transfer on the date specified (e.g. the last day of the month).

Payers of regular retail payments (e.g. wages, salaries, state social insurance payments) are obliged to submit their instructions to the banks via electronic data media (magnetic tape or, for smaller volumes, diskettes or cassettes). Increasingly, such payments are now being handled via telecommunication, not just between banks but also between banks and their customers.

In 1994, approximately 3.0 billion credit transfer orders were presented by customers already in paperless form. 0.9 billion credit transfers were issued in paper form and converted into a data record by the first bank involved. If the credit transfer orders were not subject to the EZÜ requirement (see Section 1.1), they were processed via optical reading of their OCR-A code lines. Institutions with OCR equipment in some cases convert all credit transfers submitted in paper form. In the end, the proportion of credit transfers executed in paperless form (including documents converted under the EZÜ procedure) amounted to around 70% in 1994.

#### 2.2.2 Cheques

In Germany the cheque has never acquired the same importance as in most other western countries; in 1994 it accounted for only 8% of total cashless transactions by non-banks in volume terms and 11% in value terms. The cheques circulating in Germany are mostly eurocheques which are backed by the eurocheque card; these are used by individuals to pay for consumer goods and services. In this context the guarantee of payment associated with the eurocheque card has greatly contributed to the spread of cheques in Germany.

Under the German Cheques Act, the drawee bank may not certify a cheque in such a way as to signify that it undertakes to pay against it. The purpose of this prohibition is to prevent cheques acquiring a function similar to that of banknotes. An exception is made for the central bank, which may, if cover is available, confirm that it will pay against a cheque drawn on it.

The fact that cheques must in principle be collected and presented in paper form has proved a serious disadvantage as far as payments automation is concerned. In 1985 the banking industry and the central bank therefore agreed on a paperless procedure for cheque collection on a voluntary basis (BSE). Since spring 1993 this cheque conversion procedure has applied to cheques for less than DEM 5,000 (ECU 2,598). As a result, approximately 80% of all cheques are now converted. These cheques can be cleared together with paperless direct debits and automatically charged to the issuers account. In the framework of the large-value cheque collection (GSE) procedure, in addition, the Bundesbank converts cheques for DEM 5,000 (ECU 2,598) and more into data records and collects the proceeds in paperless form in the exchange of data media (DTA) procedure. The cheques are in parallel physically presented to the credit institutions independently of the clearing of the proceeds (see Section I.1).

### 2.2.3 Direct debits

The direct debit, which was introduced by the banking associations in 1963, has greatly simplified the collection of regular payments (subscriptions, public utility bills, taxes, etc.). Nowadays about 40% of all cashless payments in Germany take the form of direct debits and their importance in relation to other payment instruments is still increasing.

In contrast to the credit transfer, the direct debit is initiated by the payee, who is thus himself responsible for ensuring that his

claim on the payer is settled on time. This presupposes, however, that the payer pre-authorises the payee to collect payment (collection authorisation) or, by agreement with the payee, authorises his bank to debit his account with direct debits issued by that payee (debit authorisation).

Customers with EDP equipment are in principle obliged to use magnetic tape to submit direct debits to banks for collection. As with credit transfers, small volumes of direct debits are also accepted on diskette or cassette. The remaining paper-based direct debits are converted into data records by the first bank involved, for example via a terminal or OCR reading, so that subsequent processing between the banks can take place electronically. In November 1993 the direct debit became the first payment instrument to be fully automated following the adoption of a general conversion requirement, and is now processed completely electronically in the interbank payment system (see Section I.1).

### 2.2.4 Payment cards

#### *Debit cards*

The most widely distributed debit card in Germany is the eurocheque card. The addition of a magnetic stripe means that it can now be used not only in the traditional way as a cheque guarantee card but also, in conjunction with a personal identification number (PIN), as a debit card without a cheque (see below). It is planned to embed chips, in addition to the magnetic stripe, in the near future, in order to allow off-line authorisation and prepaid card functions.

The banking industry has also developed special proprietary debit cards specific to a particular bank or to the members of a particular banking association so that customers who are not eligible for a eurocheque card (on grounds of creditworthiness, for example) may also have access to electronic self-service banking.

#### *Credit cards and travel and entertainment cards*

In comparison with the eurocheque card, credit cards<sup>6</sup> do not play a major role in Germany, but their use has increased significantly in recent years. The number of cards issued by the major credit card organisations (American Express, Diners Club, VISA, Eurocard in association with MasterCard) rose from around 1.8 million at the end of 1987 to more than 10 million at the end of 1994. There has been a parallel increase in the number of businesses accepting credit cards, most of them in retailing and the hotel trade. In 1994 sales to domestic cardholders amounted to approximately DEM 47 billion (ECU 25 billion). Nevertheless, credit cards are still used far less frequently than other payment instruments in Germany.

In view of the commission charged and the inconvenience involved in authorisation and payment procedures, credit cards are not always welcomed by retailers, and their use is confined largely to shops selling luxury goods. In addition, the introduction of the POS electronic cash system (see below) offers retailers a cheaper option for payments on the basis of the eurocheque card and other debit cards.

Until 1989 the *Gesellschaft für Zahlungssysteme mbH* (GZS) issued the Eurocard as a credit card for the German banks, but since then the banks have been able to issue the Eurocard themselves. In addition, the VISA card is being issued by a growing number of individual banks. Competition between banks and credit card organisations for credit card business is therefore intensifying. The banks increasingly view credit cards as payment instruments and hence as instruments which promote the use of accounts and which can therefore strengthen existing customer relationships and attract new customers.

One of the original functions of credit cards as travel and entertainment cards continues

to be reflected today in the fact that card issuers reserve exclusive card offers with additional services for certain groups of people (e.g. frequent travellers) or address themselves to a select customer group.

#### *Retailer cards*

Traditional credit cards face competition from the cards issued by some large retailers with the aim of promoting customer loyalty, often by granting a generous credit limit. For instance, the customer cards of Germany's largest issuer entail no costs or charges, and the cardholder has up to two months before payment is due or can pay in instalments. There are currently around 4.5 million customer cards with a payment function in circulation. Via customer cards the retail trade obtains precise information about customer profiles and purchasing patterns. The use of customer cards continues to increase, with currently up to 40% of purchases from major retailers being effected via customer cards.

#### *Prepaid cards*

After a pilot project taking place in 1996, the German banking industry is planning, as from 1997, to equip the eurocheque card with the functions of a prepaid card. At the same time the magnetic stripe will step by step be replaced by chip technology. In Germany, stored-value cards are currently only single-purpose cards. One example is the telephone card issued by Deutsche Telekom AG.

#### *ATM and POS networks*

Bank customers can use their magnetic-stripe eurocheque card in combination with their

<sup>6</sup> In Germany most of the so-called "credit cards" have no credit option; the periodic invoice has to be paid immediately upon receipt.

PIN to obtain cash up to a certain limit from the cash dispensers of their own or other banks participating in the common bank network. By the end of 1994 around 29,400 cash dispensers had been installed nationwide. Recently, it has also become possible to use credit cards at cash dispensers. In order to prevent fraudulent or other illicit withdrawals, all transactions at the cash dispensers of other banks are checked online against a register of stopped cards and a register of transactions at the authentication centres of the banking associations, which are interconnected by telecommunication lines. Alternatively, it is also possible for authorisation to be given by the cardholder's bank (on the customer's account) instead of centrally. Withdrawals from cash dispensers are cleared using the normal direct debit procedure via the magnetic tape clearing (DTA procedures). The system is also gradually being extended to include withdrawals made by German eurocheque cardholders in other European countries, and vice versa.

In February 1990, after many years of discussion, the banking industry concluded the Agreement on an interbank system for cashless payments at automated tills (electronic cash system), opening the way for a standardised POS system based on use of the eurocheque card as a debit card. The system enables holders of cards issued by the German banking industry (eurocheque card, Eurocard, proprietary cards) to pay for goods and services without the use of cash or cheques.

For electronic payment with the eurocheque card in the electronic cash system, terminal networks of different, competing network operators are linked to the banking industry's authorisation systems at a high level of security via specified interfaces. Following a steady rise, at the end of 1994 about 62,500 electronic cash terminals had been installed, mainly at petrol stations and retail outlets.

In addition to the electronic cash system, in February 1992 the banking industry introduced another procedure for electronic payments using the eurocheque card at POS terminals. The so-called POZ procedure offers retailers a simple and cheap payment procedure which does not require a PIN and allows simple online consultation of the register of stopped cards for transactions of more than DEM 60 (ECU 31). The banks do not guarantee payment; payment risk in the POZ procedure is borne solely by the retailer.

In addition, without agreement with the banking industry, retailers have developed a procedure allowing payment by eurocheque card without any online authorisation, whereby the customer signs a direct debit collection authorisation printed on the receipt or on a separate voucher. As in the other procedures, the payment is collected via the normal direct debit procedure (DTA procedure). The associated risk of the direct debit being rejected if the transaction is disputed, if there is insufficient cover or if the card is stopped is borne solely by the retailer.

### **2.2.5 Postal instruments**

The Deutsche Postbank AG (Postbank for short) is a privatised enterprise which offers payment system services via its branches. In addition to the execution of credit transfers, cheques and direct debits, the Postbank offers its customers e.g. the possibility of having sums of money delivered to the address of the payment recipient by means of a special payment order.

### **2.2.6 Other payment instruments**

Payment instruments other than those discussed above play no significant role in Germany and can be disregarded.

### 2.3 Recent developments

The videotex service of the Deutsche Telekom AG (BTX or Datex-J), which has been available nation-wide since 1984, enables the banks to offer home-banking services. Using either facilities in their own home (a suitably adapted television set or a PC with videotex capability) or a public videotex terminal, customers can communicate in conversational mode with their bank's computer centre via the telephone network and utilise various banking services. Nowadays, some banks also offer access to home-banking services via PC modems without using the videotex service. Moreover, the banks offer corporate customers cash management systems; these are not operated as videotex systems, but

use formats and transmission routes specific to the particular bank or banking association.

Uniform world-wide standards for electronic business and trade communications are currently being developed under the acronym EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport). With a view to the future execution of both cross-border and domestic payments in accordance with EDIFACT, the German banks and their central associations are participating in the committees drafting the standards and are preparing for the possible processing of EDIFACT messages. The Bundesbank is involved in the various German groups engaged in standardisation and will take the EDIFACT standards into consideration in the payment system in due course.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

In Germany, many of the universally active commercial banks as well as the savings and co-operative banks operate their own giro networks (see Section 1.2). In addition, the Bundesbank makes its own payment systems available to all credit institutions.

In principle the banks keep credit transfers within their own giro network as long as possible for liquidity reasons. At some stage, however, inter-network payments must be fed into the giro network of the receiving bank; at the latest, this must occur when the payments reach the locality where the receiving bank is based. In addition to the possibility of direct bilateral exchange, in particular between the clearing centres of the various giro networks, the Bundesbank's payment systems are important transfer points for inter-network payments. However, not only inter-network payments but also intra-network payments are in part routed via the Bundesbank. The Bundesbank's giro network comprises the systems described below for the execution of large-value (see Sections 3.2 - 3.5) and retail payments (see Sections 3.6 and 3.7).

All the systems operated by the Bundesbank are governed by the general provisions of the Civil Code, the Commercial Code and the Act governing General Terms of Business. They are also subject to the general terms of business of the Deutsche Bundesbank and the various payment agreements which have been concluded between the banking industry and the Bundesbank.

#### 3.2 Express electronic credit transfer system (*Eiliger Zahlungsverkehr, EIL-ZV*)<sup>7</sup>

##### 3.2.1 Functioning rules

The Bundesbank's RTGS system, the EIL-ZV, has been operated electronically since 1988. In addition to the above-mentioned general conditions, the electronic submission of payment orders - which, since January 1992, has been possible via the electronic counter (ELS) - is subject to the "Special conditions of the Deutsche Bundesbank for the electronic submission of orders, data delivery and account information (EADK)" as well as the "External specifications" for the Bundesbank's enhanced electronic access.

##### 3.2.2 Participation in the system

All credit institutions with an account at a Bundesbank branch, together with the branches and the central office of the Bundesbank itself (designated a branch in what follows) can participate in the EIL-ZV for the execution of their own payments and those of their customers.

The system is mainly used by the banks for interbank transactions, such as money market operations, as well as for their cash management. It is also used to route express credit transfer orders for bank customers.

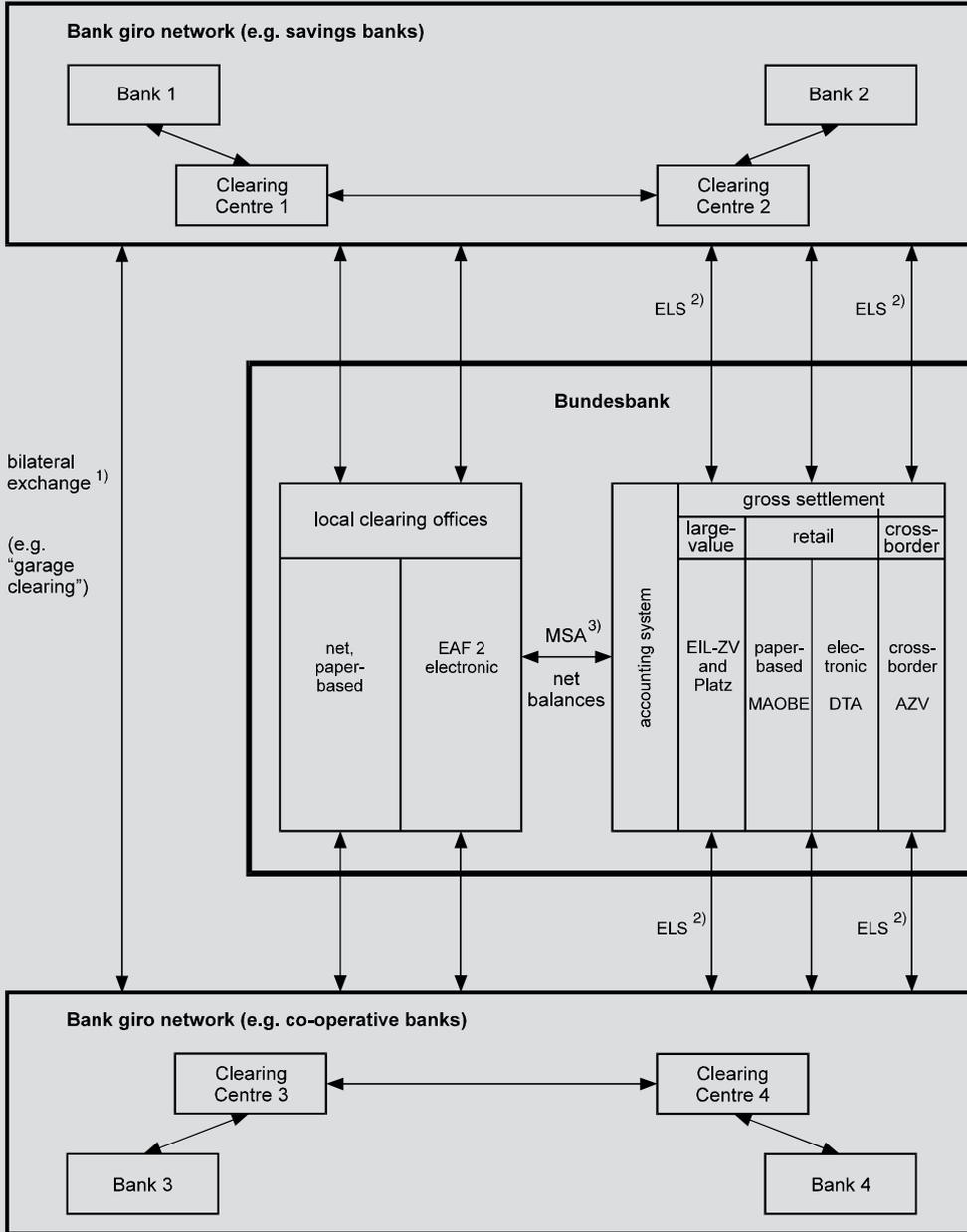
##### 3.2.3 Types of transactions handled

The EIL-ZV is used to execute credit transfers marked "telegraphic" or "urgent" by the submitting participant. Telegraphic transfers are in any case, i.e. also in the event of a failure of the telecommunication network, executed the same day. Same-day execution of urgent transfers is achieved for as many as 99% of the orders, although it is not supported

<sup>7</sup> This section describes the procedures after the implementation of the first step of the new EIL system (envisaged for autumn 1996).

**Chart 2**

Interbank funds transfer systems in Germany



1) Using the EIL-ZV for the settlement of the sum totals, if not settled through bilateral correspondent accounts.  
 2) Communication possible through Electronic Counter (ELS).  
 3) Maximum sender amounts for EAF 2.

by failure regulations. In 1997 guarantee of same-day execution will be extended also to urgent credit transfers, executed in a batch-oriented procedure within the new EIL system. In addition, in the case of telegraphic transfers, the receiving bank receives separate credit notification, except when the payment is delivered via telecommunication in the electronic counter.

Orders can be submitted in paper-based form (only telegraphic orders) or, since 1992, via the electronic counter. The electronic counter makes possible the electronic acceptance and delivery of credit transfers by means of diskette or telecommunication.

### 3.2.4 Transaction processing environment

The EIL-ZV has up till now been designed as a decentralised system. In every Bundesbank branch computer systems are installed for account management and payment execution. The decentralised computer systems are linked to each other by data telecommunication in order to process EIL-ZV payments from one account-holding Bundesbank branch to another, without any central point.

The Bundesbank is currently putting the decentralised computer systems on a new technical basis in stages. Its aim is to implement the EIL-ZV in a new EIL system with same-day execution and the highest possible security standards on the existing mainframe technology (MVS system) and to concentrate the execution in two high-availability computer centres. As a first step, the technical execution of urgent transfers has already been transferred to these two computer centres. By contrast, telegraphic transfers and account management are still being executed for a transitional period via the decentralised computer systems at the Bundesbank branches.

### 3.2.5 Operation of the transfer system

Since telegraphic and urgent transfers are being executed via different computer technology during the transitional period, the procedures for submission and execution differ in several respects.

#### *Telegraphic transfers*

Orders for this type of payment can be submitted in paper-based form or via the electronic counter. Paper-based orders and orders on diskette have to be submitted to the Bundesbank branch where the account is held. Credit transfers submitted via telecommunication are routed from a gateway to the account-holding Bundesbank branch for a cover check. Telegraphic transfers are executed immediately once debiting has occurred. (If cover is not sufficient, the order is placed in a queue, see Section 1.3.2.) If the receiving bank's account is held at another branch, the payments are routed between branches via telecommunication. Payments are delivered to participants via the electronic counter either via telecommunication (data file transmission every twenty minutes) or on diskette. For account holders who do not participate in the electronic counter the Bundesbank delivers credit notifications.

Cut-off time for the presentation of paper-based payment orders is 12 noon and 3 p.m. for the presentation of orders via the electronic counter. From 2 p.m. until 3 p.m. electronic orders are accepted and executed at an additional late charge.

Credit transfers are accepted in the national DTA record format as well as - since spring 1995 - in the international S.W.I.F.T. format.

In 1994 around 2.9 million telegraphic transfers for a total value of DEM 20,715 billion (ECU 10,763 billion) were executed via the Bundesbank's EIL-ZV system. Around 40% of these were already submitted electronically via telecommunication or on diskette.

### *Urgent transfers*

Formerly, urgent transfers were also executed via the decentralised computer systems at the Bundesbank branches, but since the first step of implementing the EIL system in 1996 they have been executed centrally via two high-availability computer centres on a batch-oriented basis. Orders submitted via telecommunication are thus routed directly from a gateway to the high-availability computer centre responsible, whereas orders on diskette have to be submitted to the Bundesbank branch where the account is held. The connection with the computer centres is effected via data input and output devices installed at the Bundesbank branches. The computer centres collect the orders per submitter and transmit cover checks to the respective account-holding branch. Provided cover is available for the whole batch, the computer system at the branches enters the orders in the accounts. (Where entry in the accounts is not possible, the batch is placed in a queue, see Section 1.3.2.) Confirmations of successful settlement are transmitted to the computer centre responsible. (These telecommunications to and from the computer systems at the account-holding Bundesbank branches will cease when account management is also executed in a technically centralised way in the high-availability computer centres.) After having received the settlement confirmation, the computer centre prepares the credit by sending credit data files to the computer system of the receiving Bundesbank branch at intervals of sixty minutes (thirty minutes after 1 p.m.). The data files contain only the important accounting information. Fifteen minutes later, the whole payment information is then transmitted from the computer centre to the receiving bank. Participants via telecommunication receive the payment information likewise via telecommunication, while diskettes are delivered and credit notifications are printed via the data input and output devices at the Bundesbank branches. If the submitting and receiving banks are not linked to the same computer

centre, the whole payment information is transmitted to the second computer centre, from where the routing procedure takes place as described above. This special batch-oriented same-day procedure will also be maintained, if later on both kinds of transfers are executed on the new centralised technical basis. There is a need within the banking industry, especially for urgent customer transfers, for a same-day procedure with less strict real-time requirements than these, which will be realised in the transaction-oriented procedure for telegraphic transfers. Finally, express payments for same-day routing will only be differentiated by different priorities (P1 and P2): former telegraphic transfers (P1) will be processed in real time on payment of a higher charge, while former urgent transfers (P2) will be routed in a batch-oriented and thus lower-priced procedure. In addition, it is planned to provide the banks with as comprehensive as possible information on account entries, account balances and queues by means of continuous insight in real time into their own accounts.

The cut-off time for the submission of urgent transfer orders is 2 p.m.

In 1994 around 1.1 million urgent transfers for a total value of DEM 2,058 billion (ECU 1,069 billion) were executed.

### *Leitwegsteuerung*

In August 1993 a routing selection procedure (the *Leitwegsteuerung*) was introduced for both types of payment. This enables banks, as part of their cash management, to route credit transfers not according to the receiving bank's code number but to a central clearing institution (e.g. a bank's main branch or a central institution in the case of the savings banks and co-operative banks).

### 3.2.6 Settlement procedures

In accordance with the Bundesbank Act credit transfers in the EIL-ZV are executed only if there is sufficient cover. The submitter's account is debited before the payment is routed. Single orders or batches for which there is insufficient cover remain in a queue until receipt of cover.

The receiving Bundesbank branch currently credits the receiving bank's account only after having received the payment information from the sending Bundesbank branch - or, in the case of urgent transfers, after having received a message from the high-availability computer centre. Credit transfers are legally effective as soon as the funds have been credited to the beneficiary's account.

### 3.2.7 Credit and liquidity risk

Since each order is executed only upon sufficient cover, settlement failures or unwinding cannot occur. Thus the receiving bank is not exposed to credit or liquidity risk and it can make the funds received available to the beneficiary unconditionally.

### 3.2.8 Pricing

For executing a telegraphic transfer the Bundesbank charges DEM 10 (ECU 5.2) per transaction. In the case of paper-based orders banks have to pay an additional DEM 2 (ECU 1) per order for conversion of the voucher. The additional charge for orders submitted late (between 2 and 3 p.m.) is DEM 10 (ECU 5.2) in each case.

The transaction charge for urgent transfers is DEM 0.30 (ECU 0.16).

### 3.2.9 Main projects and policies being implemented

Over the past few years, the volume of orders submitted to the EIL-ZV has risen sharply. Credit institutions with many branches in particular are increasingly using this electronic system to concentrate their execution of payments and to realise a central cash management. In addition, urgent customer payments for small amounts are increasingly being submitted. At the Bundesbank branches this development has led in some cases to processing problems in a few overloaded computer systems of the major branches. The Bundesbank is therefore putting the decentralised computer systems at its branches on a new technical basis in stages (see Sections 3.2.4 and 3.2.5).

## 3.3 Express paper-based local credit transfer system (*Platzüberweisungsverkehr*)

### 3.3.1 Functioning rules

The Bundesbank's express paper-based local credit transfer system provides at all its branches and the central office of the Bundesbank itself same-day processing and settlement of paper-based credit transfer orders for payments within the same locality.

### 3.3.2 Participation in the system

The participants in the system are all credit institutions with an account at a Bundesbank branch, together with the branches and the central office of the Bundesbank itself.

### 3.3.3 Types of transactions handled

Owing to the EZÜ requirement, only credit transfers for less than DEM 1,000 (ECU 520) can in principle be submitted to the express paper-based local credit transfer system. Bank-to-bank credit transfers, however, can

be submitted without value restrictions, since they are excluded from the conversion requirement.

Order-issuing and final beneficiary institutions must have an account at the same Bundesbank branch. The credit institutions use this system for interbank payments (e.g. money market transactions) and, like the central bank, for executing payment orders received from customers.

### **3.3.4 Operation of the transfer system**

The express paper-based local credit transfer system is a gross settlement system based on the traditional manual execution of paper-based credit transfers by transfer of funds between accounts held at the same branch of the central bank.

### **3.3.5 Transaction processing environment**

(See Section 3.3.4.)

### **3.3.6 Settlement procedures**

The cover principle applies, i.e. the originator's account is debited before the funds are credited to the beneficiary's account (or debit and credit occur simultaneously in the books of the central bank branch). The payment is final once the account has been credited. In principle, therefore, the execution of the payment does not give rise to any credit or liquidity risk.

### **3.3.7 Credit and liquidity risk**

(See Section 3.3.6.)

### **3.3.8 Pricing**

Express paper-based local credit transfers are currently processed free of charge.

### **3.3.9 Main projects and policies being implemented**

This system will be replaced by the EIL-ZV as soon as all interbank credit transfers have to be executed in a paperless form (envisaged for 1997).

## **3.4 Daily local clearing system (Abrechnung)**

### **3.4.1 Functioning rules**

The daily local clearing system is a paper-based multilateral net settlement system. The payments submitted are not booked individually on the accounts; instead, debits and credits are mutually offset, with the result that in each case there is only a single net position to be booked on the participant's account.

The system is governed - along with the provisions named in Section 3.1 - by the provisions of the Bills of Exchange Act and the Cheques Act as regards presentation for payment together with the terms of business of the clearing office. The last-mentioned were issued by the Bundesbank after consultation with the banking industry and regulate the detailed operation of the daily local clearing system, the legal relationship between the participants and the clearing office and between participants, and the conditions for and consequences of exclusion from the system.

### **3.4.2 Participation in the system**

Credit institutions with an account at a Bundesbank branch operating a daily local clearing, which have passive cheque capability and which are parties to the cheque and direct debit agreement can participate in the daily local clearing system. The clearing office's terms of business also make provision for an associate status for institutions (indirect participants). Bundesbank branches

performing the clearing are also clearing participants.

At the end of 1994, 902 credit institutions participated in the respective local clearing run by the majority of the Bundesbank branches.

### **3.4.3 Types of transactions handled**

Using the paper-based daily local clearing system participants or their customers can exchange and settle with one another credit items (e.g. credit transfers) and items for collection (e.g. cheques, direct debits or bills of exchange). There are no minimum amounts.

### **3.4.4 Operation of the system**

At the end of 1994 the Bundesbank had established clearing offices at 131 of its existing 182 branches. With the sole current exception of the clearing offices at the two branches in Berlin, there are in principle no exchange or clearing and settlement facilities between the various local clearing offices.

Each participant sorts the collection and credit items for each of the other participants into separate delivery envelopes (clearing items), and presents them for clearing by the delivery deadlines specified in the terms of business of the clearing office (between 8.15 a.m. and 1 p.m.). The clearing office prepares delivery lists of the clearing items which have been presented, grouped by receiving bank according to the details on the delivery envelopes (again, items for collection and credit items separately). The participants are required to collect the clearing items prepared for them from the clearing office at the delivery deadlines or at the clearing cut-off time.

The latter is fixed for each clearing office and is 1 p.m. at the latest. The net position for

each participant at that time is calculated after the clearing cut-off time by the clearing office (i.e. Bundesbank staff). Each participant receives a list showing the items submitted and received and its net position. After the cut-off time the participants can no longer influence their net positions.

### **3.4.5 Transaction processing environment**

(See Section 3.4.4.)

### **3.4.6 Settlement procedures**

The clearing office books the net positions on the accounts held by the clearing participants at the Bundesbank branch. Once the net positions have been booked on the accounts, the clearing participants are notified by fax or telecommunication of the completion of the clearing (positive report).

The daily local clearing is carried out subject to the participants fulfilling their payment obligations arising from the clearing vis-à-vis the Bundesbank branch as clearing office. According to the terms of business of the clearing office, each participant is responsible for timely provision of cover on its account for a debit position arising in the clearing (cover principle, see Section 1.3.2).

If a clearing office finds that there is insufficient cover for a participant's debit position, the latter is requested to remit cover within a specified period of time.

In the event that a participant fails to provide cover, the terms of business provide that this participant is excluded from participation in the clearing system from the day of the clearing in question. The clearing office recalculates the net positions excluding the defaulting participant and all payments to and from that participant (unwinding of the clearing).

### 3.4.7 Credit and liquidity risk

Until the net positions have been booked the clearing participants are merely custodians of the clearing items delivered to them. This means that the funds in respect of the credit items delivered to the participants and the items for collection presented by them are only finally available to them on settlement. The clearing participants are accordingly exposed to risk if they credit their customers' accounts before settlement has been completed, as is clearly indicated in the terms of business of the clearing office.

In the event of default by a participant, the terms of business of the clearing office provide for an unwinding of the clearing. This unwinding of the clearing, with the further exclusions it may trigger (the domino effect), constitutes the systemic risk inherent in the current clearing procedure.

### 3.4.8 Pricing

Since January 1995 the Bundesbank has charged DEM 1 (ECU 0.52) per delivery envelope (clearing item) for payments submitted for clearing.

### 3.4.9 Main projects and policies being implemented

It is expected that in line with the general conversion requirement for credit transfers (to be implemented in 1997), the daily local clearing will be abolished for credit transfers. In addition, collection items like cheques will probably be completely cleared via magnetic tape clearing procedures (DTA procedures) using either the bilateral exchange ("garage clearing") or the Bundesbank's payment systems.

## 3.5 Electronic clearing Frankfurt (EAF 2)

### 3.5.1 Functioning rules

With the introduction of the EAF in 1990 in Frankfurt am Main, the existing paper based clearing procedure at the Bundesbank branches was further developed into an electronic procedure. As in any multilateral net settlement system, however, the liquidity saving mechanism was bought at the cost of credit and systemic risk (see also Section 3.4.7), since the payment orders continuously exchanged were not final during the day.

The Bundesbank regarded the reduction of these risks as one of its primary objectives. At the same time, it had to address the need for a liquidity saving procedure and keep technical adjustment costs low by incorporating elements of a gross settlement system in the existing net settlement system. The main proven technical elements of the EAF were retained. As a result, the EAF 2, which commenced operations in March 1996, is a system the risks of which can be compared with those incurred in a gross settlement system.

The EAF 2 is governed by the special terms of business for electronic clearing as well as the External specifications of the Bundesbank's electronic counter.

### 3.5.2 Participation in the system

Only credit institutions with a head office, office or branch in Frankfurt and an account at the Bundesbank's branch in Frankfurt can participate in the EAF 2. There is no provision for indirect participation in the EAF 2. Participants must have the necessary technical facilities for data telecommunication and adequate backup facilities. In addition, they must, on a daily average basis, either receive and send a total of at least 100 payments or the delivered/received volume must amount to over DEM 500 million (ECU 260 million).

Currently sixty-six credit institutions participate in the EAF 2. The central bank does not participate in the EAF 2.

### 3.5.3 Types of transactions handled

The EAF 2 is used for the paperless exchange of credit transfers in Deutsche Mark between participants by telecommunication. In the EAF 2 domestic credit transfers can be presented either in DTA format or in S.W.I.F.T. format.

The EAF 2 is used primarily for same-day clearing and settlement of interbank payments (e.g. money market and foreign exchange market transactions) but also for the execution of credit transfer orders received from bank customers. The latter have become slightly more significant since a number of credit institutions have gone over (in order to save liquidity) to routing some of the inter-network payments centrally via the EAF 2. But payments from abroad continue to predominate, as can easily be seen from the fact that EAF 2 turnover on US bank holidays falls to 10-20% of normal turnover, and virtually doubles thereafter.

### 3.5.4 Operation of the system

The EAF 2 is characterised by a two-phase procedure.

#### *Phase 1 (delivery phase with bilateral offsetting of payments)*

In phase 1 (8 a.m. to 12.45 p.m.) the EAF 2 resembles a gross settlement system. It is based primarily on the principle of using incoming payments as cover for outgoing payments, by offsetting them against each other as far as possible in cycles of twenty minutes. Offset payments involved become immediately final, as under a gross settlement system, but no booking on an account of the Bundesbank takes place. Liquid funds in the

form of central bank credit balances or intraday credit are necessary only to the extent that the amounts of the counter-payments involved in the offsetting do not exactly match. In the EAF 2 - unlike in a bilateral net settlement system - payment orders in the waiting queues of the bilateral partners are not offset completely but only as far as possible, in corresponding amounts. Payments which are not included in the offsetting procedure are subsequently carried over into queues for the next processing cycle. By contrast, in a bilateral net settlement system, a balance would be calculated as the difference between all incoming and outgoing payments, which would be settled by debiting a single account.

The participants can determine themselves how much liquidity they actually wish to use, by defining so-called maximum sender amounts for each of their bilateral relations. By fixing a maximum sender amount, a participant defines how many payments of its own it is willing to send off in excess of those provided by a counterparty, i.e. he limits the liquidity he is willing to invest in a bilateral relation.

Each participant's maximum sender amounts are transferred before the start of phase 1 from its Bundesbank account to special accounts (taking up, if so desired, the Bundesbank's secured intraday credit facility (see Section 1.3.2)), and assigned to its respective bilateral partners as security. Even if, owing to its maximum sender amount, a participant pays more than it receives under a bilateral relationship, the recipient credit institution nevertheless receives a final payment for this excess amount, since, for security purposes, the corresponding amount on the special blocked account is assigned to it.

A receiving credit institution can therefore, as in a gross settlement system, pass on all payments included in the offsetting process to the payment recipient without incurring credit risk. However, unlike in a usual gross

settlement procedure, the inflowing payments cannot be used by the recipient credit institution as cover for any operations whatsoever (e.g. for cash withdrawals, payments to recipients other than the respective bilateral EAF 2 partner), since it is not made available on the Bundesbank account. This liquidity is available only for covering outgoing payments in subsequent delivery cycles within the same bilateral relationship.

In phase 1 of the EAF 2, with the use of relatively small amounts of liquidity compared with a usual gross settlement system (around DEM 2-3 billion (ECU 1-1.6 billion), or only about 0.5% of the average delivered value of over DEM 600 billion (ECU 312 billion)), around 70% of the delivered value regularly becomes final as early as about 10.30 a.m.

At the end of phase 1 all a participant's bilateral debit and credit positions are cumulated into a single debit and a single credit balance and booked on the Bundesbank account. At the same time, the cover funds assigned as security for the maximum sender amounts are unblocked. Only once the cumulative bilateral balances have been booked on the Bundesbank accounts is central bank money redistributed between the participants and can again be used for any purpose whatsoever (i.e. not only for payments to EAF 2 participants).

Unlike in a usual gross settlement system, in which payments tend to be held back and only delivered at a relatively late point in time during the working day, bilateral settlement in the EAF 2 has the advantage that the system provides an inherent inducement to deliver payments early and thus to synchronise incoming and outgoing payments. For payment recipients receive final payments only when they are themselves willing to feed two-way payments into a bilateral system. This inducement is enhanced due to the fact that participants are allowed to look at the queue of payments which are destined for them but are not yet final.

#### *Phase 2 (multilateral clearing and settlement)*

At the beginning of phase 2 (1 p.m. to 2.15 p.m.), there is a multilateral clearing and settlement of the payments which had not been offset in phase 1. If debit balances arising from this first multilateral clearing remain uncovered, the maximum volume of residual payments that can be cleared and settled by resorting to the operational resources provided by the participants (at least 50% of the account credit balances and unused intraday credit facilities) is determined with the aid of an appropriate algorithm. Using previously defined, objective selection criteria, which exclude arbitrary or random influences, individual payments are calculated which have generated uncovered debit balances. The individual payments regarded as uncovered are temporarily deferred for the execution of a second multilateral clearing and settlement and the revised multilateral balances are booked on the Bundesbank accounts.

After the first multilateral clearing and settlement in phase 2, the quota of final payments amounts to over 99%. Owing to the early booking of the revised multilateral balances on the Bundesbank accounts (at about 1 p.m.), the liquidity arising from the EAF 2 is available earlier for multifarious purposes (compared with the former EAF).

After the first multilateral settlement, participants are granted a forty-five minute period to obtain cover on their Bundesbank accounts (e.g. through an incoming payment from the gross settlement system) or to ensure (as is exceptionally possible in phase 2) delivery of a balance adjustment payment in the EAF 2 by another participant, which is then immediately cleared with the other residual payments. If, in the course of the subsequent booking trial, balances again remain uncovered, no unwinding is envisaged. Instead, single payments are definitively withdrawn from clearing and settlement via the above-mentioned algorithm until such time as the total existing cover (100% of the

account credit balances and unused intraday credit facilities) is sufficient. Thus the EAF 2 is always completed, and unwinding, associated with systemic risk, is ruled out. Individual payments treated as uncovered are deemed to be revoked payments, and are not executed. This is the same procedure as that used under a usual gross settlement system, where uncovered payments remaining in queues are returned without affecting the finality of already executed payments.

### **3.5.5 Transaction processing environment**

The execution of the EAF 2 occurs via a mainframe computer system in Frankfurt am Main. Technically, communication between the computer systems of the participating credit institutions and the Bundesbank's mainframe - as at the electronic counter in the EIL-ZV - is effected via an interface on dedicated gateway systems. The principles laid down in the External specifications for the Bundesbank's electronic counter and the requirements for the submission and delivery of data files via telecommunication apply to the EAF 2 in the same way as for the electronic counter in the EIL-ZV.

### **3.5.6 Settlement procedures**

During phase 1, a settlement in the sense of an entry in the Bundesbank account takes place only at its end, when the cumulative bilateral debit and credit balances are booked. Payments which were previously included in the cyclical offsetting processes are final even without this accounting procedure.

At the beginning of phase 2, the balances revised by the temporarily deferred uncovered payments are entered in the Bundesbank accounts. At the end of phase 2 the balances arising from the second multilateral clearing are booked. The finality of the previously settled and cleared payments is not affected by a possible withdrawal of payments.

### **3.5.7 Credit and liquidity risk**

The maximum sender amounts are used to manage credit and liquidity risks of the sender in phase 1. An advance payment, which is conceived as a credit extension to the receiving bank insofar as the sending bank also expects due payments from that receiver is limited by the maximum sender amount. The maximum sender amount also addresses the liquidity risk by limiting the outflow of liquidity during the bilateral processing cycles. Unlike in a usual gross settlement system, the sender does not have to monitor the ongoing outflow of liquidity.

EAF 2 also reduces the credit risk of the receiver. Payments included in the offsetting cycles become final at once. They can therefore be passed on to the beneficiary without incurring any credit exposure.

Systemic risk is eliminated, since in the event of an uncovered debit balance the clearing is not unwound (which might in some circumstances trigger liquidity problems for other participants (the domino effect)). Instead, as in a gross settlement system, only those individual payments are returned which are treated as uncovered.

### **3.5.8 Pricing**

The Bundesbank charges a monthly basic fee of DEM 500 (ECU 260) for participation in the EAF 2. Besides, a transaction charge of DEM 0.40 (ECU 0.21) is made per payment. Participants also have to bear the costs of their own data-processing systems and the charges for data transmission to and from the Bundesbank.

### **3.5.9 Main projects and policies being implemented**

As the EAF 2 has just started operation there are no changes envisaged in the near future.

## 3.6 Paperless exchange of data media (DTA) procedure

### 3.6.1 Functioning rules

The retail payment system DTA is used both for the routing of credit transfers and for the collection of cheques and direct debits. The procedure is based on general and special agreements between the banking industry and the Bundesbank. These agreements contain both technical requirements and certain conversion possibilities or conversion requirements (see Section 1.1). The DTA procedure is not only used for the processing of payments already submitted in paperless form, but also for the execution of payments submitted in paper form by the customer and converted into data records at the customer's bank.

The execution of payments in the Bundesbank's DTA procedure is subject to the "Special terms of the Bundesbank for the paperless exchange of data media" as well as the General Terms of Business.

### 3.6.2 Participation in the system

All credit institutions with an account at a Bundesbank branch and which satisfy the technical requirements of the DTA terms can submit paperless credit transfers or cheques and direct debits to the Bundesbank on data media. The branches and the central office of the Bundesbank use this procedure to execute paperless orders for their customers (in particular public authorities).

### 3.6.3 Types of transactions handled

Paperless credit transfers and direct debits of any value are executed under this procedure. Converted cheques on the other hand can only be submitted to a maximum value of less than DEM 5,000 (ECU 2,598) (BSE procedure). In addition, the Bundesbank converts cheques submitted to it for amounts

of DEM 5,000 (ECU 2,598) and above (GSE procedure) into DTA data records and collects the value in paperless form. In the case of GSE cheques the Bundesbank additionally transmits the original cheques separately.

### 3.6.4 Operation of the system

The data media (magnetic tapes, diskettes, cassettes) have to be submitted to the Bundesbank branches by 2.30 p.m.; they are then transported by courier to the computer centre responsible. Credit institutions have the possibility of joining a service centre or clearing institution and having the data media submitted and delivered via this institution; in this case the payments are settled via the clearing institution. As direct submitters, clearing institutions can submit payments directly to the seven computer centres or two payment units until 6 p.m. The data media are read in and the data records are sorted according to the receiving credit institution. At the same time the payment is checked to ascertain whether it should remain within the area of the computer centre (regional payment) or is to be routed to another computer centre (supraregional payment).

Data media with regional payments are transported overnight by courier to the account-holding Bundesbank branches or are collected the next morning by the clearing institutions from the computer centre. Thus the settlement of credit transfers or direct debits and cheques takes place on the morning of the next working day. The processing time for regional payments is consequently one working day. Supraregional payments to another Bundesbank computer centre are routed within the Bundesbank either via telecommunication or via data media. All credit transfers as well as direct debits and cheque records for amounts of DEM 1,000 (ECU 520) and above are transmitted the same evening via telecommunication to the computer centre

responsible, where they are delivered together with the regional payments of those centres. In these cases, the processing time is only one working day, too. By contrast, direct debits and cheque records for less than DEM 1,000 (ECU 520) are compiled on data media which are transported to the respective computer centre responsible by courier. The processing time is hence two working days (forty-eight hours).

### **3.6.5 Transaction processing environment**

The banking industry and the Bundesbank have agreed on a common data record for the execution of paperless payments in the DTA procedure. The payment data are given in the prescribed data record format on the respective data media. The actual payment order, however, is represented by an accompanying note which has to be signed by the submitter. On this note the submitter has to give the number of data records, the total value in Deutsche Mark and the check total of the account numbers concerned as well as the bank code numbers of the credit institutions. These check totals are designed to prevent manipulation of the data media.

### **3.6.6 Settlement procedure**

Under the provisions of the Bundesbank Act credit transfers are only executed if sufficient cover is available. In the case of orders from direct submitters to the computer centre the cover check is established by means of end-of-day reports from the account-holding branches. (In these cases, however, debiting technically occurs only as the first settlement transaction of the next working day with retroactive value date.) The computer centre may only process the payments once the submitter's account has been, or is certain to be, debited. For its part, the Bundesbank branch which holds the account for the receiving credit institution only credits its account once it has received the payments from the computer centre.

The value of submitted cheques and direct debits is credited "subject to collection" to the submitter's account on the working day following submission. Debiting takes place at the Bundesbank branch as soon as the payments have been received from the computer centre.

### **3.6.7 Credit and liquidity risk**

Since each credit transfer order in this gross settlement system is only executed on receipt of cover, a failure or recalculation of the payment settlement is excluded. There is, therefore, no credit or liquidity risk. The receiving bank likewise incurs no such risk, since it can make the incoming credit available to the final beneficiary without reservation.

In the case of cheques and direct debits there is some credit risk because the items are only credited "subject to collection".

### **3.6.8 Pricing**

For the execution of credit transfers or direct debits and cheques submitted in paperless form a transaction charge of DEM 0.01 (ECU 0.005) is made per data record; but at least DEM 5 (ECU 2.60) is charged per data medium.

### **3.6.9 Main projects and policies being implemented**

It is envisaged to give credit institutions electronic access to the computer centres also for retail payment transactions. This will enable credit institutions to submit credit transfers as well as direct debits and converted cheques to the computer centres (and receive these from them) not only via data media but also via telecommunication. In addition, the Bundesbank intends to execute all credit transfers in a same-day procedure, irrespective of amounts, to avoid any float.

### **3.7 MAOBE (machine-optical voucher reading) procedure**

#### **3.7.1 Functioning rules**

The paper-based retail payment procedure MAOBE is used to route credit transfers and to collect cheques. The procedure is governed by general and special agreements between the banking industry and the Bundesbank. A particular precondition was the establishment of a common machine-optical readable script (OCR) to read the code lines pre-printed at the foot of the vouchers. In addition, binding coding guidelines had to be established and common pre-printed payment vouchers adopted. In the meantime, various agreements have been reached relating to the conversion possibilities and conversion requirements to promote paperless procedures (see Section 1.1).

#### **3.7.2 Participation in the system**

All credit institutions with an account at a Bundesbank branch can participate in the MAOBE procedure as well as the branches and the central office of the Bundesbank itself.

#### **3.7.3 Types of transactions handled**

In accordance with the various conversion requirements, credit institutions can now only submit credit transfers for less than DEM 1,000 (ECU 520) and cheques of any value.

#### **3.7.4 Operation of the system**

The coded vouchers have to be submitted to the Bundesbank branches by 2.30 p.m. As in the DTA procedure, credit institutions have

the possibility of joining a clearing institution which can submit vouchers directly to the computer centre until 6 p.m. The voucher readers at the computer centres recognise the data given in the code lines and sort the vouchers according to the receiving bank. At the same time the payment is checked to ascertain whether it should remain within the area of the computer centre (regional payment) or is to be routed to another computer centre (supraregional payment).

Vouchers for regional payments are transported overnight to the account-holding Bundesbank branch or are collected the next morning by the clearing institutions. The crediting of transfers and the debiting of cheques takes place on the working day following submission (processing time of twenty-four hours). Routing supraregional payments via courier to the computer centre responsible extends the processing time for these payments to forty-eight hours.

#### **3.7.5 Transaction processing environment**

(See Section 3.7.1.)

#### **3.7.6 Settlement procedure**

As far as credit transfers are concerned, see Section 3.6.6.

The value of cheques is credited to the submitter's account on the working day following submission. Debiting takes place at the Bundesbank branch as soon as the payments have been received from the computer centre.

#### **3.7.7 Credit and liquidity risk**

(See Section 3.6.7.)

### 3.7.8 Pricing

For the execution of paper-based orders a transaction charge of DEM 0.05 (ECU 0.026) for credit transfers and of DEM 0.10 (ECU 0.05) for cheques is made. No special charge is made for converting vouchers.

### 3.7.9 Main projects and policies being implemented

In mid-1997 it is planned to make the EZÜ requirement complete (see Section 1.1). From then on, not only direct debits but also all credit transfers will have to be converted into data records and routed in paperless form. The paper-based MAOBE procedure will then in principle only continue to be needed for the conversion of cheques submitted in paper-based form, since there are no plans to introduce a conversion requirement in the foreseeable future. In addition, the procedure will also continue to be needed to route vouchers which cannot be converted (e.g. large-format foreign cheques).

### 3.8 Other interbank funds transfer systems

Most credit institutions in Germany are actively involved in the execution of payments.

Many of the universally active private credit institutions have, with their branches, established their own national or regional giro networks. The credit institutions compete intensively with each other. As a consequence, the private banks in Germany do not have a common interlinked system for payments.

However, the savings banks, which are active at the local or regional level, and the co-operative banks, which also have a geographically restricted business area, form, together with their respective central institutions, single giro networks: the so-called *Spargironetz* and the *Deutsche Genossenschaftsring*. Both networks are based on internally agreed processing and settlement procedures. In principle, the savings banks and co-operative banks settle payments via their respective central institutions. These procedures allow overdrafts within certain limits, which may also depend on other transactions with the central institutions (see Section 1.2).

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

The Safe Custody Act of 1937 forms the legal basis of the safe custody and administration of securities. The Safe Custody Act serves to protect those securities owners who deposit their securities with depository banks. In particular, it ensures that buyers receive title to their securities as quickly as possible and that they do not lose this title if the depository bank runs into financial difficulties.

The Safe Custody Act provides for the safe custody of securities by banks in the form of collective safe custody as a rule or - at the request of the owner and only if paper certificates have been issued - separate safe custody (or individual custody). For reasons of efficiency and cost and because of the general advantages of a book-entry system, virtually only collective custody plays a significant role nowadays.

Credit institutions may entrust another custodian - the "third-party custodian" - with the custody of their customers' securities in their own names. This does not infringe the rights of the depositor as the third-party custodian is required to assume, as a matter of principle, that the securities delivered belong to the customers of the credit institution depositing them (principle of non-property presumption). In particular, customer securities may not be used without specific authorisation to cover liabilities of either of the credit institutions involved.

The bulk of all securities (shares and bonds) is deposited with credit institutions, the Bundesbank and the Federal Debt Administration. Securities deposited with credit institutions and the Bundesbank are kept as a rule in third-party custody at the *Kassenverein* (see Section 4.1.4).

#### 4.1.2 The role of the central bank

##### *General responsibilities*

The Bundesbank has no special responsibilities for the securities settlement system.

##### *Provision of settlement facilities*

The Bundesbank provides its payment system for the cash clearing, i.e. the securities settlement system (*Deutscher Kassenverein AG - DKV*) and its clients settle the payments via accounts with the Bundesbank.

##### *Provision of operational facilities*

The operational facilities are provided by the DKV (see Section 4.1.4).

##### *Monetary policy operations and securities settlement systems*

Securities used for monetary policy operations are:

- public debt (eligible by law);
- private debt (credit risk assessment by the Bundesbank).

Credit institutions seeking to take part in monetary policy operations must maintain special safe custody accounts (so called Bundesbank operational safe custody accounts, BOSCA) with the Bundesbank.

Securities entered in these accounts are held by the Bundesbank as an intermediate custodian with the DKV usually being the ultimate custodian. Monetary policy operations involving securities are settled via these accounts. So delivery versus payment is ensured in every case.

#### 4.1.3 The role of other public sector bodies

##### *Stock Exchange authorities*

The Exchange Rules and Regulations and schedules of charges are issued by each of the stock exchanges as self-regulatory organisations. The Rules and Regulations and schedules of charges must be approved by the Stock Exchange Supervisory Authorities of the Land in which the stock exchange is situated (legal supervision). The latter also have far-reaching powers for supervising trading (market supervision). In this they are assisted by the Exchange Market Surveillance Boards.

##### *Other authorities (e.g. supervisory authorities)*

The Federal Banking Supervisory Office (*Bundesaufsichtsamt für das Kreditwesen*) supervises the banking industry of which the securities settlement system is a part.

The stock exchanges are subject to supervision by the Land concerned (see above).

At the Federal level, exchange-based and over-the-counter securities trading is additionally supervised by the *Bundesaufsichtsamt für den Wertpapierhandel* (BAWe - Federal Securities Supervisory Office).

#### 4.1.4 The role of other private sector bodies

##### *Central securities depository*

Book-entry securities transactions, in which no physical exchange of instruments takes place, are carried out by the *Deutscher Kassenverein AG* (DKV), a body owned by the *Deutsche Börse AG*, which is itself owned by the German banking industry. The DKV has branches in the following centres, which have stock exchanges: Berlin, Düsseldorf,

Frankfurt (the main branch), Hamburg, Hannover, Munich and Stuttgart. (The stock exchange of Bremen uses the Hamburg branch.) Only credit institutions which are subject to the legally required audit of deposited securities and securities brokers and securities trading firms that meet special requirements may hold an account. For practical purposes, all banks active in the securities trading and custodian business hold accounts with the DKV. The DKV is a specialised bank with a limited scope of business and is subject to supervision by the Federal Banking Supervisory Office.

The DKV is the central custodian for securities held in collective custody via book-entry and the central agency for the securities transfer system. 98% of the bonds and about 70% of the shares issued in Germany are held in custody by the DKV.

Ownership of securities is transferred via actual delivery or via book-entry transfer of securities in the collective holding scheme. Book-entry transfers, like payment transactions, are executed on a local or an intercity basis depending on the location of the depository branch involved. The DKV's branches have accounts with one another and are interconnected via telecommunication. According to the DKV's terms of business, ownership of securities (which in most cases is co-ownership of collective holdings) is transferred when the daily securities account statement has been sent or delivered to the account holder. Statements are sent, as a rule, after completion of cash clearing via the Bundesbank branch, once it has been established that there is cover for all amounts due.

The DKV does not carry out securities netting. Securities transfer takes place on a gross (trade-by-trade) basis. All securities deposited with DKV are supposed to be securities of customers of the account holders.

### Clearing House

There is no special clearing house for securities besides the DKV. The central institutions of the payment networks (see Section 3.8) also play a role as securities intermediaries for their member banks. So they may provide clearing functions for securities as well.

The DTB (see Section 4.2.1) acts as a clearing house for its products for its members.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

There are several markets at the stock exchange:

- First Segment or Official Market (*amtlicher Handel*), with two methods of price fixing.

In the price fixing carried out as a single (standard) price, auction prices are fixed by specialists of the stock exchange. All orders received must be included when fixing the standard price. The bunching-up of supply and demand at a given point in time for fixing the standard price especially protects smaller market orders from being executed at unfavourable prices. In fixing the price, the specialist complies with what is known as the "principle of maximum execution", i.e. the official price fixed is the price at which the largest turnover takes place.

In addition to fixing of the standard price, the specialist establishes official prices in actively traded stocks on a continuous basis during the trading period of a trading day. An order must have a nominal value of DEM 1 million (ECU 0.52 million) (bonds) or a size of 50 shares (100 if face value is DEM 5 (ECU 2.6)) to be eligible for price fixing on a continuous basis.

- Second Segment or Regulated Market (*Geregelter Markt*).

Admission conditions for securities are less stringent than for the Official Market but are examined by the Admission Board, too.

- Third Segment or Free Market (*Freiverkehr*).

Over-the-counter trading also takes place at the stock exchange and is open to securities that are not traded on the Official Market or the Regulated Market.

In addition the *Deutsche Börse AG* (German Stock Exchange) offers the services of the *Integriertes Börsenhandels- und Informationssystem* (IBIS - Integrated Stock Exchange Trading and Information System) as an electronic screen-based trading system for the handling of wholesale transactions in actively traded stocks.

The *Deutsche Terminbörse* (DTB - also owned by the *Deutsche Börse AG*) offers a broad range of futures and options. Like IBIS, the DTB has been designed as a screen-based trading system. Trades may be conducted directly on screen. The DTB's product range includes interest-related products, index-related products and options on several heavily traded German so-called blue-chip stocks. Settlement of all obligations incurred on the DTB is ensured by the DTB clearing house, in line with common practice on international financial futures exchanges, acting as a counterparty to each transaction. Moreover, the clearing house computes and monitors the margins to be maintained by exchange participants to cover open positions. Margins may be deposited in either cash or securities.

### 4.2.2 Basic quantitative aspects (basic statistics)

At the end of 1994 the market value of shares of German issuers amounted to DEM 773.9 billion (ECU 402.1 billion) and the face value of bonds to DEM 2,668.4 billion

(ECU 1,386.4 billion). Total turnover in 1994 was DEM 5,529 billion (ECU 2,873 billion) on all German stock exchanges. The settlement volume of DKV in 1994 was DEM 7,184 billion (ECU 3,733 billion).

#### **4.2.3 Financial intermediaries operating in the different securities markets**

Admission to the stock exchange is granted by the Board of Governors (of the stock exchange - *Börsenvorstand*) only to representatives of credit institutions and to Official Brokers (*Kursmakler*) and independent brokers (*Freimakler*).

Third parties not admitted to the stock exchange have to use the services of credit institutions since only credit institutions are allowed to act as a broker for third parties, while the intermediation between credit institutions is provided by official and independent brokers.

### **4.3 The German securities settlement system**

#### **4.3.1 Major regulations**

The major regulations are laid down in the Safe Custody Act of 1937 which is described in Section 4.1.1.

The system for securities settlement is operated by the central securities depository, the *Deutscher Kassenverein* (DKV, see Section 4.1.4). The vast bulk of transactions are made by book entry.

#### **4.3.2 Participation in the system**

All banks active in trading/custody of securities; brokers and other trading firms engaged in principal trading which meet the specified admission criteria.

#### **4.3.3 Types of transactions handled**

Automated settlement of transactions at stock exchanges and via the screen-based IBIS system. Individual over-the-counter transactions can be settled against payment or free of payment.

#### **4.3.4 Operation of the transfer system**

For technical reasons the DKV uses the German Securities Data and Service Centre (DWZ - *Deutsche Wertpapierdatenzentrale GmbH*) as a centralised transaction processing system.

#### **4.3.5 Transaction processing environment**

Brokers and banks can enter their stock exchange securities transactions for processing via terminals.

Every working day the EDP system issues transaction reports - for checking by the counterparties - in respect of stock exchange transactions. Errors must be reported before the start of the next trading session. If the contents of transaction reports are not disputed within the set time-limits, the underlying transaction is considered to have been firmly accepted. Thus, there is no provision for confirmation between counterparties. According to the stock exchange rules all transactions must be settled on the second trading day following the date of the trade. With regard to IBIS the transactions are matched by the system before they are passed to the settlement process.

Individual (over-the-counter) trades are carried out only after prior matching. These transactions are entered into the DWZ computer by the parties concerned and matched by the system as far as they are made against payment. The settlement day may be between T + 0 and T + 40. For

settlement day T + 0 same-day settlement (SDS) and real-time settlement (RTS) is available (see below).

#### 4.3.6 Settlement procedures

Securities deliveries in the standard and same-day settlement cycles take place on a gross basis and the payment legs on a net basis. Securities transfer instructions are processed during two batch cycles. The batch programmes attempt to maximise the number of settlement instructions that can be carried out on the basis of available securities in participants' accounts through iterations. Account is taken of priorities which customers may give to their instructions, of the settlement date (older outstanding instructions are processed first) and of the size of the trades (large transfers are settled before small ones). For each securities transfer against payment executed during the batch processing the corresponding cash clearing accounts of the payer and payee are debited and credited. At the end of the batch cycle each participant thus ends up with a single net cash position since all his incoming and outgoing payments are effectively offset.

The DKV runs two securities batch processing cycles. The first one takes place on the evening before settlement date (S-1) and is called the standard processing cycle. The second occurs in the morning on the settlement date (S) and is referred to as the same-day processing cycle. For the standard processing cycle, which typically takes place between 5.30 p.m. and 8.30 p.m. instructions have to be entered by 5.30 p.m. on S-1 at the latest. In the case of the same-day processing cycle, which is carried out between 10 and 10.30 a.m., the cut-off time for submitting instructions on line is 10 a.m. on S. At the end of each processing session, that is around 8.30 p.m. and 10.30 a.m., the DKV makes available to the participants a statement of settled and unsettled trades (so-called *Regulierungsliste* or delivery list) as

well as the resulting net cash position (debit or credit). The Securities Deposit Law in Germany does not allow a central securities depository to lend securities (but DKV arranges securities lending between the partners of a lending pool). If securities are not available on participants' accounts, the delivery instruction will remain unexecuted. Unsettled instructions are automatically carried over to the next processing run (i.e. either the next standard or same-day processing).

Participants with a net debit cash position at the end of the same-day processing cycle (which includes the cash results of the standard processing cycle) must have the necessary cover available on their Bundesbank account by 1 p.m. The cover may consist of credit balances or of available overdraft facilities. Upon instruction from the DKV the Bundesbank - through its various branches - will debit the accounts of all banks in a net debit position at around 1 p.m. When all debit positions have been covered, the DKV pays out the corresponding amount to the participants with a net credit position. At that time the provisional securities transfers executed during the batch processing cycles also become final. Should one of the participants in a debit position be unable to provide the required cover, the clearing for that day would have to be unwound.

Besides the standard and the same-day settlement (SDS) the DKV offers the so-called real-time settlement (RTS), which is not processed in batch cycles. Orders for the transfer of securities may be entered from 6.30 a.m. until 1 p.m. via terminal to the DKV by both partners. Payment orders have to be entered by electronic means from 8.15 a.m. until 2 p.m. to the Bundesbank branch, which transfers the funds at once to the Bundesbank account of the DKV. The DKV matches the orders and - if funds have arrived and securities are available - makes final book-entries for securities and transfers the received funds to the Bundesbank account of

the seller. If securities are not available in time the DKV returns the funds to the Bundesbank account of the buyer.

#### **4.3.7 DVP arrangements**

Securities transfers against payment are recorded by the DKV only on a delivery-versus-payment basis. Although in operational terms the book entries for securities transfers for standard and same-day settlement are made in advance they become legally effective (final) when the securities account statements have been delivered to the DKV's customers. This does not happen until the corresponding cash transfers are final. Cash payments are settled in Deutsche Mark via the DKV branch accounts held with the Bundesbank branches. Payment is final at about 1 p.m. on the settlement day.

In real-time settlement, DVP is ensured because final book-entries for securities and cash occur at the same time.

#### **4.3.8 Pricing**

The DKV tries to recover the costs of its services by the fees which it charges for them. In recent years the DKV gave a reduction on the fees at the end of the year if they exceeded the costs.

In general, custody of dematerialised or immobilised securities is less expensive than that of printed securities and orders via electronic devices are less expensive than orders by other means.

#### **4.3.9 Credit and liquidity risk control measures**

Fulfilment of DVP avoids principal risk. A shortage of securities can be avoided by using the (not yet automated) securities lending service provided. As funds settlement takes place on central bank accounts usual central bank facilities are available.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	79,365	79,984	80,595	81,180	81,418
Gross domestic product (DEM billions)	2,426.0	2,853.6	3,075.6	3,154.9	3,320.3
Exchange rate vis-à-vis ECU <sup>(2)</sup>	2.0519	2.0507	2.021	1.9368	1.9248

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

(end of year)

	DEM billions				
	1990	1991	1992	1993	1994
Notes and coins	158.6	171.8	200.5	212.0	225.9
Transferable deposits	444.9	445.0	469.5	527.8	541.1
<i>of which held by:</i>					
<i>households</i>	240.2	253.7	288.5	327.3	333.1
<i>corporate sector</i>	151.0	149.2	152.1	158.8	174.7
<i>other</i>	53.7	42.1	28.9	41.7	33.3
Narrow money supply (M1)	584.3	604.0	669.6	726.3	764.1

**Table 3**
**Settlement media used by deposit-taking institutions**

(end of year)

	DEM billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	68.9	73.6	85.2	59.6	43.6
Free reserves held at central bank	2.0	1.4	1.2	0.8	0.8
Transferable deposits at other institutions	256.4	226.9	301.2	380.2	342.8

(1) After deduction of deductible cash balances.

**Table 4****Banknotes and coins***(total value, end of year) <sup>(1)</sup>*

	DEM billions				
	1990	1991	1992	1993	1994
Total banknotes issued	166.9	181.3	213.4	224.2	236.1
of which					
DEM 1,000	40.7	46.9	64.3	68.5	75.0
DEM 500	21.1	21.5	24.0	24.3	25.7
DEM 200	6.6	9.6	11.5	11.6	11.3
DEM 100	69.6	73.8	82.1	86.8	90.7
DEM 50	17.9	18.3	19.4	20.3	20.4
DEM 20	6.7	6.7	7.4	7.7	7.9
DEM 10	4.0	4.2	4.4	4.7	4.8
DEM 5	0.3	0.3	0.3	0.3	0.3
Coins issued	12.6	13.3	13.9	14.4	14.8
of which					
DEM 10	1.6	1.8	1.9	2.0	2.2
DEM 5	5.1	5.3	5.3	5.4	5.5
DEM 2	1.7	1.8	2.0	2.1	2.1
DEM 1	2.0	2.1	2.2	2.2	2.3
DEM 0.50	0.9	1.0	1.0	1.1	1.1
DEM 0.10	0.8	0.8	0.9	0.9	1.0
DEM 0.05	0.3	0.3	0.3	0.3	0.3
DEM 0.02	0.1	0.1	0.1	0.2	0.1
DEM 0.01	0.1	0.1	0.2	0.2	0.2
Notes and coins held by credit institutions	21.1	22.8	26.8	26.7	25.0
Notes and coins in circulation outside credit institutions <sup>(2)</sup>	158.6	171.8	200.5	212.0	225.9

(1) Differences between sums and individual figures due to rounding.

(2) Identical to Table 2, "Notes and coins".

**Table 5****Institutional framework**  
(end of 1994)

Categories	Number of institutions	Number of branches	Number of accounts (thousands) <sup>(1)</sup>	Value of accounts (DEM billions)
Central bank <sup>(2)</sup>	1	183	37	0.9
Commercial banks <sup>(3)</sup>	408	8,382	15,900	191.7
Savings banks	656	20,360	36,900	222.2
Co-operative and rural banks	2,664	20,093	21,900	117.0
Postbank <sup>(4)</sup>	1	185	4,600	25.9
<b>TOTAL</b>	<b>3,730</b>	<b>49,203</b>	<b>79,337</b>	<b>557.7</b>
Branches of foreign banks	63	108		1

(1) Partly estimated.

(2) As a legal entity the Deutsche Bundesbank comprises the Central Office (in Frankfurt am Main) and nine Land Central Banks, as well as 182 branches.

(3) Including mortgage banks, installment sales financing institutions, banks with special functions and building and loan associations.

(4) Not including 20,000 post offices, which execute semi-cashless payments for Postbank AG.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals** <sup>(1)</sup>

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	4	4	4	4	4
Number of machines	11,300	13,750	19,000	25,000	29,400
Volume of transactions (millions)	n.a.	n.a.	n.a.	n.a.	935
Value of transactions (DEM billions)	n.a.	n.a.	n.a.	n.a.	238.5
<b>EFTPOS terminals</b>					
Number of networks <sup>(2)</sup>	11	18	19	18	30
Number of machines <sup>(2)</sup>	23,152	34,673	51,806	28,000	62,500
Volume of transactions (millions) <sup>(3)</sup>	3.5	20.2	28.0	69.1	104.0
Value of transactions (DEM billions) <sup>(3)</sup>	0.2	1.8	1.9	6.2	10.8

(1) Partly estimated.

(2) From 1993 onwards, "electronic cash" and "POZ procedures" only. Non-bank systems are also included up to 1993.

(3) From 1993 onwards, "electronic cash" and "POZ procedures" only. In 1991 and 1992 "electronic cash" and other debit card procedures. In 1990 "electronic cash" procedures only.

**Table 7****Number of payment cards in circulation <sup>(1)</sup>***(end of year)*

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	n.a.	n.a.	n.a.	n.a.	n.a.
Cards with a debit/credit function	28,726	33,528	39,272	44,842	47,353
<i>of which:</i>					
<i>cards with a debit function <sup>(2)</sup></i>	23,729	27,424	31,863	35,901	37,113
<i>delayed debit cards</i>	4,997	6,104	7,409	8,941	10,240
<i>cards with a credit function <sup>(3)</sup></i>	n.a.	n.a.	n.a.	n.a.	n.a.
Cards with a cheque guarantee function	23,729	27,424	31,863	35,901	37,113
Retailer cards	n.a.	1,500	3,000	n.a.	4,500
Multi-purpose prepaid cards	n.a.	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures. Partly estimated.

(2) Eurocheque cards, eligible for cash and debit functions, if they are issued with a Personal Identification Number (PIN).

(3) Most of the so-called "credit cards" do not have a credit option (the periodic invoice has to be paid immediately after receipt). These cards appear under "delayed debit cards".

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions <sup>(1)</sup>

	millions				
	1990	1991	1992	1993	1994
Retail payments	2,422.1	2,762.2	2,649.5	2,613.5	2,355.1
Maschinell-optische Beleglesung (MAOBE) <sup>(2)</sup>	590.4	577.3	511.7	393.5	248.0
<i>Collection items</i>	237.4	230.2	214.9	155.5	86.0
<i>Credit transfers</i>	353.0	347.1	296.8	238.0	162.0
Belegloser Datenträgeraustausch (DTA) <sup>(3)</sup>	1,831.7	2,184.9	2,137.8	2,220.0	2,107.1
<i>Collection items</i>	1,562.9	1,788.3	1,693.3	1,702.2	1,496.9
<i>Credit transfers</i>	268.8	396.6	444.5	517.8	610.2
Large-value payments	262.2	426.2	463.5	483.8	477.6
Gross-settlement procedures	25.5	83.2	74.5	56.5	34.3
Eiliger Zahlungsverkehr (EIL-ZV) <sup>(4)</sup>	2.4	3.0	2.6	3.4	4.0
Platzüberweisungsverkehr <sup>(5)</sup>	23.1	80.2	71.9	53.1	30.3
Net settlement procedures	236.7	343.0	389.0	427.3	443.3
Konventionelle Abrechnung <sup>(6)</sup>	234.4	338.0	381.2	416.4	430.6
<i>Collection items (conventional)</i>	40.1	44.8	57.2	95.4	150.8
<i>Local credit transfers (conventional)</i>	194.3	293.2	324.0	321.0	279.8
Elektronische Abrechnung Frankfurt (EAF) <sup>(7)</sup>	2.3	5.0	7.8	10.9	12.7

(1) This table does not include figures relating to IFTS which are not operated by the Deutsche Bundesbank.

(2) Machine-optical voucher reading procedure, excluding payments submitted in a paper-based form which were converted and passed on in a paperless form by the Bank's regional computer centres/payment units (BSE/GSE cheques and BZU credit transfers).

(3) Paperless exchange of data media, including payments submitted in a paper-based form which were converted and passed on in a paperless form by the Bank's regional computer centres/payment units (BSE/GSE cheques and BZU credit transfers).

(4) Express electronic credit transfer system.

(5) Express (paper-based) local credit transfer system.

(6) Daily local clearing system.

(7) Electronic clearing Frankfurt.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions<sup>(1)</sup>

	DEM billions				
	1990	1991	1992	1993	1994
Retail payments	4,054.8	4,726.4	4,846.1	4,822.1	4,688.7
Maschinell-optische Beleglesung (MAOBE) <sup>(2)</sup>	2,881.4	3,220.7	3,112.9	2,814.4	2,307.3
<i>Collection items</i>	2,569.8	2,924.2	2,924.8	2,666.5	2,203.4
<i>Credit transfers</i>	311.6	296.5	188.1	147.9	103.9
Belegloser Datenträgeraustausch (DTA) <sup>(3)</sup>	1,173.4	1,505.7	1,733.2	2,007.7	2,381.4
<i>Collection items</i>	757.9	887.0	907.4	1,063.8	1,313.9
<i>Credit transfers</i>	415.5	618.7	825.8	943.9	1,067.5
Large-value payments	127,932.7	137,703.9	160,441.4	195,455.3	204,656.0
Gross-settlement procedures	16,759.4	18,911.4	22,041.2	27,661.8	30,342.6
Eiliger Zahlungsverkehr (EIL-ZV) <sup>(4)</sup>	8,354.2	10,792.2	13,611.0	18,874.6	22,772.4
Platzüberweisungsverkehr <sup>(5)</sup>	8,405.2	8,119.2	8,430.2	8,787.2	7,570.2
Net settlement procedures	111,173.3	118,792.5	138,400.2	167,793.5	174,313.4
Konventionelle Abrechnung <sup>(6)</sup>	86,180.2	63,856.3	55,377.1	38,488.5	29,409.9
<i>Collection items (conventional)</i>	698.9	735.7	818.9	827.6	799.9
<i>Local credit transfers (conventional)</i>	85,481.3	63,120.6	54,558.2	37,660.9	28,610.0
Elektronische Abrechnung Frankfurt (EAF) <sup>(7)</sup>	24,993.1	54,936.2	83,023.1	129,305.0	144,903.5

(1) This table does not include figures relating to IFTS which are not operated by the Deutsche Bundesbank.

(2) Machine-optical voucher reading procedure, excluding payments submitted in a paper-based form which were converted and passed on in a paperless form by the Bank's regional computer centres/payment units (BSE/GSE cheques and BZU credit transfers).

(3) Paperless exchange of data media, including payments submitted in a paper-based form which were converted and passed on in a paperless form by the Bank's regional computer centres/payment units (BSE/GSE cheques and BZU credit transfers).

(4) Express electronic credit transfer system.

(5) Express (paper-based) local credit transfer system.

(6) Daily local clearing system.

(7) Electronic clearing Frankfurt.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
Deutscher Kassenverein (DKV)			
Banks	598	598	598
Stockbrokers	0	0	0
Securities houses	0	0	0
Insurance companies	0	0	0
Foreign central banks	0	0	0
Cedel / Euroclear	2	2	0
Others <sup>(1)</sup>	5	5	0

(1) DTC, New York; Necigef, Amsterdam; OEKB, Vienna; SEGA, Zurich; SICOVAM Paris.

**Table 11****Transfer instructions handled by securities settlement systems:  
volume of transactions**

	millions				
	1990	1991	1992	1993	1994
Deutscher Kassenverein (DKV)					
Delivery versus payment	16.2	16.4	16.5	21.9	20.5
without countervalue	5.9	4.1	6.1	5.9	4.7
TOTAL	22.1	20.5	22.6	27.8	25.2

**Table 12****Transfer instructions handled by securities settlement systems:  
value of transactions**

	DEM billions				
	1990	1991	1992	1993	1994
Deutscher Kassenverein (DKV)					
Bonds	n.a.	n.a.	n.a.	n.a.	8,205
Shares (including options)	n.a.	n.a.	n.a.	n.a.	1,305
TOTAL	3,078	2,852	4,663	9,417	9,510

**Table 13**

**Nominal values registered by securities settlement systems**  
*(end of year)*

	1990	1991	1992	1993	1994
Deutscher Kassenverein (DKV)					
Bonds (DEM billions)	n.a.	n.a.	2,457.1	3,002.1	3,274.1
Shares:					
unit quotations (DEM millions)					
(including warrants)	n.a.	n.a.	6,222.6	13,230.9	19,378.3
percentage quotations (DEM millions)					
(including profit-sharing certificates)	n.a.	n.a.	16,479.3	20,336.7	25,361.6
Investment fund units (DEM millions)	n.a.	n.a.	2,157.8	2,567.3	4,183.6

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions <sup>(1)</sup>

	millions				
	1990	1991	1992	1993	1994
Cheques issued	784.0	880.0	902.0	934.0	903.0
<i>of which truncated</i>	573.0	643.0	658.0	730.0	722.0
Payments by debit and credit cards	121.7	170.3	214.0	293.5	350.5
Paper-based credit transfers	1,835.4	2,012.3	1,991.2	1,959.1	1,672.2
<i>customer initiated</i>	1,812.0	1,989.0	1,971.0	1,947.8	1,664.7
<i>interbank/large-value <sup>(2)</sup></i>	23.4	23.3	20.2	11.3	7.5
Paperless credit transfers	2,264.5	2,697.3	3,092.4	3,294.3	3,899.4
<i>customer initiated</i>	2,261.0	2,691.0	3,083.0	3,281.2	3,884.3
<i>interbank/large-value <sup>(2)</sup></i>	3.5	6.3	9.4	13.1	15.1
Direct debits <sup>(3)</sup>	2,939.5	3,419.8	4,016.0	4,286.9	4,607.0
<b>TOTAL</b>	<b>7,945.1</b>	<b>9,179.7</b>	<b>10,215.6</b>	<b>10,767.8</b>	<b>11,432.1</b>

(1) Partly estimated.

(2) Only interbank payments via the Deutsche Bundesbank by *Konventionelle Abrechnung* in Frankfurt, *Elektronische Abrechnung Frankfurt*, *Eilliger Zahlungsverkehr* and *Platzüberweisungsverkehr*.

(3) Including cash dispenser/ATM withdrawals made with eurocheque cards at banks other than the one issuing the card.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions <sup>(1)</sup>

	DEM billions				
	1990	1991	1992	1993	1994
Cheques issued	3,997.0	4,443.0	4,583.0	5,343.0	5,550.0
<i>of which truncated</i>	228.0	254.0	261.0	583.0	662.8
Payments by debit and credit cards	22.6	30.0	35.7	48.3	57.2
Paper-based credit transfers	105,029.3	84,343.0	76,837.7	65,984.4	55,224.8
<i>customer initiated</i>	14,548.0	16,273.0	19,303.0	24,418.6	22,908.5
<i>interbank/large-value <sup>(2)</sup></i>	90,481.3	68,070.0	57,534.7	41,565.8	32,316.3
Paperless credit transfers	35,646.0	68,349.0	103,156.0	155,854.9	177,993.7
<i>customer initiated</i>	4,103.0	5,424.0	9,508.0	11,333.4	15,528.5
<i>interbank/large-value <sup>(2)</sup></i>	31,543.0	62,925.0	93,648.0	144,521.5	162,465.2
Direct debits <sup>(3)</sup>	2,573.8	2,902.2	3,906.1	4,481.7	4,766.8
<b>TOTAL</b>	<b>147,268.7</b>	<b>160,067.2</b>	<b>188,518.5</b>	<b>231,712.3</b>	<b>243,592.5</b>

(1) Partly estimated.

(2) Only interbank payments via the Deutsche Bundesbank by *Konventionelle Abrechnung* in Frankfurt, *Elektronische Abrechnung Frankfurt*, *Eilliger Zahlungsverkehr* and *Platzüberweisungsverkehr*.

(3) Including cash dispenser/ATM withdrawals made with eurocheque cards at banks other than the one issuing the card.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	218	232	238	230	240
<i>of which:</i>					
<i>members</i>	147	150	152	150	149
<i>sub-members</i>	70	81	84	78	88
<i>participants</i>	1	1	2	2	3
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
<i>of which:</i>					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	28,299,791	30,963,599	32,585,476	35,359,560	38,187,536
<i>of which:</i>					
<i>category I</i>	10,261,651	11,027,035	11,997,937	12,842,381	13,843,274
<i>category II</i>	6,180,512	6,563,223	6,747,897	7,245,703	7,557,127
<i>sent/received to/from domestic users</i>	4,768,910	5,158,337	5,527,524	6,056,083	6,310,196
Total messages received	38,740,113	42,081,217	44,887,628	48,149,365	51,011,768
<i>of which:</i>					
<i>category I</i>	-	-	14,832,041	15,490,352	16,438,145
<i>category II</i>	-	-	18,220,015	20,424,752	21,833,621
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

EUROPEAN MONETARY INSTITUTE  
PAYMENT SYSTEMS IN THE EUROPEAN UNION

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**List of abbreviations**

<b>ACO</b>	Athens Clearing Office - net settlement system
<b>ALF</b>	Automatic Lending Facility (refers to NSS for securities in book-entry form)
<b>ASE</b>	Athens Stock Exchange
<b>DIAS</b>	Name of a retail payments net settlement system
<b>HBA</b>	Hellenic Bank Association
<b>HERMES</b>	Name of the RTGS system
<b>IECCS</b>	Interbank Electronic Cheque Clearing System developed by DIAS
<b>ISIN</b>	International Standard Identification Number (refers to NSS for securities in book-entry form)
<b>PSB</b>	Postal Savings Bank

## Introduction

The overriding aim of the Bank of Greece, in recent years, has been to deregulate the banking system, reinforce market competition, develop policy instruments and further expand credit markets. The ultimate objective has been to enhance the effectiveness of monetary policy and improve the operation of the credit system.

In the current competitive environment, many banks have issued cards (credit, debit, etc.) and installed ATM and EFTPOS terminals, resulting in a considerable increase in cashless

payments. Nevertheless, cash is still used for a high percentage of payments, in comparison with other European countries. The institutional framework for prepaid card schemes has been established and this instrument is expected to enter the market soon. With a view to modernising the credit system, a real-time gross settlement system is under development, while a clearing system for securities in book-entry form started operating in 1995 and an electronic clearing system for cheques became operational in 1993.

## I. Institutional aspects

### 1.1 General legal aspects

There are no special regulations governing payment systems in Greece. Only cheques are regulated by a law which dates back to December 1933. However, the Government, in close co-operation with the Bank of Greece, exercises a general and regulatory influence on the operation of the Greek payment system.

In addition, the Statutes of the Bank of Greece provide for the central bank to promote the establishment of a clearing house and provide facilities for the conduct of its business on premises belonging to the Bank.

Moreover, the Statutes of the Bank of Greece are to be revised in order to bring the central bank's institutional framework in line with the Treaty on European Union and strengthen the Bank's independence. The Bank will assume exclusive responsibility for the formulation and conduct of monetary policy in order to maintain price stability, which is the primary objective, but it will also carry out its other basic tasks, one of which is to promote the smooth operation of payment systems.

Further to the deregulation of the credit system, the liberalisation of international transactions and the development of a clearing and settlement system for interbank payments, several reforms have already been introduced. The granting of advances or any other credit facilities by the Bank of Greece to the Greek Government, local authorities, legal persons in public law or public undertakings is now prohibited. The relations between the Greek Government and the Bank of Greece, as the Government's cashier, have been redefined. Moreover, special provisions have been enacted, enabling the Bank of Greece to participate in the DIAS clearing system for retail payments (see Section 1.3.1).

In line with recent developments, the supervision of payment systems assumes new aspects and imposes new responsibilities in order to ensure their smooth operation, both at the national and at the European level. Greek banking legislation (Law 2076/1992) is being harmonised with that of the European Union in order to enable the Bank of Greece to exercise prudential supervision and oversight of credit institutions so as to ensure their trustworthiness and the stability of the credit system (see Section 1.3.1).

Another major issue refers to the implications of the zero hour clause for the operation of payment systems. With regard to the commencement of a bankruptcy, Greek legislation stipulates the zero hour clause.

Nevertheless, it is judged that under the law currently in force the zero hour clause is not likely to cause problems to payment systems. Owing to the nature of bank transactions, if a bank stops effecting payments, this will immediately become known; this situation cannot last long with the bank remaining in business, given that banks are financed through the interbank market by, among other institutions, the Bank of Greece itself, and are strictly supervised by the latter. Normally, in the event that a bank faces financial difficulties, the Bank of Greece will react immediately and implement the law (appointment of a commissioner, etc.) long before the said bank is obliged to stop payments and go bankrupt. It should be stressed that if the Bank of Greece appoints a commissioner or decides to put a bank into liquidation, this bank can no longer be declared bankrupt, which would have entailed the implementation of the zero hour clause.

However, action has been taken towards abolishing the zero hour clause, which has yet to have any effect.

## 1.2 Financial intermediaries that provide payment services

There are four types of credit institution operating in the banking sector:

- Greek commercial banks and the domestic branches of foreign commercial banks;
- shipping banks;
- specialised credit institutions; and
- co-operative banks.

Institutions outside the banking industry make a small contribution to the total financing of the Greek economy.

### *Commercial banks*

According to the Banking Law of 1931, commercial banks are enterprises which have the authority to engage in deposit-taking. Greek commercial banks are multi-product firms providing a wide range of corporate and retail banking services. They are also allowed to engage in lending activities, which were primarily exercised by specialised credit institutions (e.g. housing loans), while the latter have also been authorised to offer traditional commercial banking products (e.g. consumer credit). Several large commercial banks have subsidiaries which specialise in insurance, mutual funds and credit card business.

There are forty commercial banks operating in Greece. Twenty of them are Greek-owned and the other twenty are the Greek branches of foreign banks (twelve with their head offices in other EU countries). Greek banks are also shareholders in some foreign banks. The two largest Greek commercial banks have affiliated banking enterprises abroad.

The Agricultural Bank of Greece used to be a specialised credit institution, with an extensive network of branches, responsible for the

conduct of the country's agricultural policy and the support of the process of agricultural modernisation. The Agricultural Bank of Greece is now allowed to operate as a commercial bank, granting all types of loans, including commercial and consumer credit.

Of the twenty Greek banks, eight are indirectly controlled by the State and the others are private. Three of the state-controlled banks (the National Bank of Greece, the Commercial Bank of Greece and the Ionian Bank of Greece) account for 65% of total deposits with commercial banks. Services provided by commercial banks also include those offered to various social groups (e.g. the collection of certain social security contributions).

### *Shipping banks*

There is only one shipping bank operating in Greece, granting loans and credit to shipping companies. It accepts deposits in foreign currency only from non-residents.

### *Specialised credit institutions*

There are eight credit institutions which specialise in granting loans to specific sectors of the economy: three development banks (the Hellenic Industrial Development Bank, the National Investment Bank for Industrial Development and the Investment Bank); three mortgage banks (the National Mortgage Bank, the National Housing Bank and the Aspis Housing Bank); the Postal Savings Bank; and the Deposits and Loans Fund.

The three development banks were established for the purpose of promoting the industrialisation of the Greek economy and extending long-term loans to industry. They are members of the payment system. Today development banks accept deposits from the public and they have diversified their activities by providing investment and banking services (financial consulting, underwriting, advising

on mergers, acquisitions and privatisations) and other financial services (project finance, joint ventures, leasing, etc.).

The three mortgage banks are members of the payment system and accept deposits. Their principal function is to acquire mortgage claims and grant mortgage loans. They have the exclusive right to offer state-subsidised savings accounts and subsidised housing loans to their clients.

The Postal Savings Bank (PSB) is an administratively independent institution of the public sector under the supervision of the Ministry of Transport. The PSB has an extensive network that includes all the country's post offices (which operate as agencies for the PSB), for the collection of savings deposits. Savings deposits with the PSB are fully guaranteed by the Greek State and offer higher interest rates than those of commercial banks. The PSB also accepts other types of deposits on the same terms as commercial banks. The funds collected are predominantly used for development and social purposes (i.e. granting housing loans to civil servants, financing public enterprises and public organisations), as well as for investments in Treasury bills and securities of various public entities.

The Deposits and Loans Fund is directly controlled by the State. Its main function is to hold and administer every kind of deposit in custody. The Fund is a depository and specialises in granting loans to individuals or legal entities and housing loans to civil servants and pensioners.

#### *Co-operative banks*

Co-operative banks have only recently entered the banking system and, therefore, their market share is marginal.

Co-operative banks, previously known as credit co-operatives, engage in the same operations as commercial banks and are

subject to legislation governing credit institutions. They carry out transactions exclusively with their members, other credit institutions and the Greek State. They may hold current accounts with the Bank of Greece and participate in the interbank and foreign exchange market. Co-operative banks are not allowed to offer underwriting services. They may engage in the rediscounting of bills of exchange and promissory notes up to a certain limit, as well as in borrowing from the Bank of Greece against collateral in the form of government paper, under Decision 2185/93 of the Governor of the Bank of Greece.

Deposits with co-operative banks are subject to reserve requirements under Decision 1959/91 of the Governor of the Bank of Greece. Rules governing the supervision and audit of credit institutions also apply to co-operative banks. For a credit co-operative to be authorised by the Bank of Greece to operate as co-operative bank (credit institution), it must fulfil the terms and conditions of Law 2076/92 as well as a number of special requirements.

### **1.3 The role of the central bank**

The Bank of Greece was established in 1928 under Law 3424/7 of December 1927 as a "société anonyme" and has twenty-seven branches and sixty-seven agencies all over the country. It has the exclusive right of banknote issuance in Greece.

Although the general involvement of the Bank of Greece in payment systems is significant, it is not covered by specific regulations.

In addition to its monetary and supervisory functions and in relation to payment systems, the Bank of Greece keeps the settlement accounts of credit institutions, offers retail services to individuals and firms for payments to the government and public organisations, and offers credit facilities to the other banks.

The Bank of Greece also chairs the Athens Clearing Office.

The Bank of Greece plays a leading role in the move towards the third stage of Economic and Monetary Union, being responsible for the introduction of institutional reforms, the establishment of new procedures and the conduct of the preparatory work in the field of organisational and technical infrastructure.

### **1.3.1 General responsibilities**

#### *Statutory responsibility*

The responsibility of the central bank regarding payment systems is not explicitly stated in the Statutes of the Bank of Greece. Nevertheless, in the context of the institutional changes required for the gradual completion of EMU, the Statutes are being revised, so that the promotion of the smooth operation of payment systems will be stated explicitly as one of its tasks.

Until the ratification of the revised Statutes and by way of derogation from the provisions of the current Statutes of the Bank of Greece, which prohibit its participation in any kind of undertaking and the acquisition of any company shares, it was stipulated that the Bank can establish or participate in specialised legal entities which undertake to support or pursue specific aims within the Bank's field of competence. This arrangement is primarily aimed at broadening the scope of the Bank of Greece for the development of payment systems. Specifically, the above-mentioned arrangement allows the Bank to participate in the DIAS retail payments net settlement system (see Section 3.4).

#### *Establishment of common rules*

In the context of the implementation of monetary policy, the Bank of Greece has always laid down the rules of the banking system.

In recent years, several steps have been taken towards deregulating the credit system, leading to the abolition or reform of certain rules and to the liberalisation of capital flows. Despite these developments, satisfactory competitive conditions in the banking system are being established at a slow pace, given the persistence of inherent weaknesses which hinder its efficient operation and modernisation.

Nevertheless, the operating framework and the terms on which banking services are rendered have changed radically. Banks are now free to choose their areas of activity and offer new financial services and products, as the Bank of Greece has been moving towards the adoption of the EU Directives, which ensure the smooth operation of the banking system and enhance its reliability.

#### *Supervision and audit*

The Bank of Greece has regulatory and supervisory powers over the entire range of credit institutions with the exception of certain specialised ones, i.e. the Postal Savings Bank, which is supervised by the Ministry of Transport, and the Deposits and Loans Fund, which is under the joint control of the Ministry of Finance and the Hellenic Industrial Development Fund.

The central bank evaluates the solvency, liquidity and profitability of financial institutions through on-site inspections and off-site surveillance.

Since 1992 the provisions of EU Council Directive 89/646 have been incorporated into Greek law by Law 2076/1992. Under this law, the Bank of Greece is empowered to supervise credit institutions having their head offices in Greece, including their branches abroad, as well as domestic branches of credit institutions of non-EU Member States. Under other provisions, the Bank of Greece is empowered to supervise financial institutions that are subsidiaries of credit

institutions. The Bank of Greece is also entrusted with the special supervision of financial institutions engaging in leasing, factoring-forfeiting and venture capital activities. Law 2076/1992 does not apply to the Bank of Greece itself or to the above-mentioned specialised credit institutions. In addition, this law does not apply to institutions which are established and operate in other EU Member States and which are explicitly exempt from the EU Directives on the harmonisation of the taking-up and pursuit of the business of credit institutions.

### **1.3.2 Provision of processing and settlement facilities**

#### *Provision of settlement accounts*

Current accounts at the Bank of Greece are used by banks for liquidity purposes. According to the rules and regulations laid down by the Bank of Greece, banks are not allowed to use their central bank accounts to offer payment services directly. However, commercial banks can use these accounts to cover their liquidity needs and to settle interbank transactions. At present, debit balances are allowed, provided they are covered by collateral within two days. This time limit will be abolished in the context of the operation of HERMES (see Section 3.2). The central bank charges penalty interest rates in the case of overnight debit balances.

Banks are obliged to hold reserve requirement accounts at the Bank of Greece, whose level is set in proportion to the level of deposits with each bank (currently 11%). The calculation of reserves is based on the average monthly deposits of the preceding month. The resulting reserve amount is deposited with the Bank of Greece with a value date of the last working day of the following month. Subsequently, this amount must be held for a period of one month, i.e. until the determination of the new level of reserves at the end of the next month. The Bank of Greece is provided with the relevant data by

banks in the form of special reports. The Bank of Greece pays interest on half of the total amount of reserves.

In addition, commercial banks are required to deposit with the Bank of Greece their unused balances of the funds earmarked for the financing, on privileged terms, of small and medium-sized enterprises. The funds on these accounts are of negligible importance, since this obligation is no longer operative.

#### *Provision of credit facilities*

The Bank of Greece offers the following standing facilities to credit institutions:

- a rediscount facility for commercial bills (underlying commercial transactions with a remaining maturity of up to three months). This facility was reactivated in 1993 and is subject to an overall quota set by the General Council of the Bank and allocated among credit institutions on the basis of their short-term lending to the non-financial sector;
- a lombard-type facility for loans against collateral in the form of government securities. These securities must have a remaining maturity of over two months and the loans must not exceed 80% of the securities' face value. This facility was established in 1993 and is subject to an overall quota set by the General Council of the Bank and allocated among individual credit institutions on the basis of their own funds;
- overdrafts on current accounts granted at the discretion of the Bank of Greece, collateralised by government securities.

In recent years, the Bank of Greece has controlled liquidity through:

- interventions in the interbank market at overnight and one-month maturities;

- repos/reverse repos with credit institutions on government securities;
- foreign exchange swaps with credit institutions;
- a reserve requirement which is imposed uniformly on most drachma liabilities and on most credit institutions (with the main exception of mortgage banks).

In the second half of 1995, the reserve ratio stood at 11%; half of the reserves are remunerated at 12.5% p.a.; vault cash can count towards fulfilment of the non-interest-bearing part of the reserve requirement. Variations in reserve requirements are infrequent but might serve the purpose of money market management.

#### *Pricing policies*

The pricing policy of the Bank of Greece is being revised. Currently, there is no cost accounting method, while overheads and support costs are calculated on the basis of a predefined formula.

The central bank has always been very supportive of the public sector. Services provided to the public sector are free of charge, with the exception of specific transactions subject to a commission which is paid upon agreement. Operations with commercial banks and the private sector are subject to periodically revised commissions. In addition to the commission, a charge is made on these transactions to cover the operational costs incurred.

The banking sector in Greece is not characterised by a uniform pricing policy, but instead each bank adopts its own policy, depending on the special relationships established with customers and the existing competition among banks.

### **1.3.3 Monetary policy and payment systems**

The development of payment systems is very important for the effectiveness of monetary policy and the proper operation of the credit system. The new net settlement system for securities in book-entry form (see Section 4.3), which has been in operation since 1995, and HERMES, the new real-time gross settlement system (see Section 3.2), through which all transactions associated with the conduct of monetary policy will pass, will facilitate not only transactions but also the conduct of monetary policy.

Besides the development of new settlement systems, the Bank of Greece is working to modernise the methods of intervention in the conduct of monetary policy. Interventions in the interbank money market, the financing of credit institutions against collateral in the form of government securities and through rediscounting of promissory notes and bills of exchange, as well as open market operations, which are already in use, will be significantly enhanced over the next few years. Foreign exchange and money markets in Greece are also experiencing a period of rapid transformation.

Important steps have been taken concerning institutional and monetary policy issues. The restrictions on capital flows have been lifted and the deregulation of the credit system has virtually been completed through the deregulation of consumer credit, the abolition of compulsory investment in Treasury bills and the prohibition of preferential access of the public sector to the banking system. In addition, the Bank of Greece, in harmonising the banking legislation with the European Union laws, has set the rules for the monitoring of large exposures of credit institutions. Moreover, banks have expanded their activities into the secondary securities market and can finance nearly all sectors of economic activity

at freely negotiated interest rates and on terms determined by themselves, while specialised credit institutions are penetrating areas of commercial banking.

#### **1.3.4 Main projects and policies being implemented**

It is worth mentioning that the percentage of payments made in cash is significantly higher in Greece than in the other EU countries. In recent years, improvements in the use of cashless means of payment have been remarkable. Many banks, especially Greek ones, are issuing credit cards and installing ATMs. Nevertheless, the lack of an automated clearing and settlement system for interbank payments has obstructed the rapid development of the payment system.

The main task that the Bank of Greece has undertaken in the area of payment systems is the development of a real-time gross settlement system. As the existing clearing system is a traditional paper-based one, major changes are required to both the organisational and technical structure of the central bank and the banking system as a whole. Moreover, institutional aspects regarding the operation of the banking system and monetary policy issues are being dealt with, with a view to harmonising the banking system within the framework of the European Union.

### **1.4 The role of other private and public sector bodies**

*The Hellenic Bank Association (HBA)*

The HBA was established in 1928 and now has twenty-eight full members and four associate members.

Besides the Association's founding members, any credit institution may become a regular member if it has its head office in Greece, otherwise it may become an associate member.

The HBA is the organisation representing the interests of the Greek banking industry. According to its Statutes, the HBA, in co-operation with its member banks, aims to:

- promote the banking sector in Greece;
- intervene in activities of common interest to its member banks;
- contribute to the growth of national savings;
- consolidate public confidence in banking;
- promote banking co-operation and the conduct of banking activities.

The role of the HBA is of an advisory nature on legal, technical and administrative matters.

## **2. Payment media used by non-banks**

### **2.1 Cash payments**

The Bank of Greece has the exclusive right of note issuance in Greece. It prints banknotes and also mints coins on behalf of the Greek State. Moreover, it is responsible for removing from circulation and replacing worn notes and for checking counterfeit notes. Notes

are issued in denominations of GRD 10,000, 5,000, 1,000, 500, 100 and 50 and coins in denominations of GRD 100, 50, 20, 10, 5, 2 and 1. The use of cash still predominates, although it is constantly decreasing owing to the rapid development of cashless instruments.

## 2.2 Non-cash payments

### 2.2.1 Credit transfers

As many banks have developed computerised networks, a large proportion of credit transfers between branches of the same bank are dematerialised. Credit transfers between accounts held by the same person can be effected at ATMs. Moreover, an interbank credit transfer system is under development by DIAS SA (see Section 3.4).

### 2.2.2 Cheques

Cheques are the most commonly used cashless payment instrument. The banking industry, for security purposes, has agreed on a uniform cheque, though this is optional and has been adopted by some banks only. Regulations governing cheques are very strict and the issuing of uncovered cheques is considered a criminal offence, punishable by imprisonment of up to three years. Moreover, issuers of uncovered cheques are blacklisted and deprived of cheque books for a period of one to three years.

Bank drafts either in drachmae or in foreign currency are cleared through the Athens Clearing Office. Personal cheques are cleared either through the Athens Clearing Office or through DIAS SA.

A specific category of cheques is the pension payment cheque issued by the social security funds, the payment of which is guaranteed by the government.

### 2.2.3 Direct debits

The use of direct debits is increasing, since banks provide services for the payment of public utility bills.

### 2.2.4 Payment cards

#### *Debit cards*

Debit cards have only recently been launched on the market by the large banks, and their use is increasing as EFTPOS networks are expanding all over the country. Debit cards can also be used as cash cards.

#### *Credit cards, travel and entertainment cards*

Credit cards are issued by credit institutions for their customers, usually through subsidiary companies. There is one non-bank company issuing a credit card in co-operation with the banks. The use of credit cards is widespread and constantly increasing.

On the other hand, the use of travel and entertainment cards is very limited.

#### *Retailer cards*

Retailer cards are issued by retailers or suppliers of services for use exclusively with them. This payment instrument is also developing but statistical data are not available.

#### *Prepaid cards*

The only kind of prepaid card existing in Greece is the telephone card.

Multi-purpose prepaid cards do not yet exist in Greece. Nevertheless, the institutional framework for prepaid card schemes, namely multi-purpose prepaid cards, has been established very recently and the circulation of such cards is expected in the near future.

*ATMs and POS networks*

ATM networks have spread throughout the country and some are interlinked. Smaller banks issuing cards provide the relevant services to their customers through the networks of larger banks.

There are three POS networks, operated by four banks and one non-bank card-issuing company. POS terminals are installed in retail outlets and transactions through them are effected directly via telecommunication links by debiting the card holder's account.

**2.2.5 Postal instruments**

Postal money orders are issued through post offices. They are printed payment orders by means of which any individual can remit money to any payee; it is not necessary for either of them to hold a bank account. The slip of the order retained by the payer

represents official receipt of the transaction, as it states the kind of transaction and is officially stamped.

**2.2.6 Other payment instruments**

Bills of exchange are payment orders for a specific amount to be paid at a future date. They are mainly used to facilitate commercial transactions. The law on unpaid bills of exchange is strict and provides for heavy penalties.

**2.3 Recent developments**

In recent years the whole range of cashless payments has been increasing. In particular, the market share of cards and the use of ATMs and POS terminals are developing rapidly, while new instruments such as prepaid cards are also entering the market.

**3. Interbank exchange and settlement systems****3.1 General overview**

In recent years many changes have taken place in payment systems and, more precisely, the processing of cashless payments, and others are due to be implemented in the near future. As described below, a new securities clearing system has been established and started operating in mid-1995, while the clearing system for retail payments, DIAS, is expanding its activities. Moreover, the RTGS system for large-value payments, HERMES, is under development and is due to become fully operational by July 1997.

The traditional Athens Clearing Office (ACO) continues to operate, handling retail payments by means of cheques and interbank money market loans.

Correspondent banking in both the domestic and the international context is still very important in Greece. Foreign currency cheques are cleared through the ACO and settled through correspondent banking relationships. Foreign currency cheques drawn on accounts outside the country are processed through correspondent banks via S.W.I.F.T.

Furthermore, DIAS has developed an electronic cheque clearing process based on the principle of cheque truncation.

### 3.2 Real-time gross settlement (RTGS) system: HERMES

At present, no real-time gross settlement system is in operation; payments are settled through net settlement procedures. An RTGS system, HERMES (Hellenic Real-time Money transfer Express System), which will operate in parallel with other net settlement systems, is currently being developed by the Bank of Greece. The Bank of Greece will be responsible for the functioning of the system as a whole.

HERMES is being designed to serve the interests of the Bank of Greece and the commercial banks, as well as to provide the banking industry with a set of procedures which will effectively reduce settlement risk.

#### 3.2.1 Functioning rules

The operation of the system will be based on the dematerialisation of payment orders which will be transferred electronically. Payment orders will be settled finally and irrevocably in the books of the Bank of Greece, provided that sufficient funds are available on the participants' settlement accounts.

Only payment orders with same-day value will be settled through HERMES; back-value payment orders will not be accepted for settlement. Payment orders that are to be effected with a value date D+1 and D+2 will enter the system, but will be processed for settlement on the specific value date.

Each payment order will first be settled and then forwarded to the receiving bank. Partial settlement of a payment order will not be allowed.

Intraday current account overdrafts will be allowed, provided that they are fully collateralised and the securities pledged as collateral with the Bank of Greece at the beginning of the business day in the context of the existing legal framework.

#### 3.2.2 Participation in the system

All credit institutions and specialised credit institutions which hold a settlement account with the Bank of Greece will have direct access to HERMES. Organisations that do not participate in the system can transfer funds through a direct member with which they hold an account.

To become a direct member of the system, the potential participant must apply for membership to the Bank of Greece. The Bank of Greece approves membership after evaluating the applicant's financial strength based on financial data, such as solvency ratio and capital adequacy, as well as on other criteria used in banking supervisory practice. If the Bank of Greece approves the application, the participant must:

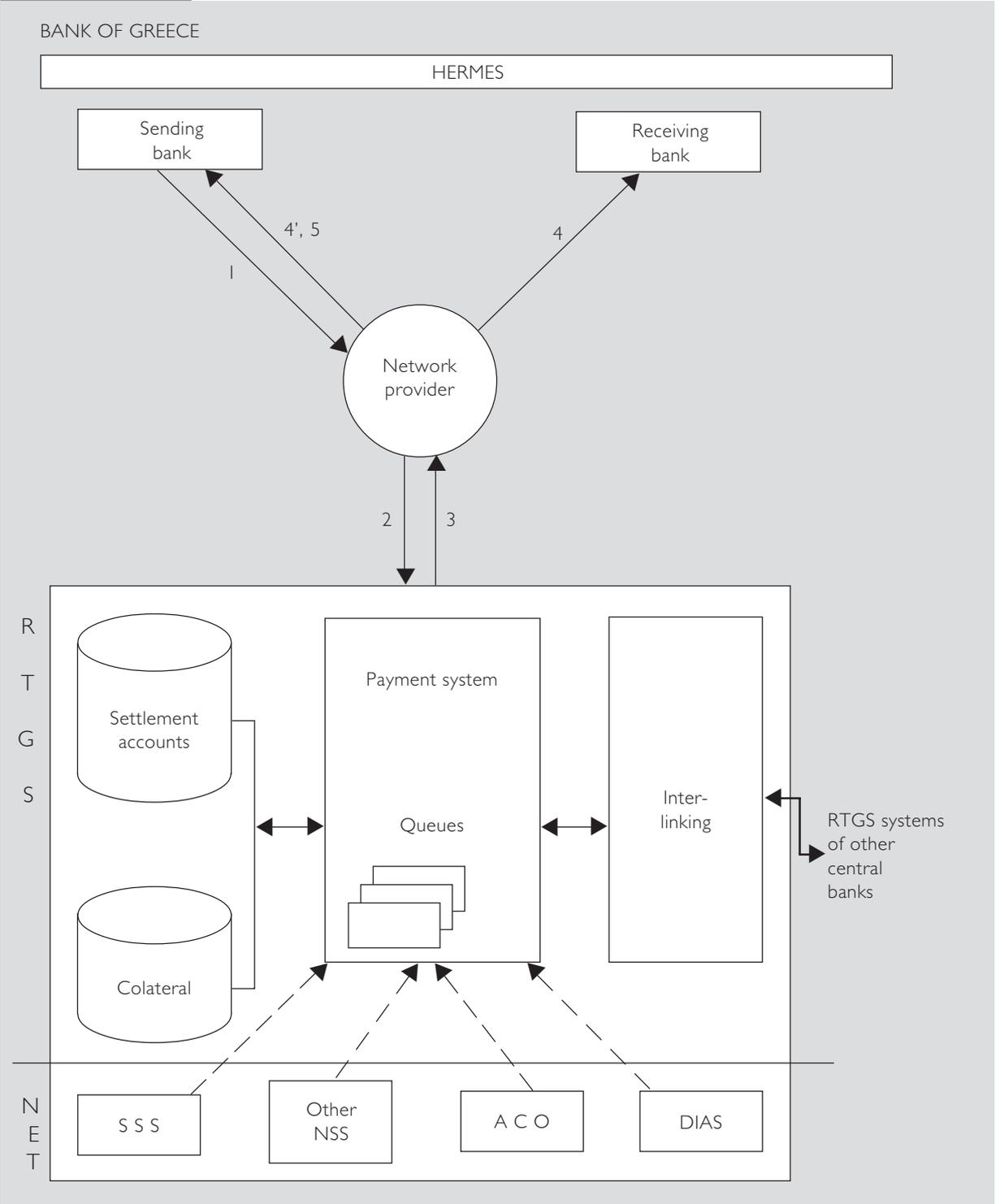
- accept the operating rules and procedures of the system;
- sign a membership contract;
- pay the requisite entry fee.

#### 3.2.3 Types of transactions handled

HERMES will handle several types of funds transfers, above a certain ceiling. The following types of transactions will be compulsorily exchanged through HERMES, irrespective of their value:

- interbank money market transactions;
- payments related to various netting systems connected to HERMES, e.g. the Athens Clearing Office, the DIAS interbank clearing system, as well as the book-entry securities clearing system;
- transactions in which one counterparty is the Bank of Greece, i.e. transactions relating to monetary policy operations; repos and reverse repos between the Bank of Greece and a member bank; cash

**Chart I**



- |    |                                 |           |                              |
|----|---------------------------------|-----------|------------------------------|
| 1  | Payment order message           | —————     | Real time (message handling) |
| 2  | Subset of payment order message | - - - - - | File transfer                |
| 3  | Settlement confirmation         | —————     | Not decided yet              |
| 4  | Original payment message        |           |                              |
| 4' | Debit confirmation              |           |                              |
| 5  | Rejection confirmation          |           |                              |

deposits where a member bank deposits coins and banknotes with the Bank of Greece; cash withdrawals, where a member bank withdraws banknotes and coins from the Bank of Greece.

In addition, it is up to credit institutions to process customers' payments, above a certain ceiling, through HERMES.

### **3.2.4 Operation of the transfer system**

HERMES is being designed as a fully automated real-time gross settlement system, in which messages will be transmitted electronically. The message flow will reflect the "Y" shape, from the technical point of view, as only part of the message, restricted to the essential elements, will be forwarded to the current account sub-system. The issuing bank will transmit a payment message to the system, the system will validate the message, match the information and proceed with the payment settlement in accordance with the settlement procedures.

There will be continuous interaction between the system, the current account and the central collateral sub-systems throughout the business day. Payment orders will be classed according to the priority determined by the issuer. Payment orders will be classed either as orders of high priority (priority 1) or as ordinary orders (priority 0). Transactions with the Bank of Greece and the balances of net settlement systems will be classed as high priority.

When a payment order cannot be effected because of a lack of sufficient funds in the settlement account, it will be routed to pending queues, in which optimisation routines will be performed at certain time intervals during the business day and/or when a need for optimisation arises, that is to say in the event of gridlock due to insufficient funds to settle the first payment order in the queue.

Payment orders stored in pending queues will be treated according to the FIFO (first-in, first-out) principle.

The system will automatically provide member banks with information concerning the balance on their settlement account in real time. Further to this, information will be provided, on request, concerning the status of each payment order, payment orders in queues and the transactions settled.

### **3.2.5 Transaction processing environment**

At present, no final choice of the message carrier has been made. However, the message carrier will have to satisfy the requirements of the so-called "Y"-shaped flow of information, according to which:

- the original full payment message will be transmitted to a message centre;
- part of the message, containing the information necessary for settlement, will be transferred to the current account sub-system;
- the full payment message will be released to the receiving bank once the debit entry in the settlement account has been effected, and a settlement confirmation message will be sent to the issuing bank.

### **3.2.6 Settlement procedures**

A settlement account will be opened for each member bank. This account will be used to settle HERMES payment orders, will operate as a sub-account of the member's current account and will be managed centrally at the head office of the Bank of Greece.

The Bank of Greece will continuously monitor the position of current accounts before each debit entry is effected, in order to support the smooth flow of payments. During the settlement procedure of payment orders, a

number of different message types will be released, which may also provide participants with information about a payment order's status in the settlement process.

The business day takes place in two stages: the first lasting from the opening of the business day to cut-off 1 (the first accounting closure), and the second being the period between cut-off 1 and cut-off 2 (the end of the system's business day), which coincides with the end of interbank money market operations.

All payment orders up to cut-off 1 will be executed, according to their given priority, only when sufficient funds are available to effect settlement. The clearing of debit positions will occur during the period between cut-off 1 and cut-off 2.

During this period, the system will only accept payment orders to cover debit positions in order to settle pending orders in the queues. Payment orders in queues at cut-off 2 will be cancelled by the system.

Three optimisation routines will take place during the business day; the first shortly after the opening of the system, to facilitate the settlement of payment orders related to previous days' transactions with value date the current day, the second before the entry of net settlement systems' balances and the third before cut-off 1.

In exceptional cases, where collateralised intraday balances turn into collateralised overnight overdrafts, no payments will be settled the next business day, for the particular participant, unless funds are transferred to cover the debit positions arising from the previous business day's transactions.

### **3.2.7 Credit and liquidity risk**

The Bank of Greece will provide limited liquidity against specified collateral. Securities accepted as collateral will be government

bonds and Treasury bills. Later, other types of securities may be eligible. Securities deposited with the Bank of Greece will be subject as a matter of law to a legal pledge in favour of the Bank of Greece.

Moreover, the Bank of Greece is to examine the possibility of offering intraday liquidity to credit institutions through the use of part of their reserve requirements.

### **3.2.8 Pricing**

The pricing policy will aim at full recovery of the system's cost. The pricing policy to be adopted will induce a smooth flow of payment orders during the business day by charging a higher fee for payment orders entering the system during peak hours.

The information which will be provided on request will be charged per message.

In order to discourage intraday overdrafts from turning into overnight ones, a penalty rate will be applied, according to the current policy.

## **3.3 Net settlement system: Athens Clearing Office**

### **3.3.1 Functioning rules**

The Athens Clearing Office (ACO) was established in December 1928 and came into operation in January 1929. It is a multilateral net settlement paper-based clearing system, which settles in the books of the Bank of Greece. It operates on the premises of the Bank of Greece and is staffed by Bank of Greece personnel.

There are sixty-eight clearing houses throughout the country, each located at either a branch or an agency of the Bank of Greece, operating under the supervision of the main Athens Clearing Office.

The legal basis of the ACO is Article 55 of the Statutes of the Bank of Greece. Its organisation and function are governed by its Statutes and it is supervised by its six-member Administrative Board, consisting of one representative of the Bank of Greece, who chairs the board, four representatives of the state-controlled banks and one representative of the private banks.

### 3.3.2 Participation in the system

The regulations of the ACO do not stipulate any admission criteria. All banks with head offices, subsidiaries or branches in Greece, as well as special credit institutions, are entitled to become ACO members. The procedure for obtaining membership involves an application submitted by the interested party to the ACO and approved by four out of the six members of its Administration Board, the formal acceptance of the ACO's Statutes and the payment of an entrance fee.

At present membership consists of forty-seven banks and two specialised credit institutions.

### 3.3.3 Types of transactions handled

The ACO processes retail and large-value payments.

The types of transactions handled are the following:

- clearing of cheques in drachmae;
- clearing of cheques in foreign currency;
- clearing of interbank money market loans. In future, once HERMES is operational, these kinds of transactions will cease to be processed through the ACO.

### 3.3.4 Operation of the transfer system

As already mentioned, the ACO is a paper-based clearing system.

The transfer and clearing procedure for cheques is described below. Every day, banks sort the cheques presented to them into batches, each containing cheques drawn on the same bank. Cheques drawn on banks outside the area in which they are presented are sent to a branch of the collecting bank in the area where they are drawn; if it does not have a branch in that area they are batched by the paying bank and sent to the Athens' branch of the ACO via the local branch of one of the banks with a large network which has a branch in that area. Since 1992, cheques presented at branches outside Athens but drawn on an Athens bank branch have been accepted and the ACO is planning to extend this facility to cover the whole country, so that cheques can be drawn on any bank branch, irrespective of the area in which they were presented.

Batches are sent to the ACO, together with a statement listing each cheque and its value. If there is an error in the batch, it is the bank's responsibility. The overall batch information, payer bank, payee bank, number of cheques and total value of the batch, is keyed into a terminal to produce a balance for all the banks and a net position for each bank.

With reference to the interbank money market loans, the related transactions take place from bank dealing rooms by telephone. These deals are all passed to the ACO as a signed order, with a series of instructions from each bank to debit its account at the Bank of Greece in favour of the other banks. Instructions to transfer the money between the banks are then sent to the Bank of Greece. In effect, the clearing house acts as the agent of the Bank of Greece. The borrowing bank initiates the loan repayment. The process of repayment is exactly the same as for the initial payment.

### **3.3.5 Transaction processing environment**

Both the head office of the ACO in Athens and its branches use computers that are linked to the mainframe of the Bank of Greece.

The outcome of the clearing operations in respect of cheques in drachmae and interbank loans is transmitted by the ACO to the Bank of Greece via the above electronic links in order to debit or credit the banks' current accounts with the corresponding amount. The ACO's automation is therefore limited to its internal transactions and transactions with the Bank of Greece only; it is unable to accept electronic orders from its member banks.

### **3.3.6 Settlement procedures**

After 3.30 p.m. the day's figures are passed by the ACO to the Bank of Greece via the shared computer system and current accounts are updated. Cheques drawn on banks in the same area as the branch at which they are presented, provide same-day value for the payer bank, while cheques drawn on banks outside the area in which they were presented are given a value date of four days later. Rejected cheques, after being returned and presented again, have a value date of two additional days later. Interbank money market loans have a same-day value date.

Cheques in foreign currency are cleared through the ACO, but are not settled through the Bank of Greece. The settlement of cheques in foreign currency is effected through correspondent banking relationships.

Any error which may occur during the settlement of cheques in drachmae is dealt with between the banks concerned with the assistance of the ACO; in the case of interbank loans, approval of the relevant department of the Bank of Greece is needed.

### **3.3.7 Credit and liquidity risk**

There are no unwind clauses in the ACO's rules. The Bank of Greece reports a lack of cover on the banks' accounts to the ACO. According to its regulations, the ACO may then ask the bank concerned to provide cover. In the event of the bank not complying with this demand, the ACO may cancel the entries in the account which took place on the day of the demand to provide cover, which may lead to the exclusion of the particular bank from the ACO, according to its regulations. In practice, the ACO's request for provision of cover depends on the financial soundness of the respective bank, as well as on the collateral deposited with the Bank of Greece.

### **3.3.8 Pricing**

The operating expenses of the system are covered by its members at the beginning of the year. The Council of the ACO sets the percentage of the expenses to be charged to each member, according to the average number of transactions presented during the previous year. The minimum charge is 1% of the total costs.

Each bank or credit institution which becomes an ACO member has to pay an entrance fee determined by the Administrative Board.

The Bank of Greece is treated differently with regard to operating expenses; its share is reduced to reflect its costs in providing premises, computer facilities and staff.

### **3.3.9 Main projects and policies being implemented**

The ACO is conducting several studies in order to improve its services and expand its field of activities in the clearing of payment

orders in drachmae and foreign currency. It aims at a direct computerised linkage with member banks, establishing efficient information channels.

### 3.4 Retail payments net settlement system DIAS

DIAS SA stands for Interbank Systems and was established in 1989 by fifteen banks following a decision of the Board of Directors of the Hellenic Bank Association. Currently, the company has thirty-eight member banks, which is approximately the total of the banks which operate in Greece, including the Bank of Greece.

DIAS has developed and operates the Interbanking Electronic Cheque Clearing System (IECCS).

This system has been operational since October 1993 and operates on the basis of the "cheque truncation" principle, according to which the actual cheque remains at the branch where it was presented. The IECCS supports and facilitates same-day settlement of the total amounts that result from the electronic cheque clearing process via current accounts held with the Bank of Greece.

#### 3.4.1 Functioning rules

The established functioning rules of the IECCS provide that:

- eligible cheques must comply with the Hellenic Bank Association's standardisation;
- refusal of payment of a cheque by a paying bank for certain pre-specified reasons provides the bank at which the cheque was presented with the authorisation to certify non-payment of the cheque. Certification of non-payment can only be issued if a cheque is presented within eight days of the date of issue;
- accordingly, and taking into account the IECCS's transaction cycle, eligible cheques are those presented to the buying bank up to the sixth day from the date of issue, as well as those presented after the ninth day from the date of issue. A regulatory provision is expected shortly in order to allow cheques presented on the seventh and eighth days from the date of issue to be cleared through the IECCS without compromising the right for certification of non-payment;
- the bank at which a cheque is presented is responsible for the expeditious completion of each transaction, as well as for any loss that may be sustained by any participating bank, except in explicitly specified cases, where the paying bank undertakes responsibility. In cases of forged cleared cheques, an established Interbanking Committee will determine responsibility.

#### 3.4.2 Participation in the system

Twenty-three banks are currently using the system, with a further ten small and medium-sized banks expected to become users by the end of 1995. Participation is open only to DIAS's shareholders.

#### 3.4.3 Types of transactions handled

Currently, the system clears truncated personal cheques, while the introduction of banker's drafts and pension cheques is also planned.

DIAS has also designed and developed a number of services, including ATM-switching, the Interbanking small-value credit transfer system and the Interbanking payroll system, which are expected to become operational shortly. Furthermore, DIAS operates as the national clearing centre for eurocheques.

The upper limit of the value of an eligible cheque in the context of the system has currently been set to approximately ECU 70,000.

#### **3.4.4 Operation of the system**

The general procedures followed in the context of the IECCS's operation are as follows:

- upon purchase of one or more cheques, specific data are manually entered into the local system of the branch via a specific application which also performs various validity checks. The created records are transferred online to the host computer of the bank at which the cheque was presented, where a cumulative Daily Transaction File is prepared. The Daily Transaction File is delivered that day (D) to DIAS's computer centre no later than 7 p.m. either on magnetic tape or by file transfer. After the appropriate checks have been made by IECCS, a new file is created for each bank, including the details of all cheques to be paid by that bank. Delivery of the file to the paying bank is done the same day (D), no later than 9.30 p.m.;
- the final processing of the received file by the paying bank's computer system is carried out in the evening of day D+1, when the application automatically fills in an appropriate field with a suitable acceptance code indicating whether a particular cheque has been paid or not and the reason for its rejection, in the latter case. When a cheque is paid, the customer's account is debited with a D value date;
- by midnight of day D+1 (strictly speaking, no later than 12.30 a.m. of day D+2), the acknowledgement file of each paying bank

is delivered to the DIAS computer centre. After the execution of validity checks a new file is created for each bank at which cheques were presented, which is delivered no later than 2.30 a.m. of day D+2. Upon receipt of that file, the bank at which the cheque was presented updates the individual branches so that any further actions may be taken in the case of rejected cheques.

#### **3.4.5 Transaction processing environment**

The IECCS runs on an IBM ES 9000 and co-operates with DB2 database software. It is a batch application which also includes an online facility which gives the banks access to clearing and settlement information dating back three months. The application is written in COBOL.

#### **3.4.6 Settlement procedures**

Every day DIAS produces tables with the position of banks against each other, as well as the net position of each bank against all the others. The net position is determined on the basis of the transactions carried out on that particular date, as well as any rejections of the transactions that took place two days before. The net positions of banks are sent to the Bank of Greece, which in turn debits or credits accordingly the current accounts of the respective banks with a same-day value.

#### **3.4.7 Pricing**

The IECCS can be used only by credit institutions which are shareholders in DIAS SA. Charging has been set to ECU 0.174 per transaction (cheque cleared) and is paid by the bank at which the cheque was presented.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

The legal framework governing government securities is based on Law 3745/1957, which refers to Treasury bills. In response to developments in the securities market and in order to establish a legal framework for bonds as well, this law was amended by Laws 1642/86 and 1914/90. These laws empower the Bank of Greece to manage paper-based government securities. The Bank of Greece was appointed by Law 2198/94 to establish and manage the System for Monitoring Transactions in Securities in Book-Entry Form (Securities Clearing System). The System started operating in mid-1995.

Commercial banks are also entitled to issue bonds under Law 3746/57, which was amended by Law 128/75; the latter defines the terms and conditions of their issue. Although this law is still in force, this activity has been declining in recent years.

Law 2324/95 governs the operation of the Stock Exchange Market (see Section 4.1.3), where among other transactions, retail trading of government securities takes place.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

##### ■ Statutory responsibilities

Under Articles 45 and 55 of its Statutes, the Bank is entrusted with the issue and management of all domestic government loans on such terms and conditions as may be agreed upon. The securities issued for this purpose can be either in paper or in book-entry form.

The Bank undertakes the issue and sale of the above securities by public subscription or auction, the redemption of bond coupons and the repayment of loans through the State accounts with the Bank, in accordance with its Statutes.

##### ■ Establishment of common rules

The Bank consults credit institutions before introducing new procedures and regulations. The operating regulations of the new Securities Clearing System are the outcome of the Bank's co-operation with commercial banks and the HBA and they are compulsory for all participants. Accordingly, the stripping project which was designed by the Bank and has been completed was agreed by a Committee established ad hoc at the HBA with the participation of thirteen banks.

##### ■ Oversight and audit

Under Law 2076/1992, the tasks of the Bank include the supervision of the credit system. The Bank is also responsible for the government securities market and the parties involved. The supervision of the Securities Clearing System as such is carried out in the context of the internal audit services of the Bank, in its capacity as manager of the newly established book-entry securities system.

##### *Provision of settlement facilities*

##### ■ Securities accounts

The Bank of Greece does not keep securities accounts with respect to paper-based securities, but credits and debits the accounts of the Greek State and banks held with the Bank, upon issue or redemption, respectively.

Securities handled by the Securities Clearing System are dematerialised and represented by entries (in block) in securities accounts kept separately for each participant by the System. The nominal value of a transaction in securities concluded by participants or by their customers is recorded by entries in participants' own securities accounts or in third parties' securities accounts. The cash leg of the transaction is recorded by entries in participants' cash accounts with the Bank of Greece.

#### ■ Securities lending

Securities lending has not yet been legally arranged. Therefore, this type of transaction is not in use, although the Securities Clearing System can offer its participants the transaction of borrowing and lending of securities. As soon as this matter is arranged, this type of transaction and, in addition, the Automatic Lending Facility (for those participants which sign the relative contract) (see Section 4.3.6) can be offered.

#### *Provision of operational facilities*

#### ■ the Athens Clearing Office (ACO)

The ACO is used when a transaction in securities is paid off by cheque, which has to be processed and settled through the ACO.

#### *Monetary policy operations and the Securities Clearing System*

#### ■ Type of securities

For monetary policy operations, only government securities are used.

#### ■ Legal arrangements

The Bank of Greece intervenes in financial markets through several monetary policy operations (see Section 1.3.2). Transactions referring to overnight and one-month

interventions in the interbank market and repos/reverse repos with credit institutions in government securities in book-entry form can be handled by the Securities Clearing System.

#### *Main projects and policies being implemented*

The Securities Clearing System started operating in mid-1995 and several of its features (i.e. borrowing/lending of securities, connection with the ICSDs) have not been activated as yet. It is envisaged that these features will soon be operational (probably in 1996) once legal and technical issues have been addressed.

Furthermore, the Bank of Greece, in order to further enhance the securities market, is elaborating the rules and regulations of the secondary market for securities, which will incorporate an electronic trading system.

#### **4.1.3 The role of other public sector bodies**

#### *The Athens Stock Exchange (ASE)*

The ASE is the only stock exchange existing in Greece. It is a société anonyme with the Greek State being its sole shareholder. The ASE is governed by Law 2324/95 and is supervised by the Capital Market Committee of the Ministry for Economic Affairs.

The ASE is equipped with an electronic trading system. The financial instruments traded in the ASE are:

- ordinary shares of companies, either listed on the main market or traded in the over-the-counter market;
- government bonds, denominated in drachmas or in foreign currency (USD, DEM, ECU);
- bonds issued by credit institutions;

- bonds issued by international organisations.

At present, only transactions in cash are allowed, but it is expected that transactions on derivatives will soon be introduced. A draft law has already been drawn up providing for the introduction of futures contracts and options on equity indices, individual equities and bonds.

Transactions are settled through the Central Securities Depository SA, which employs an electronic clearing system. Registered shares are compulsorily deposited with the Central Securities Depository SA, which issues depository documents that represent a large number of shares and are traded on the Stock Exchange. Depositing with the Central Securities Depository is optional for bearer shares.

Members of the Stock Exchange are obliged to deliver the shares that are sold and to deposit with the Central Clearing Office the amount due in cash within two trading days of the conclusion of the transaction. Securities and cash clearing is carried out by netting; securities are cleared directly by the Central Securities Depository SA via delivery-receipt, while cash clearing is effected by debiting or crediting a bank account, held by each of the members of the Stock Exchange, with the respective balance stemming from the netting of transactions settled through the Central Securities Depository SA.

#### **4.1.4 The role of other private sector bodies**

##### *Central Securities Depository*

The Central Securities Depository was established in 1991 as a société anonyme owned by the Athens Stock Exchange. Its shares are registered and can be sold only to banks listed on the ASE, mutual funds/unit trust investment companies and brokers who are members of the ASE.

## **4.2 Summary information on securities markets**

Customers mostly buy Treasury bills and government bonds on the primary market through their bank. The secondary market for government securities is being activated following the recent establishment of the Securities Clearing System (June 1995). As mentioned in Section 1.3.3, banks are expanding their activities in the securities secondary market and are able to finance nearly all sectors of economic activity at freely negotiated interest rates and on terms determined by themselves.

## **4.3 The Securities Clearing System**

### **4.3.1 Major regulations**

By Law 2198/1994, Section B,<sup>1</sup> the Bank of Greece was entrusted with the management of the System for Monitoring Transactions in Securities in Book-Entry Form (the Securities Clearing System or, in the interests of brevity, "the System"). In accordance with this Law, the System can be expanded with new features and accept new instruments following a Governor's Act. The System is a net settlement system, settling the transactions with same-day value at the end of the day. The System also ensures that the sale of and payment for securities are effected simultaneously. The transactions are settled on the basis of the principle of double notifications sent by contracting parties. Moreover, the System offers to participants an Automatic Lending Facility (the legal arrangement of securities lending is still pending). This facility operates as described in Section 4.3.6. International Clearing Systems may also participate in the System.

<sup>1</sup> Government Gazette 43/A of 22nd March 1994.

#### 4.3.2 Participation in the System

Institutions' eligibility for the System is subject to the approval of the Bank of Greece. The System opens and keeps securities accounts for each approved institution and is authorised to settle the transactions carried out by such institutions on their own behalf or on behalf of their customers/investors through respective cash management or deposit accounts in drachmas. Participants in turn keep securities accounts in the name of their customers/investors. Participants may not hold securities accounts as customers of other participants. Apart from the Bank of Greece and the Ministry of Finance, the following institutions are eligible for membership of the System:

- financial and credit institutions, stock market companies, brokers who are members of the Athens Stock Exchange and other resident agents;
- international clearing systems (e.g. Euroclear, Cedel), only for their non-resident customers.

Agencies wishing to participate in the System have to submit an application to the Bank of Greece, Public Sector Financial Operations Department, requesting the opening of a securities account and a cash management or a deposit account in drachmas (if not already existing).

Following the acceptance of the application and the issue of the required Bank of Greece Governor's Act, an accession agreement is signed by the legal representatives of the participant, which is thereby committed to observe the Operating Regulations of the System. Each participant is given a four-digit code number, representing his securities account with the System, and has to state this number in any notification he sends to the System.

#### 4.3.3 Types of transactions handled

##### *Transactions in the primary market*

##### ■ Initial sale of securities

The initial sale of securities in the primary market can be effected by any procedure, such as public subscription, auction etc. The final distribution between securities for own portfolio and securities for customers' portfolios and the respective settlement values aggregated by issue code (ISIN) of securities, are entered in the System. This entry is made prior to notifications of transactions in the relevant securities in the secondary market. In all cases, no annulment of or amendment to an entry is possible. On the basis of the data stated in the entries, the System makes the following entries simultaneously:

- it debits the participants' cash management accounts and credits the issuer's cash management account; and
  - it debit the issuer's securities accounts and credits the own portfolio and/or customers' portfolio securities accounts of the participants.
- Redemption of securities on maturity and payment of coupons

The System redeems securities and coupons on the date of their maturity or payment, respectively, and makes the relevant entries in the securities accounts and cash management or deposit accounts in drachmas, on the basis of the balances on the securities accounts on the day prior to the maturity of the securities or of payment of the coupons. The System transfers the amounts of the coupons to the cash management accounts or deposit accounts in drachmas of the participants owning the securities. If on that date the securities have

been entered in the account of another participant owing to a forward transaction, e.g. lending, repos etc., the System transfers the relevant amounts to the cash management account or drachma deposit account of the participant which was the owner of the securities immediately before such a forward transaction entered into force. Participants must promptly transfer the corresponding amounts to the beneficiaries. If the date of maturity of the securities or of payment of the coupons is an official holiday, the cash management accounts or drachma deposit accounts are credited on the next working day, unless otherwise stipulated in the terms and conditions of the issue of the securities.

Proceeds of redemption of securities pledged are transferred to a special non-interest-bearing blocked account with the Bank of Greece until the expiry of the collateral, unless it has been agreed to lift the collateral before expiry. This special account is held in the name of both contracting parties.

#### *Transactions in the secondary market*

Notifications concerning transactions by participants in the secondary market must be sent to the Clearing System as soon as the transaction is concluded. They must include the information common to all transactions indicated below and that relating to each transaction in particular.

The nominal amount of the transaction must be a multiple of GRD 100,000 (ECU 347).

All well-known transactions of the secondary market can be handled by the System, i.e.:

- purchase/sale;
- free transfer;
- internal transfer;

- repurchase agreements;
- securities swaps;
- borrowing and lending of securities;
- simple loan;
- loan against collateral.

#### **4.3.4 Operation of the transfer system**

The System opens and starts receiving notifications by participants at the beginning of each banking day. Cut-off time for receiving notifications with same-day value is the end of official banking hours.

In the course of the day, three interim clearings of transactions are effected on the basis of matched notifications which have been received and have same-day value or are generated automatically by the System. Participants are promptly notified of any debit balances in their securities accounts resulting from such interim clearings, as well as of any non-matching of their notifications.

The first interim clearing is carried out at the opening of the System.

The second interim clearing is carried out three hours after the opening.

The third and last interim clearing is carried out one hour before the end of official banking hours.

Following the cut-off time for receiving notifications of transactions, the final clearing (made on a netting basis) begins, the automatic lending facility (when this facility is legally arranged) is activated, the transactions are settled and entries are made in the relevant accounts. Thereafter, the System closes and sends participants statements of their accounts showing all flows recorded during the day.

#### 4.3.5 Transaction processing environment

The two notifications (one by each participant), as soon as they are received, are matched on the basis of the data common to all transactions (code number of sender; code number of counterparty; code number of transaction; trade date; status of sender (i.e. buyer, borrower etc.); value date of transaction; ISIN of the securities concerned; nominal value of the securities concerned). In addition, special data according to the type of transaction must be identical in both notifications (e.g. settlement value for sales/purchases of securities; date of maturity of transaction and settlement value for repos in securities etc.).

#### 4.3.6 Settlement procedures

##### *Final clearing*

The final clearing is carried out in the following stages:

- matched transactions in securities are examined on multilateral basis so that the position (debit or credit) of the securities accounts of each participant by code number of issue can be determined. This examination includes the balances of the securities accounts of the previous day and matched notifications with same day value;
- in the event of a debit position in the securities accounts, the automatic lending facility (when this facility is legally arranged) is activated;
- transactions which are still not covered even after the application of the automatic lending facility will be cancelled, so that the securities accounts do not show a debit position;
- the remaining transactions are then examined for their cash leg;
- if the cash management or deposit account in drachmas of a participant does not have an adequate balance (as this is defined by the relevant decisions of the Bank of Greece), the transactions are cancelled to the extent that they are not covered by cash;
- finalised transactions are settled simultaneously for the securities and cash legs and relative entries are made in the accounts.

##### *Automatic Lending Facility (ALF)*

The automatic lending/borrowing program enables holders of securities who have no immediate need of them to lend them to other participants. These loans are granted without the direct involvement of the lenders and borrowers. Therefore, there is no need for a notification to be sent.

The program operates on the pooling principle, whereby a number of lenders make securities available to participants who need them in order to conclude their transactions. This principle ensures complete confidentiality, the identity of the lenders not being revealed to the borrowers and vice versa.

The ALF operates in a way that guarantees a fair distribution of the loans over a year in relation to the amounts offered by each potential lender. The repayment procedure is also automated.

Participants may join the ALF by signing a special agreement. Such membership may be confined to the lending function.

##### ■ Borrowers

Under this agreement the program creates a pledge from securities entered in the borrower's account. Automatic pledging is free of charge. The program transfers these securities to a pledge sub-account on the same day as the borrowing requirement. The

market value of the pledge must at all times be equal to at least 110% of the securities borrowed. Only transactions involving the participants' own portfolio can be integrated into this program.

#### ■ Lenders

Participants in the Clearing System who wish to become lenders must join the ALF. They may lend some or all of their own portfolio securities, but with a minimum of GRD 1,000,000 (ECU 3,488) per security. The risk to lenders is small since borrowers must have a pledge sufficient to participate in the ALF. The program also offers participants' clients the possibility of acting as lenders in the ALF.

All the securities admitted to the Clearing System may be handled in the ALF. However, discretionary limits have been set as follows:

- the total requests for borrowing per security for a given day must not exceed 10% of the amount in circulation;
- the borrowing of a single borrower must not exceed 5% of the amount of a security in circulation.

#### 4.3.7 DVP arrangements

The Clearing System operates according to DVP Model 3<sup>2</sup> (see also Section 4.3.6).

#### 4.3.8 Credit and liquidity risk control measures

At present, overdraft facilities are unlimited but collateralised. This situation is in the process of changing.

In the event that the balance on the securities account or the cash management or drachma deposit account of a participant is insufficient, the participant is ipso facto and without reminder liable to pay a fine of GRD 100,000 (ECU 347) (plus legal charges) for the

operating expenses incurred by the System. No fine is imposed if such a deficit arises through no fault of the participant.

The fine is collected by the System at the day's closure. At the opening of the next working day, the participant's cash management or drachma deposit account is debited and the System's respective account is credited.

In the event of recurrence, the participant may be excluded from the System.

In the event of an insufficient balance as per the above paragraph, the participant is ipso facto and without reminder in default and is liable to pay to the counterparty a penalty on the amounts overdue at the rate applicable on banks' overdrafts on their current accounts with the Bank of Greece.

#### 4.3.9 Pricing

##### *Notification and statement fees*

For each notification to the System the sender is charged ECU 1.74 (plus special tax on banking transactions). Information sent to participants at their request is priced as per the case. Notifications of acquisition of securities in the primary market and statements of securities accounts sent to participants following the closure of the System are free of charge.

##### *Charge for automatic borrowing facility*

The borrower is charged interest at a rate of 2% per annum on the nominal value of the securities borrowed (three-quarters of which in favour of the lender and one-quarter in favour of the System).

<sup>2</sup> Notifications are settled for both securities and funds on a net basis, with final transfers of both securities and funds at the final clearing.

*Adjustment of fees and charges*

The Bank of Greece, as manager of the System, may adjust, at its discretion, fees, commissions, fines, interest rates and other charges. These adjustments will be announced to participants in writing three months before their entry into force.

**4.3.10 Main projects and policies being implemented**

The Bank of Greece, as manager of the Securities Clearing System, is carrying out studies on the improvement and development

of the System. In this respect the following studies are in progress:

- the handling of transactions in securities denominated in European currency units (ECU);
- the stripping and reverse-stripping of bond coupons;
- the conversion of physical securities to securities in book-entry form.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	10,160.5	10,259.9	10,321.9	10,379.4	10,409.6
Gross domestic product (GRD billions)	12,973.4	15,848.2	18,238.1	20,609.1	23,196.3
Exchange rate vis-à-vis ECU <sup>(2)</sup>	201.427	255.215	246.886	268.413	287.939

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**
*(end of year)*

	GRD billions				
	1990	1991	1992	1993	1994
Notes and coins	1,162.0	1,255.5	1,410.1	1,512.0	1,687.7
Transferable deposits <sup>(1)</sup>	718.8	849.7	947.0	1,175.5	1,611.7
<i>of which held by:</i>					
<i>households</i>	112.1	204.3	214.4	258.8	431.3
<i>corporate sector</i>	238.6	210.6	217.2	326.0	376.5
<i>other <sup>(2)</sup></i>	368.1	434.8	515.4	590.7	803.9
Narrow money supply (M1)	1,880.8	2,105.2	2,357.7	2,687.5	3,299.4

(1) Total sight deposits (in local currency).

(2) Including non-bank financial institutions, public entities and public enterprises.

**Table 3**
**Settlement media used by deposit-taking institutions**
*(end of year)*

	GRD billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	478.7	565.9	638.4	754.0	860.7
<i>of which can be used for settlement</i>	0	0	0	0	0
Free reserves held at central bank	0	0	0	0	0
Transferable deposits at other institutions	63.3	153.6	199.7	165.5	363.6

(1) Primary and secondary reserve requirements.

**Table 4****Banknotes and coins***(total value, end of year)*

	GRD millions				
	1990	1991	1992	1993	1994
Total banknotes issued	1,248,990	1,348,942	1,501,852	1,606,274	1,800,385
of which:					
GRD 5,000	1,047,918	1,182,139	1,342,632	1,455,445	1,654,553
GRD 1,000	165,410	129,188	118,750	112,439	108,743
GRD 500	16,801	18,023	19,299	22,167	24,845
GRD 100	16,947	17,731	18,454	13,814	10,262
GRD 50	1,914	1,861	2,717	2,409	1,982
Coins issued	19,698	21,972	27,806	35,324	39,415
Notes and coins held by credit institutions	106,647	115,367	119,567	129,555	152,102
Notes and coins in circulation outside credit institutions	1,162,041	1,255,547	1,410,091	1,512,043	1,687,698

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches <sup>(2)</sup>	Number of accounts (thousands)	Value of accounts (GRD billions)
Central bank <sup>(1)</sup>	1	95	2	27.3
Commercial banks	20	1,471	1,083	1,289.6
Savings banks	0	0	0	0
Co-operative and rural banks	4	4	0	0
Specialised credit institutions	8	109	18	187.3
Post office	1	117	0	0
<b>TOTAL <sup>(3)</sup></b>	<b>34</b>	<b>1,796</b>	<b>1,103</b>	<b>1,504.2</b>
Branches of foreign banks	20	83	35	107.5
of which EC-based	12	42	16	66.1

(1) There are twenty-seven full branches and sixty-seven agencies of the Bank of Greece (which offer payment services only).

(2) Including head offices.

(3) Foreign banks are not included.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	n.a.	7	12	12	12
Number of machines	326	472	704	850	1,617
Volume of transactions (thousands)	n.a.	n.a.	n.a.	n.a.	40,655
Value of transactions (GRD millions)	n.a.	n.a.	n.a.	n.a.	1,198,099
<b>EFTPOS terminals</b>					
Number of networks	n.a.	1	2	2	3
Number of points of sale	n.a.	1,500	2,500	2,500	11,296
Volume of transactions (thousands)	n.a.	n.a.	n.a.	n.a.	7,867
Value of transactions (GRD millions)	n.a.	n.a.	n.a.	n.a.	149,407

**Table 7****Number of payment cards in circulation <sup>(1)</sup>***(end of year)*

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	744	815	892	n.a.	667
Cards with a debit/credit function	744	815	892	1,114	1,077
<i>of which:</i>					
<i>cards with a debit function</i>	-	-	-	n.a.	502
<i>cards with a credit function</i>	-	-	-	n.a.	575
Cards with a cheque guarantee function	n.a.	n.a.	n.a.	n.a.	n.a.
Retailer cards	n.a.	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
Athens Clearing Office					
Cheques in GRD and exchange	12,215	12,039	12,829	15,408	14,558
Other (Money Market Loan)	28	38	52	53.5	52.8
DIAS SA <sup>(1)</sup>					
Cheques					1,900

(1) DIAS SA started operating in October 1993.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	GRD billions				
	1990	1991	1992	1993	1994
Athens Clearing Office					
Cheques in GRD and exchange	14,454.0	17,633.4	22,834.3	32,456.2	42,148.7
Other (Money Market Loan)	17,998.1	25,957.0	46,933.9	68,906.0	84,289.5
DIAS SA <sup>(1)</sup>					
Cheques					1,084.3

(1) DIAS SA started operating in October 1993.

**Table 10****Participants in securities settlement systems <sup>(1)</sup>**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central
Securities Settlement Procedure I	n.a.	n.a.	n.a.

(1) The Securities Settlement System for securities in book-entry form started operating in mid-1995.

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**Table 11****Transfer instructions handled by securities settlement systems: <sup>(1)</sup> volume of transactions**

	1990	1991	1992	1993	1994
Securities Settlement Procedure I	n.a.	n.a.	n.a.	n.a.	n.a.

(1) The Securities Settlement System for securities in book-entry form started operating in mid-1995.

**Table 12****Transfer instructions handled by securities settlement systems: <sup>(1)</sup> value of transactions**

	1990	1991	1992	1993	1994
Securities Settlement Procedure I	n.a.	n.a.	n.a.	n.a.	n.a.

(1) The Securities Settlement System for securities in book-entry form started operating in mid-1995.

**Table 13****Nominal values registered by securities settlement systems <sup>(1)</sup> (end of year)**

	1990	1991	1992	1993	1994
Securities Settlement Procedure I	n.a.	n.a.	n.a.	n.a.	n.a.

(1) The Securities Settlement System for securities in book-entry form started operating in mid-1995.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions <sup>(1)</sup>

	thousands				
	1990	1991	1992	1993	1994
Cheques issued	n.a.	n.a.	n.a.	n.a.	n.a.
Payments by debit and credit cards	n.a.	n.a.	n.a.	18,000	28,000
Paper-based credit transfers	n.a.	n.a.	n.a.	n.a.	822
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	743
<i>interbank/large-value</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	79
Paperless credit transfers	n.a.	n.a.	n.a.	n.a.	2,497
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	2,117
<i>interbank/large-value</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	380
Direct debits	n.a.	n.a.	n.a.	n.a.	n.a.
Others	n.a.	n.a.	n.a.	n.a.	n.a.
<b>TOTAL</b>	n.a.	n.a.	n.a.	n.a.	n.a.

(1) These data refer to thirty of the forty banks, including all major banks.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	GRD millions				
	1990	1991	1992	1993	1994
Cheques issued	n.a.	n.a.	n.a.	n.a.	n.a.
Payments by debit and credit cards	n.a.	n.a.	n.a.	320,000	n.a.
Paper-based credit transfers	n.a.	n.a.	n.a.	n.a.	137,559
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	105,917
<i>interbank/large-value</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	31,642
Paperless credit transfers	n.a.	n.a.	n.a.	n.a.	132,940
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	30,528
<i>interbank/large-value</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	102,412
Direct debits	n.a.	n.a.	n.a.	n.a.	n.a.
Others	n.a.	n.a.	n.a.	n.a.	n.a.
<b>TOTAL</b>	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	30	35	36	37	40
of which:					
members	14	18	18	19	22
sub-members	16	17	18	18	18
participants	-	-	-	-	-
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
members	1,812	1,963	2,074	2,103	2,412
sub-members	1,469	1,607	1,738	1,802	2,023
participants	63	78	91	99	188

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**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	1,255,730	1,456,604	1,679,609	2,090,383	2,558,821
of which:					
category I	420,167	505,296	577,953	698,886	833,724
category II	489,107	519,134	592,398	737,499	955,238
sent/received to/from domestic users	130,942	195,462	232,629	403,575	576,431
Total messages received	1,431,237	1,658,502	1,909,987	2,221,004	2,599,331
of which:					
category I	n.a.	n.a.	556,507	635,959	748,822
category II	n.a.	n.a.	229,347	316,394	469,224
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

**Definitions**

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>AEB</b>	Spanish Association of Private Sector Banks
<b>AIAF</b>	Association of Financial Asset Intermediaries
<b>CBE</b>	Banco de España Certificates
<b>CECA</b>	Spanish Confederation of Savings Banks
<b>CNMV</b>	National Securities and Exchange Commission
<b>FRA<sub>s</sub></b>	Forward Rate Agreements
<b>MEFFSA</b>	Financial Options and Futures Market
<b>OMF</b>	Funds Movement Orders - <i>Órdenes de Movimientos de Fondos</i>
<b>SACDE</b>	Government Debt Book-Entry System - <i>Sistema de Anotaciones en Cuenta de Deuda del Estado</i>
<b>SCLV</b>	Securities Clearing and Settlement Service - <i>Servicio de Compensación y Liquidación de Valores</i>
<b>SLBE</b>	Settlement Service of the Banco de España - <i>Servicio de Liquidación del Banco de España</i>
<b>SNCE</b>	National Electronic Clearing System - <i>Sistema Nacional de Compensación Electrónica</i>
<b>STMD</b>	Money Market Telephone Service - <i>Servicio Telefónico del Mercado de Dinero</i>

## Introduction

The key characteristics of the Spanish payment system are as follows:

In terms of its institutional environment, and as a result of a widely extended network of bank branches, the Spanish banking system's role in providing payment services is more important than the role of the postal system, which is very marginal.

Payments other than those between banks are frequently made in cash. The most widely used cashless instruments in terms of value are cheques and in terms of volume direct debits. Important factors here are both the increasing size of networks of automated teller machines and point-of-sale terminals and the progress of co-operation among financial institutions.

Also with regard to interbank clearing and settlement, progress has been achieved in the process of automation by the creation of the National Electronic Clearing System (*Sistema Nacional de Compensación Electrónica,*

SNCE) that is replacing the traditional clearing houses. The SNCE is based on the exchange, through bilateral computer links among participants, of data on documents to be cleared.

In the specific field of interbank loans and other transactions involving large-value payments, the role of the Money Market Telephone Service (*Servicio Telefónico del Mercado de Dinero, STMD*) as an interbank clearing and settlement system has been strengthened by the creation of the government debt book-entry system, which settles interbank transactions through the STMD. Large-value foreign transactions in pesetas are channelled through the Madrid Clearing House.

Finally, the Banco de España plays an important role both in the oversight of the payment system as a whole and in the management and co-ordination of interbank clearing and settlement systems.

## I. Institutional aspects

### 1.1 General legal aspects

There is no legislative body in Spain that systematically regulates all aspects of payment systems, and references to a national payment system are very rare, with the exception of Royal Decree 1369/1987 dated 18th September and Ministerial Order of 29th February 1988, that regulate the creation of the SNCE. Therefore, generally it is necessary to turn to the provisions of civil, commercial and public law that regulate both the instruments and the institutions that provide payment systems.

The Banco de España is legally obliged to promote the sound functioning and stability of the payment system, as expressly provided in the Autonomy Act (Act 13/1994 of 1st June), that in turn governs the functions and governing bodies of the Bank.

Banks are governed by the Banking System Act (*Ley de Ordenación Bancaria* 1/1946) of 31st December, subsequently adapted to the Community's legislation by means of Legislative Royal Decree 1298/1986 of 28th June. This Decree stipulates that any business whose usual profit-making activity is the receipt of funds from the public in the form of deposits, loans or the temporary trust of financial assets and other similar transactions which involve the obligation of reimbursement, and which uses such funds for its own account for granting loans or similar transactions, is a credit institution.

The creation of new banks in Spain and the entry of foreign credit institutions are governed by Act 3/1994 of 14th April and Royal Decree 1245/1995 of 14th July. These regulations adapt Spanish legislation on credit institutions to the Second Banking Co-ordination Directive, allowing the free establishment in Spain of EU credit institutions.

The penalisation of credit institutions is governed by the Discipline and Intervention of Credit Institutions Act (Act 26/1988 of 29th July).

With the exception of financial intermediaries, there is no specific regulation involving other providers of payment media, such as credit card management companies or firms that issue purchase cards.

The Antitrust Act (*Ley de Defensa de la Competencia* 16/1989 of 17th July) bans the abuse of dominant positions and any agreements that restrict competition. This act is also applicable to payment systems.

Currently, the incorporation in Spanish legislation of Directive 93/22/CEE on Investment Services is under way.

The protection of the customers of credit institutions with regard to such institutions is governed by the Circular of the Banco de España 8/1990 of 7th September on the transparency of transactions and the protection of customers.

### 1.2 Financial intermediaries that provide payment services

The main suppliers of payment services in Spain are private sector banks, savings banks and credit co-operatives. Commercial banks are relatively more important: in 1994, their balance sheets represented 64% of the total for the credit system, as against 33% for savings banks. Both commercial banks and savings banks currently operate under the same regulatory conditions and offer the same payment services.

In recent years, however, the traditional predominance of commercial banks over savings banks has significantly diminished as far as attracting deposits is concerned.

Savings banks have also increased their share of term and savings deposits while sight deposits are mostly placed with the commercial banks.

A high degree of concentration exists in the banking system, concentration being much higher among commercial banks than among savings banks.

The strict regulations to which the Spanish banking system was subject up to the mid-1980s, with regard both to the limitation and segmentation of business areas and to interest rates, led to a situation in which the number of new branch offices was the main competitive instrument between banking institutions.

The number of branches of each savings bank is much higher on average than that of commercial banks. The number of employees per branch office is lower in savings banks than in commercial banks (5.8 against 8.8 in 1994) although the number of ATMs installed in savings banks is much higher.

Credit co-operatives also provide financial and payment services to their customers. These credit institutions are significant in rural areas, but their size is small compared with that of commercial banks and savings banks.

In Spain, the post office offers payment services such as postal orders and cheques, for example, but its role is purely marginal.

### 1.3 The role of the central bank

#### 1.3.1 General responsibilities

##### *Statutory responsibility*

The Banco de España is mainly regulated by the recent Autonomy Act (Act 13/1994), which came into effect in June 1994.

Pursuant to the Autonomy Act, the Banco de

España is a public law government institution which, although reporting to the government in general terms, enjoys full autonomy as far as monetary policy is concerned, with the main objective of such policy being price stability. This means that:

- a) Within the scope of monetary policy, the Bank is not subject to government instructions and is completely free to implement monetary policy aimed at price stability. However, and without prejudice to the above-mentioned target, the Bank must support the general economic policy of the government.
- b) The government and its agencies are not allowed overdrafts on their accounts with the Banco de España, even on an interim basis, as such overdrafts could affect the implementation of monetary policy as well as the credibility of such policy.
- c) The Banco de España is not allowed to underwrite government debt, although it is entitled to carry out transactions in the secondary market for government debt when such transactions are associated with the performance of the Bank's monetary policy.

The Autonomy Act entrusts the following functions to the Banco de España:

1. To define and implement monetary policy.
2. To implement exchange rate policy, for which the Bank is entitled to own and manage reserves of currencies and precious metals.
3. To promote the sound functioning and stability of the financial system and, especially, of the payment system. To this end, the Banco de España is entitled to regulate interbank markets and foreign exchange markets by managing, as the case may be, the relevant clearing and settlement systems.

4. To issue banknotes in pesetas, as well as to withdraw and exchange such notes.
5. To determine on an annual basis the total amount of coins to be issued, as well as to put such coins into circulation and to perform other functions in this connection on behalf of the government.
6. To provide treasury and financial agency services with regard to the government debt (thus acting as the banker to the State).
7. To advise the government, to prepare and publish statistics relating to its functions, as well as to issue reports and surveys as necessary.
8. To exercise additional functions pursuant to the existing regulations (Risk Information Centre, Balance-Sheet Centre, Claims Services).
9. To supervise the solvency of credit institutions, as well as their performance and compliance with rules specifically involving credit institutions, or of any other financial institutions and markets under its supervision.

*Establishment of common rules, supervision and audit*

The Banco de España supervises credit institutions (Act of 29th July 1988 on Discipline and Intervention of Credit Institutions). The scope of this function is relatively broad as it includes a combination of powers intended to ensure the solvency of the financial system. Such a guarantee relies on the fulfilment by institutions of a number of rules that affect practically all aspects of credit operations.

The Banco de España oversees interbank and foreign exchange markets pursuant to Article 16 of the Autonomy Act. Supervisory functions covering the government debt

book-entry market are exercised by the Banco de España in co-ordination with the National Securities and Exchange Commission (CNMV).

Within the specific scope of payment systems, the Banco de España is the owner of the Money Market Telephone Service (*Servicio Telefónico del Mercado de Dinero*, STMD) in the field of large-value payments, and oversees the National Electronic Clearing System (*Sistema Nacional de Compensación Electrónica*, SNCE) and the clearing houses within the retail payment field, while co-operating in the drafting of their operating rules.

**1.3.2 Provision of processing and settlement facilities**

The Banco de España centralises the settlement of all interbank payments through its Settlement Section, which receives gross bilateral payment orders or net multilateral orders, according to the type of funds transfer system of origin. Retail payments and large-value payments are differentiated.

At present, there are two types of system for processing retail payments: the SNCE on a national level, with payment orders being electronically transmitted through the bilateral computer interfaces of the participating institutions, and bank clearing houses on a regional level.

Large-value payments are channelled through the different systems according to the type of market of origin or according to the identity of the parties involved.

Each organised market uses a specific funds transfer system to settle the transactions carried out between its members. Stock markets use the Securities Clearing and Settlement Service (*Servicio de Compensación y Liquidación de Valores*, SCLV) and the private sector fixed income market (AIAF) uses Espaclear. The Financial Options and Futures Market (MEFFSA) has its own transfer

system. All three are net multilateral clearing systems.

The markets for interbank deposits, book-entry government debt, FRAs (Forward Rate Agreements) and Banco de España certificates channel their payments through the STMD. This is a gross payment system.

The Spanish foreign exchange market settles such transactions as well as transfers of funds with non-resident institutions in the Madrid Clearing House.

Finally, other institutional payment transactions are made using cheques and payment orders drawn against ordinary current accounts held by credit institutions and other financial intermediaries with the Banco de España.

#### *Provision of settlement accounts*

Credit institutions may have two types of account with the Banco de España: ordinary current accounts, which may be opened at any of the fifty-two branches of the Bank, and centralised accounts.

Transactions over the ordinary accounts are entered gross. They are decentralised accounts for specific geographical areas (Madrid, or the location of the Banco de España branch).

Cash payments are made using such accounts. In addition, payment flows between the banking system and the public sector (branch offices of the Treasury, etc.) and smaller interbank payments are also settled through these accounts.

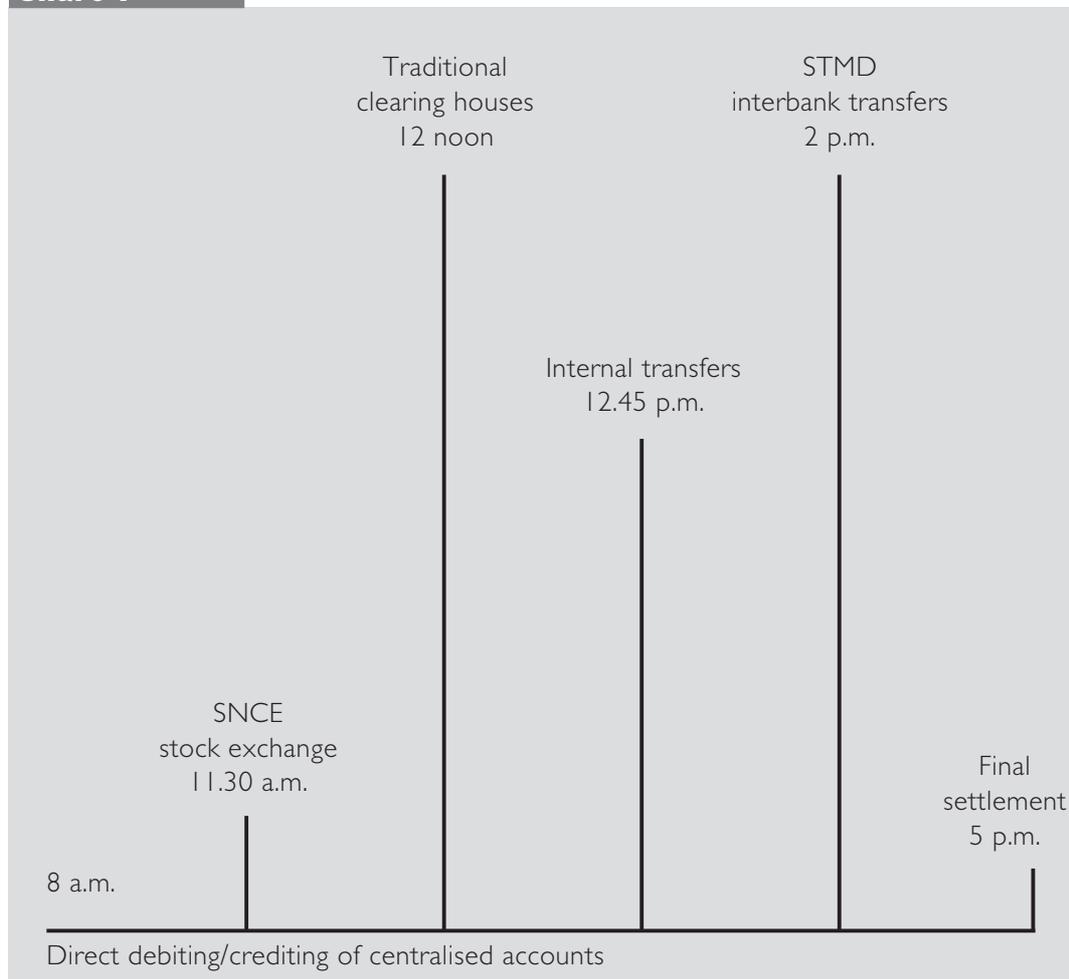
The centralised account was created in order to effect the settlement of high-value payments derived from the operation of the various organised financial markets. Interbank systems (clearing houses, the SNCE and other multilateral clearing systems, such as those of the stock exchange, AIAF and derivatives markets already mentioned in this section) are also settled with the centralised account. All payment orders are entered into the system individually during the business day, but are not final until the close of business at 5 p.m., when all institutions must have sufficient balances on their accounts.

As regards the settlement of securities, the Banco de España acts as manager and supervisor of the government debt book-entry system. Since its creation, government debt transactions have increased substantially and this market has become the largest financial market in the country.

All book-entry transactions involving government debt are entered in the securities accounts opened by member institutions with the book-entry centre of the Banco de España. All transactions in this market are governed by the principle of delivery versus payment.

The following chart shows the timetable for settlement with centralised accounts.

**Chart I**



On the other hand, the Banco de España grants certain treasury facilities to institutions. Commercial banks and savings banks which are members of the STMD, and holders of a centralised account who voluntarily apply for it, can obtain at the end of each business day the transfer of the balance on their ordinary current accounts to their centralised account by means of an automatic “sweeping” procedure that leaves the ordinary accounts at zero. At the beginning of the day, such accounts are credited by means of automatic transfers of funds, according to the amount preset by each institution for each account. However, if credit institutions need to move funds between their ordinary accounts and their centralised account during the day, they

can order the so-called internal transfers. These services mean that all the accounts opened by an institution with the Banco de España are managed as if they were a “single account”.

Currently, messages to the STMD are sent via a direct link between the computers of member institutions and the central computer of the Banco de España. Via this link, the Banco de España supplies institutions with a number of online information services such as the status of the transactions carried out throughout the day and their interim statements and balances on the centralised account, as well as the balances on the ordinary accounts.

On the other hand, credit institutions are obliged to hold a certain level of reserves on their accounts with the Banco de España (see Section 1.3.3). This cash ratio is computed taking into account as eligible assets the sum of the balances held on ordinary current accounts and on centralised accounts held by credit institutions with the Banco de España at the end of the business day. These accounts are used for payment purposes.

#### *Provision of credit facilities*

There is no specifically defined policy in terms of payment systems, as the credit facilities granted to credit institutions fall within the framework of the general implementation of monetary policy. When faced with unexpected liquidity problems, credit institutions may turn to the Banco de España as lender of last resort through loans granted against securities given as collateral to the Banco de España to prevent such a situation from affecting the solvency of the entire system. These loans are only granted under exceptional circumstances and are subject to very high interest rates.

The Banco de España uses another more common method of providing liquidity to credit institutions within the exercise of the Bank's monetary policy, such as the temporary acquisition of government securities and certificates issued by the Bank held by credit institutions.

#### *Pricing policies*

The rates charged by the Banco de España for the use of its payment services are aimed at the recovery of the costs involved, whether fixed or variable.

Such rates are approved by the Executive Commission of the Banco de España and published in a public bulletin which is divided into seven sections: transactions involving

deposited securities, cheque transactions, credit and loan transactions, transfers, STMD, transactions involving foreign currencies and other services.

The STMD rates include both payment settlement services and registry and statistical data services.

### **1.3.3 Monetary policy and payment systems**

Under the Autonomy Act of the Banco de España, the Bank shall define and implement monetary policy with the primary objective of achieving price stability. In other words, the aim is to gradually and steadily bring the inflation rate - measured by the consumer price index - over a certain period of time to a level below a preset rate.

In relation to the implementation of monetary policy in Spain, financial institutions are required to maintain reserves on their accounts with the Banco de España. Currently, these reserves amount to 2% of their deposits and other liabilities, calculated on the basis of a ten-day average. During that ten-day period, financial institutions are allowed to use these compulsory reserves to effect payments. As a result, liquidity pressures are shifted to the last day of each ten-day period.

The Banco de España regulates the overall liquidity level by injecting or absorbing funds through very short-term instruments, specifically repos on government debt and on Banco de España Certificates. However, the law does not expressly specify which securities settlement systems or which specific securities the Bank must use to achieve its objectives. Nevertheless, although the Banco de España may not underwrite any type of government debt, it may acquire it in the secondary market for monetary policy intervention purposes.

An auction at which credit institutions request amounts at the interest rate they wish to bid is held every ten days. In this way, the Banco

de España provides most of the liquidity deemed necessary through operations formalised as ten-day repos (reserve requirement period).

Every day liquidity injecting or absorbing fine-tuning operations are carried out, using overnight repo transactions. In these daily operations, the Banco de España deals only with market makers who provide liquidity to the rest of the market through the continuous quotation of supply and demand prices.

Both ten-day and daily operations are cleared and settled in the same way as the other operations traded among members of the book-entry system. The Banco de España is itself a member of the STMD and of the central book-entry office, where it holds its own securities accounts on which its government holdings are recorded.

#### *1.3.4 Main projects and policies being implemented*

Spain, as other European countries, has chosen to maintain a dual system (RTGS and net) due to the flexibility this provides. Basically, the reforms consist of:

- implementing the RTGS system by transforming the STMD into a real-time gross settlement system. (Currently, the STMD is a gross payment system but with settlement at the end of the business day, i.e. not in real time.) One of the steps taken has been the implementation of the Funds Movement Orders System (*Órdenes de Movimientos de Fondos*, OMF) at the beginning of 1996. This system mainly handles interbank payments that were previously settled via ordinary current accounts. In the third stage of EMU and after the necessary harmonisation, the OMF system will allow the streamlining of payments which member institutions make to and receive from institutions which are members of RTGS systems operated by other EU central banks;

- making a distinction, within the Madrid Clearing House, between two different clearing systems, one for retail payments (which will preserve the current operating pattern although it is very likely to disappear after being gradually integrated into the SNCE), and another for large-value payments (cross-border and domestic payments for currencies/pesetas). The latter will also take the form of a net system but must comply with the Lamfalussy standards (fixing bilateral and multilateral limits and underwriting settlements in case the institution with the highest debtor position fails to pay). This reform should be completed by the first quarter of 1997;
- modifying the rates policy of the STMD in order to encourage the early transmission of orders, during 1996.

### **1.4 The role of other private and public sector bodies**

Three associations play an important role. These are the Spanish Association of Private Sector Banks (AEB), the Spanish Confederation of Savings Banks (CECA) and the Deposit Guarantee Fund.

#### *1.4.1 Spanish Association of Private Sector Banks (AEB)*

The AEB was created in 1977 as a professional association to defend its members' interests. It has gained greater significance today as a consequence of Act 3/94 on adaptation to the Second Banking Co-ordination Directive which governed the dissolution of the High Banking Council which was the consultative body of the Ministry of Economy and Finance for banking affairs. The AEB has become the representative body of the institutions that formed the High Banking Council, and has consequently taken over almost all the duties previously performed by the Council.

Its duties include co-operating with the public administration and with business organisations, performing information and dissemination work, and standardising banking practices. To this end, the Spanish Association of Private Sector Banks issues circulars stating the regulations that apply to certain aspects of bank transactions, such as the standardisation of data on current accounts, the standardisation of payment instruments, etc.

#### **1.4.2 Spanish Confederation of Savings Banks (CECA)**

The Spanish Confederation of Savings Banks was formed in 1928 to promote the national and international activities of its members. Today it includes all Spanish savings banks. It is the consultative body of the Ministry of Economy and Finance for savings bank matters.

Its activities are focused on providing services to its members. These include:

- representing savings banks both individually and collectively vis-à-vis government bodies;
- representing savings banks at an international level;
- providing its members with whatever financial services are required, increasing their technical structure for added efficiency and achieving an optimum level of organisation;

- operational co-ordination, information and financial consultancy functions; clearing and credit functions.

The CECA also operates as a financial institution, which distinguishes it from other consultative bodies.

#### **1.4.3 Deposit Guarantee Fund**

The Deposit Guarantee Fund was formed in November 1977 for the initial purpose of guaranteeing commercial bank customers the return of a specific maximum amount of their deposits in the event of a bank crisis (receivership, bankruptcy, danger of insolvency). This amount is now fixed at ESP 1.5 million per depositor, regardless of the number and class of deposits. The objectives were later extended to resolving conflictive situations of banks that found themselves in crisis, by undertaking the management of doubtful assets in order to restructure such banks. The net worth of the fund is made up of contributions by the participating banks and by the Banco de España.

The guarantee funds of the savings banks and credit co-operatives perform similar duties to those of the commercial banks, although the amount of their contributions is different.

Membership of one of the funds is mandatory for Spanish credit institutions.

## 2. Payment media used by non-banks

### 2.1 Cash payments

In Spain, cash payments play a very important role, as shown by the relatively low number of payments which are not made in cash (an average of 36 per inhabitant in 1994). In recent years, banknotes and coins in circulation have shown a growing trend in respect of MI and GDP (11.09%), even though the payment of wages by transfers to employees' current accounts is now far more widespread and there is a wide EFTPOS network. This could be explained by the existence in Spain of a strong historical trend to use cash in preference to other alternative payment media because of the concealment of certain transactions for tax reasons, the hidden economy, and the widespread network of ATMs, which facilitates cash withdrawals to cardholders.

The Banco de España has the exclusive power to issue, withdraw and exchange banknotes. It also has the power to decide on the amount to be issued, and on the denominations and characteristics of the banknotes. As far as coins are concerned, their issue is undertaken by the Treasury, but the Banco de España determines the maximum limit to be issued and put into circulation on behalf of the government. Both the coins and banknotes are produced at the National Mint.

There are banknotes in circulation in Spain with denominations of ESP 10,000, 5,000, 2,000 and 1,000 (ECU 63, 31, 13 and 6<sup>1</sup>) and coins with denominations of ESP 500, 200, 100, 50, 25, 5 and 1 (ECU 3, 1, 0.6, 0.3, 0.2, 0.03 and 0.006). The ESP 5,000 notes account for the largest proportion in terms of volume. Banknotes represent 96% of cash in circulation by value, and coins 4%.

<sup>1</sup> The exchange rate vis-à-vis the ECU used is the average for 1994 (ECU 1 = ESP 158.9).

Moreover, acceptance of coins in a single transaction is mandatory up to a specific amount.

### 2.2 Non-cash payments

Non-cash payments are based on transferable deposits which include current accounts and savings accounts. The paying of interest on these accounts has been completely liberalised.

Direct debits represent 53.5% of cashless payments in terms of volume in Spain, but they represent less than 1% of the estimated value, because the average value of such payments is very low. They are followed, in terms of volume, by payments made by cards (18%), cheques (15%), bills of exchange (8%) and transfers (6%). Cheques are the most important instrument in terms of value (in retail payments).

In recent years, a trend has been observed to replace cheques, which have declined in number, by debit and credit cards, which have experienced an increase.

#### 2.2.1 Credit transfers

This payment instrument is widely employed to pay wages and the State authorities use credit transfers to pay subsidies and pensions.

The fully electronic clearing of transfers has been possible since 1992 through the SNCE (see Section 3) by means of computer interfaces. Clearing through the traditional clearing houses has, on the other hand, disappeared altogether.

### 2.2.2 Cheques

In Spain, the cheque is the most important payment medium in terms of value. However, this payment instrument is far less widely used than in other European countries. Since 1990, there has been a drop in the number of cheques drawn in spite of the improved legal security given to the cheque following the approval of the Exchange and Cheque Act (*Ley Cambiaria y del Cheque*, Act 19/1985 of 18th July). This has partly been due to the more widespread use of credit and debit cards in Spain in recent years, as businesses run fewer risks in collecting amounts owed on transactions effected using these payment instruments.

For several years, credit institutions have reached agreements that cheques whose amount is below a given threshold are not required to be presented for interbank clearing at the bank responsible for collection. These cheques remain in the hands of the institution that has received them from its customers ("cheque truncation"). Institutions that operate in this way first of all sign a truncation agreement, which describes each party's liabilities.

### 2.2.3 Direct debits

This is the most significant payment instrument in terms of the number of transactions made (53.5% of the volume of cashless transactions), and the trend is an increase from one year to the next. However, the value of each transaction is small.

This instrument is intended to simplify regular payments. In this case, the debit order is issued by the creditor, who has previously been authorised by the debtor to charge the account. This is mainly used to pay telephone, electricity, water bills, etc. Sometimes, before the amount is charged to the payer's account, the payer is sent an advance notice, which provides the opportunity of disputing an incorrectly charged payment.

Most direct debits are performed automatically, through information exchanged via magnetic tape, although for certain non-standardised payments direct debits are still cleared at the traditional clearing houses. However, this practice is gradually declining from one year to the next.

### 2.2.4 Payment cards

In recent years, Spain has seen a substantial rise in the volume of cards in circulation, particularly the number of debit cards, which are more common than credit cards.

However, the use of ATMs and EFTPOS terminals is remarkably low given the number installed: approximately 16 cash withdrawals per year per card at ATMs and 8 transactions per year per card at EFTPOS terminals. The average value of each transaction was ESP 6,719 (ECU 42) via EFTPOS and ESP 13,365 (ECU 84) at ATMs in 1994. Although use of this payment instrument has increased, these payments still represent only a small proportion of cashless payments.

Use of debit and credit cards is not regulated, that is to say debit and credit cards are governed by the conditions imposed by the issuers upon the cardholders when they sign the membership agreements and upon retailers.

#### *Debit cards*

These are payment cards issued by credit institutions which allow their customers to have transactions directly debited from their current accounts. They can be used both at ATMs and in POS transactions. In the latter case, as with credit cards, retailers receive the proceeds of sales by debit card on their current account on the following day and their bank, in turn, deducts a percentage of the sales turnover paid by cards. Debit cards have traditionally been free to their holders,

although some banks are now starting to charge a fee for them.

In Spain, their use is more widespread than credit cards. In 1994, there were 32,351,542 cards, which represents 826 cards for every 1,000 inhabitants.

#### *Credit cards, travel and entertainment cards*

These kinds of cards are widely used in Spain. They are issued by credit institutions in association with VISA or Eurocard/MasterCard and by organisations such as American Express and Diners Club. The most widely used is VISA, which is managed in Spain by two companies: VISA España and Sistema 4B.

These cards regularly offer their holders additional benefits, such as life insurance cover for accidents which occur on the means of transport when the ticket is purchased with the card, travel assistance services, etc.

Holders of these cards are required to pay an annual fee to the card issuer. The vast majority of transactions made with these cards are performed electronically in Spain, for both the authorisation to make the transaction and the data transmission for their processing.

#### *Retailer cards*

According to estimates, there were around 8,000,000 retailer cards used in Spain in 1994. They are mainly issued by department stores and can only be used at the issuer's store or chain of stores. They are usually free of charge to customers and some include a number of added advantages, such as the possibility of paying for goods and services in several instalments at no extra cost to the cardholder. The purpose of this is to encourage customer loyalty, increase the number of customers and consequently boost sales.

#### *Prepaid cards*

The most widely used single-purpose prepaid card is that which the National Telephone Company has been issuing for approximately five years. It allows national and international telephone calls to be made from certain public telephone booths and carries a microchip.

Multi-purpose prepaid cards can only be issued by credit institutions, according to the Royal Decree 1245/1995 of 14th July. These cards are at the design stage.

Several pilot schemes for prepaid cards are currently being tested. Some are being performed by credit institutions in co-operation with universities. On a wider level, there are also two projects which are being tested in small towns.

#### *ATM and POS networks*

There are three networks in Spain: Servired, Sistema 4B and Red 6000, which have been operating since the 1970s. Red 6000 covers all savings banks and is managed by the Spanish Confederation of Savings Banks (CECA). The other credit institutions participate in one of the other two systems (Sistema 4B or Servired).

The degree of interoperability and co-operation between the three systems is very high, so that a card issued by a bank belonging to one system can be used at the banks using the other systems.

These are networks that have a very large number of ATMs, probably because of the extensive network of bank branches found in Spain. It is usual to find an ATM at each branch, particularly at savings banks, where an additional ATM is often installed for making direct savings book transactions. This has made it possible to reduce staff costs and give more efficient service to the public.

A comparison between the number of ATMs and POS terminals installed in other countries across Europe with those in Spain shows that the Spanish network is one of the most extensive. However, its low degree of use should be noted, although this is gradually increasing each year.

In recent years, Spanish networks have signed agreements to permit use of debit cards issued by Spanish institutions in the ATM and POS networks in some European countries, as has been the case with Sistema 4B in Portugal, Andorra, Italy, the United Kingdom and Belgium. Servired issues its debit card under the trademark VISA Electrón and it is consequently recognised internationally at most ATMs and EFTPOS. Cards issued under the Red 6000 system are accepted by the ATMs of European savings banks which are members of Eufiserv.

### 2.2.5 Postal instruments

As mentioned in Section 1.2, the role of postal instruments is purely marginal.

## 3. Interbank exchange and settlement systems

### 3.1 General overview

There is a clear differentiation in Spain between systems engaged in large-value payments and retail payment systems.

There are two large-value payment systems at present: the Money Market Telephone Service (*Servicio Telefónico del Mercado de Dinero*, STMD), which is basically engaged in domestic operations, and the Madrid Clearing House, dedicated to cross-border operations. The channelling of domestic and cross-border operations via one system or the other reflects historical factors and the operating standards of each system, and not a high-level

### 2.3 Recent developments

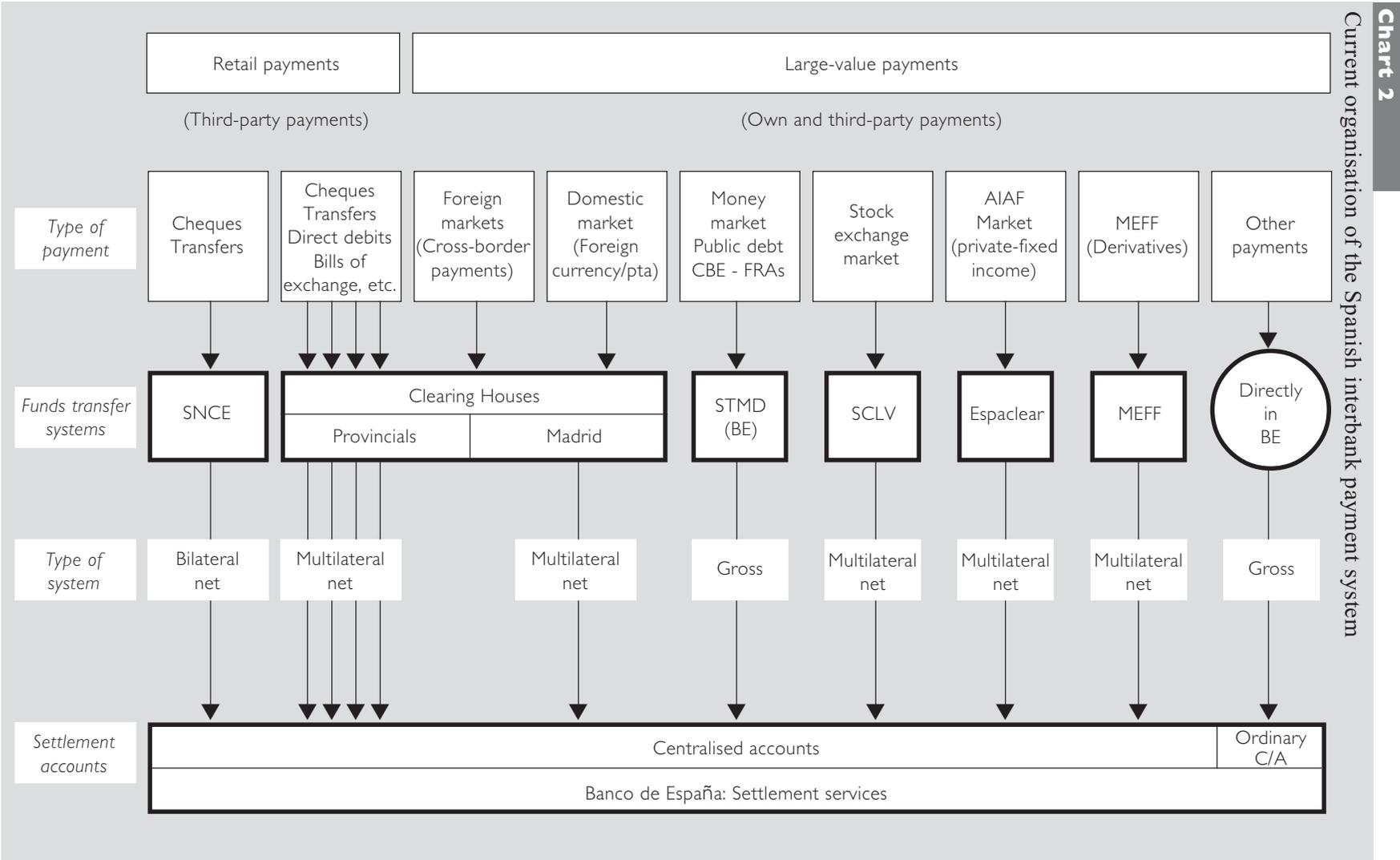
There are now plans to introduce the smart card (microchip card). The first step will be to implement the electronic purse and later more transactions and functions will be considered for the smart card, which is currently being tested (multi-purpose cards). These plans are being drawn up in co-ordination with the different national and international networks to ensure the future interaction of the systems.

In recent years, home banking has recorded substantial growth, particularly in its telephone service. This service allows customers to request bank balances, transfers, the payment of invoices, information, etc. However, home banking based on personal computers connected with the bank has not been implemented widely in recent years.

policy regulation. Both systems channel pure interbank payments and payments made by major customers.

On the basis of the principles approved by the former Committee of Governors of the EU central banks ("Minimum Common Features for Domestic Payment Systems"), a reform of these systems is now under way.

The STMD is currently an end-of-day gross settlement system, and as such it is described in Section 3.3. The Settlement Service of the Banco de España, the future real-time gross settlement system, will be the outcome of the transformation of the present Telephone



Service. The features that have already been decided for the future real-time gross settlement system are described in Section 3.2.

The Madrid Clearing House will be retained as a net system, and as such is described in Section 3.4. Currently, this system is also undergoing an important change to make it comply strictly with the Lamfalussy standards. A system of limits is consequently being implemented, with liquidity arrangements, a loss sharing agreement and guarantees.

As for retail payment systems, these comprise the provincial clearing houses and the National Electronic Clearing System (*Sistema Nacional de Compensación Electrónica, SNCE*), via which the participating banks clear the different payment instruments used by their customers. At present, a transfer of transactions continues to take place from the first system to the second. It is expected that the provincial clearing houses will have disappeared in two years' time.

### **3.2 Settlement Service of the Banco de España (SLBE)**

The Settlement Service of the Banco de España will be the future Spanish real-time gross settlement system, connected to the TARGET system of the European System of Central Banks. The SLBE will be a transformation - by the end of 1996 - of the present Money Market Telephone Service, a system described in the next section.

Since the present system is an end-of-day gross settlement system, the future system may preserve some of its features, because transactions are currently received on a gross basis by the Banco de España. Real-time gross settlement will, however, call for a number of operational modifications as described below.

#### **3.2.1 Functioning rules**

On 14th June 1994, the Executive Board of the Banco de España adopted a resolution to implement a real-time gross settlement system, using the present Money Market Telephone Service, in accordance with the recommendations of the former Committee of Governors of the EU central banks.

According to this, the necessary modifications to standards must be published as a circular by the Banco de España.

#### **3.2.2 Participation in the system**

The SLBE will remain a very open system, in which almost all credit institutions will participate directly. No major changes are expected in the present number of direct participants, which stands at 264.

In addition to credit institutions, dealers on the government debt market and certain special institutions, such as deposit guarantee funds at banking institutions (banks, savings banks and credit co-operatives) may also participate.

#### **3.2.3 Types of transactions handled**

As with the present system, transactions - both by the participating institutions and on behalf of customers - will be for a high unit amount. Large-value interbank deposit transactions and government debt entries will continue to be settled under this system. Other transfers must be added to these, the payment concept of which is not specified but which are classed as large-value, as well as the settlement results of net systems.

#### **3.2.4 Operation of the transfer system and the transaction processing environment**

The processing of received orders will follow a pattern similar to that of the present system, as described in Sections 3.3.4 and 3.3.5, with the adaptations derived from real-time payment settlements. Currently, participants can monitor, in real time, incoming orders and also obtain a simulation of the status of their account with the Banco de España.

#### **3.2.5 Settlement procedures**

Transactions received individually will be settled in real time after checking that there is a sufficient balance on the account of the payer institution with the Banco de España. If there is a sufficient balance, settlement will be final and irrevocable. If there is an insufficient balance, the order will be sent to a waiting queue. The features of the processing of orders in the waiting queue are still under study.

#### **3.2.6 Credit and liquidity risk**

Each order will be settled only when there is a sufficient balance on the sending institution's account. This will call for significant liquidity requirements for participating institutions; this liquidity will, if necessary, be provided by the Banco de España provided that adequate collateral is posted by the institutions.

The cost involved for participants to maintain this collateral is the basis for the best assignment of risks in the future system and the consequent reduction in the system's risk.

Payments that are not settled because there is an insufficient balance will not be rejected definitively, but will be sent to a waiting queue.

#### **3.2.7 Pricing**

The present system already charges the full cost of the service to the participating institutions. This principle will be followed by the future system. Charges will be modified in order to encourage the arrival of orders as soon as possible throughout the session. A variable pricing structure will consequently be imposed, depending on the time of day at which the transaction is settled.

### **3.3 Money Market Telephone Service (STMD)**

The Money Market Telephone Service (*Servicio Telefónico del Mercado de Dinero*, STMD) is an end-of-day gross settlement system for large-value payments.

It was created by the Banco de España in 1976, in order to facilitate and support the interbank loans market.

The activity of the STMD significantly increased in 1987, when the book-entry system for government debt securities was introduced by the Banco de España.

Likewise, the STMD settles the daily monetary intervention by the Banco de España (open market transactions) by making interbank transfers in response to orders from the banks which are members of the system, as well as the balances of net multilateral clearings.

#### **3.3.1 Functioning rules**

The Banco de España manages the system and is responsible for formulating its rules.

The regulation of the STMD was updated by Banco de España Circular 5/1990 of 28th March, Circular 14/1992 of 26th June, and Circular 7/95 of 31st October.

### 3.3.2 Participation in the system

Participants in the system are those institutions which, in the Banco de España's judgement, comply with the requirements for solvency and management capacity and which commit themselves to complying with the STMD's operating regulations.

Provided they comply with such requirements, the following institutions may become direct participants:

- institutions which participate in the interbank loans market: private banks, savings banks and credit co-operatives;
- institutions which are members of the book-entry market in government debt.

Likewise, other groups of institutions may be admitted pursuant to specific rules. The total number of direct participants was 264 at the end of 1994. Foreign banks established in Spain participate in this system. There are 27 branches of other EU banks and 31 branches of non-EU banks, all of which are direct participants.

Due to the high number of direct participants, indirect participation is not significant in this system.

### 3.3.3 Types of transactions handled

The STMD clears and settles transactions carried out in the interbank money market and in the government debt book-entry market, as well as large-value interbank transfers. As mentioned above, the STMD also settles the daily operations carried out by the Banco de España. These are all large-value operations. The minimum value of each transaction is ESP 50 million (ECU 0.3 million).

Although the system is open to international transactions, for historical reasons these are channelled through the Madrid Clearing House.

### 3.3.4 Operation of the transfer system and transaction processing environment

Payment messages are sent via computer links between each participant and the Banco de España. Payment messages are sent individually to the Banco de España by the two counterparties to each transaction. Therefore, the message flow is V-shaped.

Communication time schedules are as follows:

- first session: 3 p.m. to 5 p.m. (value date the following day or subsequent days);
- second session: 8 a.m. to 2 p.m. (value date the same day or subsequent days).

In order to access the system, the Banco de España supplies the duly accredited individuals with an operator code (which must be used by such individuals solely for these purposes), plus an operational code for the institutions. The messages are encrypted to maintain their confidentiality.

Orders are processed by the Banco de España following confirmation and once it has ensured that there are no discrepancies between the two communications referring to the same transaction received from the two credit institutions involved.

A new procedure called Funds Movement Orders (*Órdenes de Movimientos de Fondos, OMF*) has recently been implemented. Its objective is to shift the large-value transfers that are still processed through the ordinary accounts with the Banco de España to the centralised account of each participant with the Banco de España (see below). Most of these transfers are customer operations, although there are also some interbank operations.

### **3.3.5 Settlement procedures**

The settlement of STMD transactions is carried out on a specific current account, the centralised account, of each participant with the Banco de España.

An online information system is available for participants to monitor incoming orders and the status of their centralised account, as well as their government debt book-entry accounts.

At the close of business, each participating institution must have a sufficient balance available on its centralised account to cover its obligations. All entries, which are made one by one during the business day, are provisional until the close of business, and all payments are final only at that moment.

### **3.3.6 Credit and liquidity risk**

No transactions settled by the Banco de España are final until the existence of a sufficient balance on the relevant accounts is verified at the close of business. Should the balance be insufficient, the participant concerned is invited to look for a lender in the interbank market. In order to cover the daily settlement of transactions for which orders have been received, the STMD may authorise a late transfer of funds from any participant in the system, subject to a penalty on the participant with the insufficient balance.

If, in spite of the above, the institution does not have sufficient funds or securities, therefore rendering settlement impossible, the STMD must leave all or some orders unsettled. In selecting which transactions not to settle, the STMD may exercise discretion, with a view to minimising settlement disruption. This implies high penalties and the possibility of exclusion from the system.

The Banco de España is also entitled, on a fully discretionary basis, to provide liquidity to participants which experience difficulties

in funding their accounts. It does so very rarely, only when the unwinding of transactions might involve systemic risk.

### **3.3.7 Pricing**

Pursuant to the STMD regulations, the Banco de España charges participating institutions monthly fees. The rates are approved by the Executive Board of the Banco de España and cover all the running costs of the Service including staff, communications and computer time, in addition to the costs of services such as information, statistics and registration.

Each participant in the STMD must pay ESP 150,000 (ECU 944) per month (ESP 100,000 (ECU 629) if its payments are settled through another institution). This fee entitles the member institution to clearing and settlement services for 100 transactions per month and to the other services provided by the STMD and the Central Book-Entry Office (contract registering, statistical information, computer inquiries about its accounts, etc.). From transaction 101 onwards performed during the same month, the cost per operation is ESP 600 (ECU 4).

There is also a system of penalty fees for transactions carried out at times other than during the ordinary sessions.

At present, it is technically possible to charge different fees according to the time at which the operations are communicated. This possibility has not yet been introduced as a business option.

### **3.3.8 Main projects and policies being implemented**

The future RTGS system for large-value payments in Spain, as described in Section 3.2, will be a development from the current STMD. In this sense, the contents of this section may also be found in Section 3.2.

### 3.4 Madrid Clearing House

The Madrid Clearing House performs two functions. It operates as a traditional clearing house similar to any other one (see Section 3.5) through which retail payments are channelled, and it clears large-value foreign transactions in pesetas, as described below.

This large-value payment system has seen considerable development in terms of the total value of payments in recent years in line with the increased economic, and particularly financial, relations with other countries.

Therefore, it has been decided to maintain this system, adopting, however, a set of measures in accordance with the Lamfalussy standards the purpose of which would be to limit participants' exposure and to reinforce the certainty of settlement by the Clearing House.

#### 3.4.1 Functioning rules

The Madrid Clearing House, like other clearing houses, is owned by its participants. The Banco de España is one of its members and chairs its Governing Board on which participants are represented.

The Banco de España is moreover responsible for laying down and adapting the rules and regulations of the Clearing House.

#### 3.4.2 Participation in the system

Only commercial banks, savings banks and co-operative banks can be members of the Clearing House, participating at two levels: either directly as associate members or indirectly as represented members.

The number of direct participants in the international transfer system handled by the Clearing House is 54, of which 7 are branches of foreign banks (5 of EU banks and 2 of non-EU banks).

#### 3.4.3 Types of transactions handled

Within the international activities of the Madrid Clearing House, two types of transactions should be distinguished:

- the peseta leg of foreign exchange transactions performed by domestic credit institutions;
- large-value transfers from or to non-residents denominated in pesetas, including interbank transfers and transfers for the account of customers. In the latter case, a minimum amount of ESP 100 million (ECU 0.6 million) is required.

#### 3.4.4 Operation of the transfer system and transaction processing environment

Non-resident transfers handled through the Madrid Clearing House follow a special procedure, which takes place during a second session of the Clearing House, in which transactions reported are settled with same-day value.

Participants receive instructions from their non-resident customers and exchange transfer orders through the S.W.I.F.T. network until 10 a.m. on the settlement day. At that time, each participant transmits to the Clearing House the total transfers ordered in favour of each of the other participants.

#### 3.4.5 Settlement procedures

The Clearing House accomplishes the multilateral netting of all the transactions and, at 11 a.m., sends the resulting balances to the Banco de España, for provisional settlement on the centralised account of each participant. The settlement becomes final at the end of the day, at 5 p.m.

### 3.4.6 Credit and liquidity risk

As already mentioned, at the Madrid Clearing House, payment finality takes place at the end of the day. Therefore, all payments are considered as being provisional until final settlement is made on the accounts with the Banco de España.

This gives rise to open positions during the day, with the resulting risks. The size of the traded volume and the high value of each transaction give rise to large exposures which could have systemic risk implications.

A Working Group comprising the Banco de España and the main participants was set up at the beginning of 1994 to address this problem. A basic agreement was reached by the Group on the need to set limits on the positions of the participants and to ensure the settlement of the Clearing House. This agreement was endorsed by the Banco de España and the banking system, through its representative bodies, the AEB and CECA, in June 1995, and the reform of the system started in September 1995 with the commitment to be completed during the first quarter of 1997. Each participant will establish a bilateral limit for each of the other members. On the basis of these limits, the Clearing House will set a maximum multilateral limit for each participant which will be a percentage of the sum of the bilateral limits set for that participant by the others.

Bilateral limits will also be used as a basis on which to establish standards for the provision of collateral and sharing of losses among participants, thus allowing the system to ensure settlement by the Clearing House if a participant fails to pay, even if it holds the highest debit position.

In this way, the Madrid Clearing House will comply fully with the Lamfalussy standards from the first quarter of 1997.

### 3.4.7 Pricing

Apart from transmission fees charged by S.W.I.F.T. to each participant for channelling orders from non-resident customers to the bank, the operating costs of the Madrid Clearing House are shared between its members. All direct participants pay the same access fee and annual fee. Indirect participants pay a separate fee which is half the annual fee paid by direct participants.

The other costs of the Clearing House are charged to each participant according to the number of transactions handled.

### 3.4.8 Main projects and policies being implemented

The main lines of the risk management reform have already been defined and agreed. The main technical aspects still to be resolved are: a new definition of the payment order transmission system, the monitoring of limits and the handling of orders exceeding the established limits. All these issues are currently being addressed by the above-mentioned Working Group.

A further issue to be examined is the new definition of access conditions, and the establishment of more restrictive although always objective ones, related to technical requirements.

## 3.5 National Electronic Clearing System (SNCE)

There are two networks specialised in retail payments operating in Spain:

- the traditional clearing houses;
- the National Electronic Clearing System (*Sistema Nacional de Compensación Electrónica*, SNCE).

There are currently fifty-one clearing houses operating in Spain, one for each of the provincial capitals. Financial institutions operating in each province are entitled to participate in their respective clearing house as direct or indirect members. The Banco de España is a member of and chairs all the provincial clearing houses. These clearing houses clear paper cheques, direct debits and bills of exchange in the traditional way. Representatives of the commercial banks, savings banks and credit co-operatives meet in the clearing house and, in a session presided by the Director, physically exchange the documents and net their debts.

After a process of netting, the settlement of all transactions is entered in the respective institutions' centralised accounts with the Banco de España. At the Madrid, Barcelona and other provincial clearing houses, transactions may be sent to the clearing house on the same evening on which the institution receives the documents, whereas at others it is not possible to send transactions until the day following receipt of the documents.

Over the last few years, the traditional clearing houses have been losing the majority of their functions as more and more transactions are processed through SNCE. This system, an ACH to which most of the commercial and savings banks belong, was created in 1987. It is designed to clear cheques, credit transfers and other transactions listed in Section 3.5.3.

### 3.5.1 Functioning rules

The SNCE is a clearing procedure for payment orders which is based on the use of electronic systems. It was created in 1987 by the regulation already mentioned in Section 1.1, and its operative rules are included in the Circular of the Banco de España 8/1988 of 14th June.

The Banco de España acted as co-ordinator in the creation of the SNCE. It also acts as manager and overseer of the system.

### 3.5.2 Participation in the system

The following institutions are entitled to become participants in the SNCE: Banco de España (in future, as a member of the system to channel the retail payments of the public administration), commercial banks, savings banks and credit co-operatives, provided they comply with the requirements for admission as a member of the SNCE (such as compliance with the rules and solvency requirements, adequate technical capacity, scale of activity, discipline and financial support for the system).

There are two forms of participation:

- as a direct participant, i.e. participating in the exchange stage of the clearing on the institution's own behalf and, when doing so, representing one or more indirect participants, and subsequently taking part in the settlement stage;
- as an indirect participant represented by a direct participant (requirements for indirect participation are less onerous and an indirect participant does not take part in the settlement stage of the clearing).

At the end of 1994, there were 30 direct and 172 indirect participants in the cheque clearing sub-system and 28 direct and 163 indirect participants in the credit transfer sub-system.

### 3.5.3 Types of transactions handled

Cheques, bills of exchange, credit transfers, direct debits and diverse card payments can be cleared in the SNCE, but currently only cheques and credit transfers are processed. As from 1996, direct debits will also be cleared.

#### **3.5.4 Operation of the transfer system and transaction processing environment**

Documents are exchanged via links between the computers of the SNCE member institutions, which communicate the data represented by documents and clear their amounts. Each kind of document is processed in a different sub-system, so a net balance between each pair of institutions is obtained for each of the sub-systems. These bilateral balances are reported to the Banco de España.

The schedule for communicating transactions between institutions is from 9 p.m. to 11.30 p.m. for all documents with value date the following day.

#### **3.5.5 Settlement procedures**

As soon as the bilateral balances are reported to the Banco de España (National System for Settlement department, SNL) a net net balance (credit or debit balance) is obtained by consolidating the net bilateral balances for each institution in each sub-system. These are then settled over the relevant centralised accounts of the participants with the Banco de España.

If any discrepancies are found between the bilateral net balance reported by any two institutions, the Banco de España arbitrates. As discrepancies must be removed within a short period of time, so as to supply information to institutions on their real net position, they are resolved by applying the following criteria:

- for discrepancies representing a sum equal to or less than ESP 10 million, the figure reported by the debtor institution shall be settled;
- if the discrepancy is above ESP 10 million (ECU 0.06 million), the institutions involved must resolve their differences during a half-hour reconciliation period,

reporting the correct amounts back to the Banco de España;

- if the reconciliation period elapses before the settlement amount has been reconciled, the net amount of the bilateral position in the first report received from the institution having the net debtor position shall be settled;
- if the above rule cannot be applied, the bilateral net position is removed from the settlement process.

In the event of any incident of a technical nature which prevents communication within the set timetable, the Banco de España is free to extend the timetable, or to open a special session, or, as a last resort, to permit alternative procedures to solve the problems.

These multilateral net net balances are entered in the centralised accounts at 11.30 a.m. on the morning following the exchange of documents, although settlement is not final until the close of business at 5 p.m.

#### **3.5.6 Credit and liquidity risk**

All transactions remain provisional up to the close of business, at which point they become final provided that there are sufficient funds on the relevant accounts of the net debtor institutions.

#### **3.5.7 Pricing**

Each institution participating in the system has to assume the computer equipment and communication costs.

With regard to the settlement, each institution is charged for each entry made in its centralised account, which represents only the net net amount of each sub-system for each institution.

### 3.5.8 Main projects and policies being implemented

For the SNCE, the main line of development is to extend the payment instruments which can be included in the system through the creation of new sub-systems. In 1997, the

SNCE will absorb the turnover of the clearing houses. It is expected that they will disappear over the next two years. After that, only a residue will be maintained in the Madrid Clearing House for documents which cannot be truncated.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Any activity related to securities markets is regulated in Spain by the Securities Market Act 24/1988 of 28th July. This Act establishes the general principles to be met by the organisation and operation of primary and secondary securities markets, the rules governing the activity of individuals and institutions participating in those markets and their control and supervision systems.

This Act has been developed in different types of provisions issued by the central government and the Ministry of Economy and Finance, as well as by the National Securities and Exchange Commission and the Banco de España within the responsibilities assigned to each of these bodies by the Act.

The following securities markets operate in Spain under these provisions:

- the government debt book-entry market, in which securities issued by the central government and autonomous regions are traded. This market is specifically regulated by Royal Decree 505/1987 of 3rd April, as developed by Ministerial Order of 19th May 1987, under which the government debt book-entry system (*Sistema de Anotaciones en Cuenta de Deuda del Estado, SACDE*) was created and the Banco de España was entrusted with the

management of the book-entry system which is in charge of the central register and the organisation of the trading and settlement systems of this market;<sup>2</sup>

- the stock market formed by the four stock exchanges operating in Spain (Madrid, Barcelona, Bilbao and Valencia) and the Stock Exchange Interlinking System which connects them by means of a central computer. In accordance with the Act, the stock market has the exclusive right to trade shares and securities evidenced by paper but can also trade any securities authorised by the National Securities and Exchange Commission (CNMV). Royal Decree 116/1992 regulates the transformation from paper into book entry and the management of securities evidenced by book entries. It also establishes the clearing and settlement system of stock market transactions through the Securities Clearing and Settlement Service (*Servicio de Compensación y Liquidación de Valores, SCLV*);
- the private sector fixed income market is regulated by Ministerial Orders of 1st August 1991 and 11th May 1993 which

<sup>2</sup> Although the specific regulation came into force prior to the Stock Market Law, the general principles already established for the government debt market were incorporated into the Stock Market Law, thus being granted stronger legal support.

approve the rules governing this market and the by-laws of the Association of Financial Asset Intermediaries (AIAF) which is in charge of promoting and organising this market. The registering, clearing and settlement functions are carried out by Espaclear, a joint stock company incorporated as a securities agency for this purpose.<sup>3</sup>

Besides the three securities markets mentioned above, the derivatives market managed by MEFFSA operates in Spain, trading in various futures and options contracts. This market is governed by Royal Decree 1814/1991 and by MEFFSA rules approved by the CNMV.

Finally, the Banco de España Certificates (CBE) market should also be mentioned. It is not considered as a securities market in the strict sense as it is exclusively an interbank market and has a special origin. This market appeared as a result of the 1990 reform of reserve requirements, the reduction of which from 17% to 5% gave rise to the issue and compulsory placement of CBE among eligible credit institutions. CBE are evidenced by book entries at the Banco de España. They operate in the same way as government book-entry debt, with the specific exception that they can only be traded among credit institutions. After successive half-yearly redemptions, the outstanding ESP 2,500 billion (ECU 16 billion) will be fully redeemed by the year 2000.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

The Autonomy Act of the Banco de España (Act 13/1994) does not establish specific responsibilities in relation to securities

<sup>3</sup> This company was acquired and is now managed by the SCLV, although separately from the stock markets.

<sup>4</sup> Supervisory responsibilities are shared with the CNMV.

markets, except those which can be indirectly deduced from its settlement functions with respect to interbank payments arising from these markets as a result of the central bank's duty to promote the smooth operation and stability of the payment system.

In this field, the responsibilities of the Banco de España are limited to the government debt book-entry market in accordance with the Stock Market Act and with the above-mentioned specific provisions. These responsibilities are the following:

- manager on behalf of the central government of the issuing process of government book-entry debt;
- market ruling body;
- management of book-entry system which holds the central register;
- organisation and management of the securities and cash settlement system among market members;
- control and supervision of market operation and of its members.<sup>4</sup>

##### *Provision of settlement facilities*

Payments from all the above-mentioned markets are settled on accounts held with the Banco de España (centralised accounts) by the members of their relevant settlement systems.

The book-entry system of the government debt market organises the settlement procedures through the STMD, which is managed by the Banco de España and through which the transfers of securities and cash of each transaction are channelled simultaneously. It is a gross end-of-day securities and cash settlement system (i.e. both cash and securities transactions are provisional until the end of the day).

The other markets have their own settlement systems which are not operated by the Banco de España: SCLV in the stock market, Espaclear in the AIAF market and MEFFSA in the derivatives market. All three are net settlement systems as far as the cash leg is concerned.

The Banco de España holds only government debt securities accounts integrated in the book-entry system. There are two main types of account: 1) own accounts in which the securities owned by the market members are recorded; 2) third-party accounts. These are held in the name of each of the market members authorised to record securities for customers (such members are called dealers).<sup>5</sup>

The Banco de España does not provide specific credit facilities for the settlement of each of these markets. Funding is provided within the general policy followed by the Bank in the daily implementation of monetary policy through repo operations on government book-entry debt.

Securities lending is limited to the government debt market and is always conditional upon the relevant reverse payment (see automatic provision of securities in Section 4.3.8).

#### *Provision of operational facilities*

These facilities, which are limited to the government book-entry market, are discussed above. Derived from the management of the book-entry system, they consist in handling the central register, managing the clearing and settlement system organised through the STMD, and releasing daily information on the volumes and interest rates traded in the market.

In the book-entry system, as a central register in which securities holdings are recorded, securities accounts in the customer's name are debited and credited every day with each of the purchase and sale transactions settled

on that date via STMD. To update the balance of customers' accounts, members who hold this type of account, known as dealers, report the net overall change to the balance on each of their customers' accounts on a daily basis (each value reported is recorded in a separate account). Every week, the breakdown of all purchase and sale transactions recorded in the names of their customers is submitted by the dealers on magnetic media. The office entrusted with the book-entry system (hereinafter the central book-entry system) checks that these data match those reported daily and publishes the statistics of the amounts and prices traded during the week in that area of the market.

By channelling the transactions traded among market members through the STMD, the central book-entry system pursues the following objectives: 1) to hold a central register of purchases and sales traded among members; 2) to carry out the simultaneous settlement of the two transfers (securities and cash); 3) to have an immediate and complete information source to release aggregate trading statistics to the market and fulfil the control and supervisory functions entrusted to the Banco de España.

#### *Monetary policy operations and securities settlement systems*

See Section 1.3.3.

#### *Main projects and policies being implemented*

The projects which are currently under way have been imposed by the process of EMU. Under the operational aspect, the main reform consists in transforming the gross settlement system into a real-time one that

<sup>5</sup> There is a third type of securities account, the direct account, in the name of individuals (natural persons or non-market members) who wish to have their government debt holdings directly recorded at the Banco de España.

will replace the current end-of-day settlement system. This reform is integrated in the transformation of the STMD through which the interbank loan market is also settled.

#### 4.1.3 The role of other public sector bodies

##### *Stock exchange authorities*

The National Securities and Exchange Commission was created under the Securities Market Act as a public law institution with its own legal personality which is in charge of the supervision and oversight of securities markets and of the individuals and institutions participating in such markets. In addition, it is responsible for ensuring transparency and correct price formation, and for advising the Government and the Ministry of Economy and Finance on relevant matters. It has regulatory powers.

##### *Other authorities*

As regards the government debt book-entry market, in order to co-ordinate the responsibilities of the CNMV and the Banco de España, a Joint Advisory Committee composed of representatives of both institutions and of the Ministry of Economy and Finance was created under the Securities Market Act. In particular, a report by this Advisory Committee is required in advance for decisions affecting the organisation and operation of the government debt book-entry market and taken by the CNMV and the Banco de España within the scope of their responsibilities. The Advisory Committee may propose that these institutions adopt the measures it considers appropriate in relation to this market.

#### 4.1.4 The role of other private sector bodies

##### *Central Securities Depository*

The central register of each of these markets is entrusted to a specific institution which is also in charge of managing the relevant clearing and settlement system: SCLV for the stock market, Espaclear for the AIAF market, and MEFFSA for the derivatives market.

All three institutions manage their central register according to a scheme similar to that of the book-entry system whereby participants are required to report the breakdown of customers' balances.

These three institutions are subject to control and supervision by the CNMV.

##### *Clearing houses*

SCLV, Espaclear and MEFFSA are responsible for clearing and netting cash positions in their respective markets, thus acting as clearing houses. MEFFSA is the only one which assumes settlement risks since it stands between the trading parties.

##### *Other*

In stock markets, stock exchange ruling companies are special limited private companies with no financial functions which are entrusted under the Securities Market Act with the organisation and operation of the market. As the market's ruling bodies, they are responsible for its organisation and operation and their sole shareholders are the members of the relevant stock exchange.

In this same market, the stock exchange company, a private limited company constituted by the stock exchange ruling companies, is in charge of the conduct and management of the Stock Exchange

Interlinking System, known also as the continuous market, of which it is the ruling body. On the other hand, AIAF and MEFFSA act as ruling bodies in their relevant markets.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

On the three securities markets (government debt book-entry, stock exchanges and private sector fixed income), traded securities are exclusively evidenced by book entries.<sup>6</sup>

These are regulated markets with an established settlement system and a ruling body which is responsible, among other functions, for establishing and controlling market access and quotation and trading systems. As a basic requirement, market members must be recorded in an official register and are thus subject to supervision. Any transaction traded in those markets requires the participation of a market member, at least in order to provide the relevant information on trading between parties.

These markets employ highly developed technology as they use computer networks for the quotation, trading and communication of transactions. The stock market is a centralised market in which most trading is carried out electronically (Stock Exchange Interlinking System). The government debt and private sector fixed income markets are decentralised. In the wholesale area, trading is carried out in both markets through brokers who cannot stand between the parties. These brokers use electronic trading systems, in some cases similar to those available in the stock market ("blind trading" system).

These markets are open to the foreign sector, and the share of investment by non-residents has tended to be rather high, amounting, for instance, to 21.5% of

outstanding government debt at the end of 1994. These investors maintain their portfolios of book-entry debt in securities accounts with dealers, either directly or through Euroclear and Cedel, which appear as dealer account holders.

The government debt book-entry market is by far the most developed market in Spain. Outstanding issues exceed ESP 27 trillion (10<sup>12</sup>) (ECU 0.2 trillion) and their average daily trading volume in the wholesale market is ESP 400 billion (ECU 3 billion) in outright operations.

On the other hand, the derivatives market (MEFFSA) has acquired great significance, with 52 million contracts in 1994.

Spanish law sets out minimum rules of conduct for securities market operators aimed at defending the absolute priority of investors' interests and ensuring market transparency.

### 4.2.2 Basic quantitative aspects (basic statistics)

On the government debt book-entry market ESP 1,146 trillion (ECU 7 trillion) was traded in 1994, i.e. a 32% increase compared with the previous year. Of this figure, ESP 379 trillion (ECU 2 trillion) was traded among market members and ESP 767 trillion (ECU 5 trillion) with customers, with a 20% and 39% increase respectively, compared with 1993. By type of transaction, almost ESP 260 trillion (ECU 2 trillion) was spot, only ESP 13 billion (ECU 0.08 billion) was forward and the majority was in repo operations, at ESP 873 trillion (ECU 5 trillion) (of which ESP 582 trillion (ECU 4 trillion) was with customers). These data give an idea of the importance of repo operations in this market (75% of traded volume in 1994).

<sup>6</sup> However, in the AIAF market, paper securities are deposited and immobilised in the name of Espaclear where they are evidenced by computer records to facilitate trading, clearing and settlement.

On Spanish stock exchanges, effective variable-income trading amounted to ESP 9.1 trillion (ECU 0.06 trillion) in 1994, with a 40% increase compared with the previous year. Effective fixed income trading reached ESP 4.9 trillion (ECU 0.03 trillion), with a 112% increase compared with 1993. Such favourable developments are exclusively attributable to government debt issues, the effective volume of which increased sixfold. By contrast, private fixed income transactions, with an effective trading of ESP 1.1 trillion (ECU 0.007 trillion), experienced a 17% fall.

On the AIAF market, trading stood at ESP 4.6 trillion (ECU 0.03 trillion) in 1994 (a 17% increase on 1993).

Finally, in MEFFSA derivatives markets, more than 52 million contracts were traded in 1994 (a 148% increase on 1993). This growth is substantially higher than that of the spot markets. Thus, activity in the main futures contracts is already greater than in their respective underlying assets.

#### **4.2.3 Financial intermediaries operating in the different securities markets**

Financial intermediaries may participate as securities market members, thus being authorised in principle, according to the type of institution, to introduce orders into trading systems, for their own account only, or for the account of customers only, or for both without distinction. Moreover, membership currently allows access to the securities settlement system.

<sup>7</sup> The following bodies are responsible for registering and supervising financial intermediaries:

- the Banco de España, for credit institutions and other credit establishments (financing, factoring, leasing, mortgage companies, etc.);
- the CNMV, for securities firms and agencies, real estate investment trusts and companies, and asset management companies;
- the Directorate General for Insurance, for insurance companies and pension funds.

The general requirement for participation as a member of any of the securities markets is to be recorded in one of the official registers of financial institutions and thus be subject to supervision by the body in charge of the relevant register.<sup>7</sup> Additional conditions are established for each market.

Almost any institution recorded in an official register may become a member of the government debt book-entry market, provided it meets solvency as well technical and management capacity requirements. All market members currently maintain securities accounts in the central book-entry system, as holders of accounts in their own name (with the exception of securities agencies), or as holders of overall customers' accounts (securities agencies), or both at the same time (credit institutions and securities firms). In turn, the holding of an account with the central book-entry system provides access to the STMD and thus to the settlement system of this market, with respect to both securities settlement and payments.

On the stock market, access to trading systems is currently restricted to securities firms and agencies. However, credit institutions are expected to be granted access by the end of 1999. For the moment, they can only participate as SCLV members.

On the AIAF market, the participants must be official financial institutions which are members of the AIAF itself. All trading participants may access Espaclear securities accounts under a parallel scheme to that of the government debt market.

Finally, on the derivatives market, a wide range of credit institutions and stockbrokers are members of the MEFFSA system.

#### **4.2.4 Recent developments**

In the government debt book-entry market, interlinking between market members through personal computers connected to

the central computer of the Banco de España is currently being completed. Through this connection, market members report transactions and obtain valuable online information on the status of their communications and of their respective securities and centralised accounts (intraday provisional balance, as transactions are final only at the end of the day). Furthermore, an automatic securities provision system was created in 1995. This system is based on overnight repo transactions. If a participant defaults on the securities leg at the end of the day, the SACDE automatically selects the necessary securities from a market maker's portfolio. The transaction is carried out by an overnight repo. It is not necessary for any confirmation between the traders.

On the stock market, the settlement cycle was reduced from T+7 to T+5 in September 1993. A paperless system has also been implemented recently, securities currently being evidenced by book entries.

On the AIAF market, recent measures introduced were, on the one hand, the use of electronic trading systems through specialised brokers, which offer so-called "blind trading" and, on the other hand, the establishment of an electronic information release system aimed at ensuring greater market transparency.

Finally, on derivatives markets, the marked expansion of contracts, market members and customers which began in 1993 continued in 1994. Fees were also significantly reduced, thus contributing to an increased activity in these markets.

## **4.3 Structure, operation and administration of securities settlement systems**

### **4.3.1 Major regulations**

Securities settlement systems are regulated by the above-mentioned general provisions (see Section 4.1.1) in which the general principles governing their organisation and operation are established. They are also governed by circulars issued by the Banco de España, for the government debt book-entry market, and by the National Securities and Exchange Commission, for securities markets in general. Finally, each system has its own rules including procedures (e.g. communication formats, operating hours, reporting system, etc.) which, in the case of the SCLV and Espaclear, must be approved by the CNMV.

### **4.3.2 Participation in the system**

As discussed in Section 4.2.3, market members (with a trading scope) are currently allowed both to hold accounts in the relevant central register and to access the securities clearing and settlement systems which manage each of them. Such a dual function may be separated in the next reform of the Stock Market Act.

### **4.3.3 Types of transactions handled**

Two types of basic transaction which are common to the three securities settlement systems can be distinguished.

- Purchases and sales among market members for their own account or for that of their customers. These transactions give rise to the dual settlement of cash and securities in compliance with the delivery versus payment principle.

In the government debt book-entry market and the AIAF market outright, spot or forward and repo operations (in general, two-stage operations) may be traded. In the stock market, only outright operations are possible and their trading is currently concentrated in the spot market.

- Securities transfers which are normally carried out as a result of a purchase and sale operation between a market member and a third party who has no account of his own in the central register. In such a case, it is necessary to transfer securities between the member's own account and the segregated account in which he may act as depository or registrar for the third party.

Another type of transaction may also be carried out via securities accounts. This consists in the total or partial immobilisation of the balance for the purpose of issuing certificates used for the provision of collateral.

#### **4.3.4 Operation of the transfer system and transaction processing environment**

In the government debt book-entry market, participants report their transactions to the STMD on the date of trade, whether this is the same as the settlement date or not. The STMD matches the two communications concerning the same operation and records it as a traded transaction if there are no discrepancies. If the trade date is the same as the settlement date, it is immediately notified to the central book-entry system where it is provisionally debited and credited to the securities account, provided the seller has a sufficient balance available.

Transactions with a settlement date later than the trade date are reported by the STMD to the central book-entry system on the relevant date (this process is actually carried out the previous afternoon). Therefore, market members do not need to send any new communications on the settlement date, even if the purchase and sale transaction corresponds to the maturity of a repo operation.<sup>8</sup>

Communications to the STMD are made through market members' personal computers linked to the central computer of the Banco de España, through which members may check the matching process in order to correct any errors. They can also enquire about the provisional status of transactions in the securities settlement process.

A parallel process, although with some differences, takes place in the centralised accounts in which payments are recorded. The information provided via the computer is only a simulation of the centralised account which shows all the debit and credit movements received up to that moment both from the government debt market and other markets and from net payment systems.

On the stock market, the current trading lag is five days (T+5), although this is expected to be reduced to three days. On the trade date, transactions traded on an aggregated basis are reported by the stock exchange ruling companies to the SCLV. Stock exchange members have two days (up to T+2) to break down global balances into individual transactions, and settlement institutions have three days (up to T+3) to accept or reject each transaction. Balances are established on the fourth day and the relevant securities and cash transfers are settled on the fifth day against the centralised accounts of the Banco de España, in accordance with the net settlement remitted to the Bank by the SCLV.

<sup>8</sup> Repo operations are reported on the trade date, thus implying two reverse purchases and sales between the same institutions. The first is normally settled on the same trade date, and the second on the following day or a subsequent day, as agreed by the trading parties.

In Espaclear, the shortest possible lag between trading and settlement is one day. Communications are made on the date prior to the settlement date, except for transactions which only involve securities transfers without a corresponding payment; these can be reported until 10.30 a.m. on the same day. Espaclear forwards all communications received, establishes net payment balances in the afternoon prior to the settlement date and immediately reports these to the Banco de España and to the settlement institutions. Securities transfers are settled by Espaclear in the central register on the same settlement date on which the Banco de España settles payments against centralised accounts (day following date of receipt of net balances).

On the derivatives market, MEFFSA uses a similar process following trading in the electronic market managed by it. Net settlement arising out of the settlement of differences and collateral movements is established daily. On the contract settlement dates, if deliveries are made, these give rise to purchase and sale operations in the corresponding underlying securities.

#### **4.3.5 Settlement procedures**

The main features of settlement procedures are described in the section above.

The procedures followed by the STMD allow it to be considered as a gross end-of-day settlement system for both securities and cash since, in practice, neither securities nor cash transfers are final until the close of business.

The other settlement systems are net systems where settlement is provisional until the close of business.

At the close of business, if any institution is short of funds on its centralised account to meet any of the above-mentioned payments or payments from other systems, a special session is held to formalise "special transfers" in which any potential incident is normally

always resolved. If, exceptionally, no solution is found in this way, the Banco de España may, on a discretionary basis, provide funding backed by securities or reject settlement of payment orders to minimise the harm done to third-party institutions.

The central book-entry system also organises a special securities transfer session if any institution does not have a sufficient balance on its securities account at the close of business.

#### **4.3.6 DVP arrangements**

The three securities settlement systems are operated under the delivery versus payment principle according to the rules established in each system.

In the central book-entry system, although securities transfers are recorded on a real-time basis, these entries are provisional. The practical application of this principle is easier in the central book-entry system, as the Banco de España manages both securities and cash accounts. In spite of this, real-time settlement of transfers will remain provisional for the time being until it can be verified at the close of business that securities buyers have sufficient funds to make payments.

Compliance with this principle in the other systems requires co-ordination between their managers and those of the Banco de España. However, specific changes, which will be discussed later, are envisaged in those systems and in the central book-entry system.

#### **4.3.7 Credit and liquidity risk control measures**

The application of the delivery versus payment principle is a basic measure to prevent credit risk. Once this risk has been tackled, the only remaining risks are settlement risk and interest rate risk (which is normally reduced to price movements between two dates, since most longer-term transactions are marked to market on a daily basis).

To reduce settlement risk, apart from setting solvency and technical capacity requirements for access to each system, the following measures are envisaged:

- the central book-entry system has established an automatic securities procedure under which members who do not have a sufficient securities balance at the close of business automatically receive the required securities. The loan is made as a repo operation, so it depends on the non-performing institution having sufficient funds on its account on the same date to pay for the securities received, plus the relevant penalty. Market makers act as lenders under the contract entered into with the Banco de España for this purpose. If market makers do not have the required securities, the Banco de España acts as lender under the same conditions as specified in the contracts;
- to avoid incidents both in centralised accounts and in securities accounts, the Banco de España has established a penalty fee of ESP 100,000 (ECU 629) for each transfer of securities or cash carried out in the special session. The Bank monitors incidents and may propose the temporary or permanent expulsion of the guilty institution;
- on the stock market, the SCLV has a collateral system of guarantees which is regulated by Royal Decree 116/32. The amount of the collateral is determined on a quarterly basis depending on the development of stock market activity during the period. If the risk incurred by one or more members on transactions pending settlement is significantly higher than its/their collateral, the SCLV may require the institution to deposit a supplementary collateral. To ensure final payment on the settlement date, a guarantee of up to ESP 2,000 million (ECU 13 million) is provided to the Banco de España by one of the major credit institutions;

- in the event of failure to deliver securities, a mechanism called the “centralised securities loan” is applied by the SCLV. The purpose of this automatic securities lending procedure is to deliver securities to buyers on the settlement date. The non-performing seller obviously does not receive payment from its sale. The SCLV retains these funds, on which a return is obtained to pay interest on the securities borrowed;
- on the AIAF market, Espaclear settlement members undertake to finance the non-performing institution, in the event of default of cash, through an agreed pro rata mechanism;
- as is usual in derivatives markets, MEFFSA has a collateral system through which settlement is guaranteed by one of the major credit institutions.

#### 4.3.8 Pricing

The central book-entry system has not established any specific pricing policy. Such policy is defined on a general basis in the STMD under the operating cost recovery principle (see Section 3.3.7).

The SCLV acts under the principle of return on its own resources and its users must cover the cost of services provided. The SCLV's budget must cover all expenses with its ordinary receipts. Currently, the SCLV's membership fee is ESP 350,000 (ECU 2,203) per year. The settlement fee changes by tiers according to the amount to be settled, whereby the minimum fee is ESP 25 (ECU 0.2) (up to ESP 5,000 (ECU 31) to be settled) and the maximum fee is ESP 250 (ECU 2) (more than ESP 25 million (ECU 0.2 million) to be settled).

Espaclear has charged the following fees since May 1992: for system membership: ESP 300,000 (ECU 1,888); the annual fee: ESP 120,000 (ECU 755); transactions: between ESP 500 (ECU 3) and ESP 2,500 (ECU 16).

MEFFSA charges a wide range of fees (ESP 50, 75, 200 or 400 (ECU 0.3, 0.5, 1 or 3) per transaction) according to the type of contract traded.

#### **4.3.9 Main projects and policies being implemented**

The basic purpose of the projects envisaged is the implementation of the agreements reached by EU central banks in view of EMU.

One of these projects specifically concerns the transforming of the STMD and thus the settlement system of the central book-entry system into a real-time system. As the delivery versus payment principle is to be maintained, this shift will imply the interactive operation of securities accounts and centralised accounts for the settlement of each transaction, which

is expected to require the development of very complex computer applications.

On stock markets, a new interactive communication system enabling the exchange of real-time messages via computers is under way and will allow settlement three days after the trade date (T+3) in 1996.

MEFFSA is discussing with the managers of other European derivatives markets the possibility of opening new trading areas to futures contracts traded in each market, and will carry out the technical adjustments required to ensure compatibility with other systems.

Finally, the incorporation of the Community Directive on Investment Services in Spanish legislation is also under way.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	38,836.3	38,915.6	39,005.7	39,082.6	39,143.4
Gross domestic product (ESP billions)	50,145.2	54,927.3	59,081.4	60,905.1	64,616.8
Exchange rate vis-à-vis ECU <sup>(2)</sup>	129.4279	128.4608	132.4428	148.9101	158.9029

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

ES

**Table 2**
**Settlement media used by non-banks <sup>(1)</sup>**
*(end of year)*

	ESP billions				
	1990	1991	1992	1993	1994
Notes and coins	4,533	5,607	6,025	6,509	7,164
Transferable deposits	18,504	20,190	19,666	20,458	21,589
Narrow money supply (M1)	23,037	25,797	25,691	26,967	28,753
Deposits in foreign currencies	127	201	295	444	498

(1) Including non-bank financial institutions.

**Table 3**
**Settlement media used by deposit-taking institutions**
*(end of year)*

	ESP billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	1,525	1,719	1,145	841	904
<i>of which can be used for settlement</i>	<i>1,525</i>	<i>1,719</i>	<i>1,145</i>	<i>841</i>	<i>904</i>
Free reserves held at central bank	13	24	11	12	14
Transferable deposits at other institutions	211	191	188	243	285

**Table 4****Banknotes and coins***(total value, end of year)*

	ESP billions				
	1990	1991	1992	1993	1994
Total banknotes issued	4,717	5,791	6,210	6,683	7,324
of which:					
ESP 10,000	1,427	2,282	2,756	3,222	3,700
ESP 5,000	2,747	2,949	2,907	2,901	3,028
ESP 2,000	139	197	227	263	317
ESP 1,000	390	351	313	291	273
Other	13	12	7	5	5
Coins issued	265	281	297	306	333
of which:					
ESP 500	81	83	85	86	89
ESP 200	19	21	22	22	22
ESP 100	95	98	101	105	109
ESP 50	10	10	10	10	10
ESP 25	32	35	38	40	42
ESP 5	19	20	23	23	24
ESP 1	6	7	7	7	7
Other	2	5	9	11	11
Notes and coins held by credit institutions	449	464	482	480	493
Notes and coins in circulation outside credit institutions	4,533	5,607	6,024	6,509	7,164

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts <sup>(1)</sup> (thousands)	Value of accounts (ESP billions)
Central bank	1	52	-	0
Commercial banks	165	17,259	30,304	10,369
Savings banks	52	14,583	37,371	10,066
Co-operative and rural banks	97	3,104	4,178	1,138
Post office	-	-	-	-
<b>TOTAL</b>	<b>315</b>	<b>34,998</b>	<b>71,853</b>	<b>21,573</b>
Branches of foreign banks	55	132	32	112
of which EC-based	32	95	26	62

(1) The accounts of foreign branches of Spanish banks are included.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
Cash dispensers and ATMs					
Number of networks	3	3	3	3	3
Number of machines	14,000	17,210	19,704	21,771	23,425
Volume of transactions (millions)	355	374	398	460	509
Value of transactions (ESP billions)	4,205	4,422	5,071	6,006	6,803
EFTPOS terminals					
Number of networks	3	3	3	3	3
Number of machines	311,900	217,553	261,949	323,889	385,749
Volume of transactions (millions)	79	98	141	227	253
Value of transactions (ESP billions)	870	994	1,244	1,458	1,700

ES

**Table 7****Number of payment cards in circulation <sup>(1)</sup>***(end of year)*

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	23,600	29,053	32,056	32,565	32,352
Cards with a debit/credit function	23,600	29,053	32,056	32,565	32,352
<i>of which:</i>					
<i>cards with a debit function</i>	<i>n.a.</i>	29,053	32,056	32,565	32,352
<i>cards with a credit function</i>	<i>n.a.</i>	9,243	9,869	10,384	10,434
Cards with a cheque guarantee function	-	-	-	-	-
Retailer cards	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Clearing house	307.3	277.4	252.4	182.9	112.1
Retail payments					
<i>Cheques</i>	56.1	25.4	19.1	14.1	10.9
<i>Paper-based credit transfers</i>	-	-	-	-	-
<i>Direct debits</i>	141.7	144.0	125.0	81.0	43.3
<i>Bills of exchange</i>	109.5	108.0	106.8	86.0	56.1
Large-value payments <sup>(1)</sup>					
<i>Foreign exchange transactions</i> <sup>(2)</sup>	<i>n.a.</i>	<i>n.a.</i>	0.11	0.13	0.12
<i>Cross-border transfers</i> <sup>(3)</sup>	<i>n.a.</i>	<i>n.a.</i>	1.43	1.65	1.63
SNCE	261.6	310.8	355.2	431.9	515.5
Computer link					
<i>Cheques</i>	101.0	119.8	126.6	126.1	126.9
<i>Credit transfers</i>	-	-	28.7	51.1	61.1
Magnetic tape					
<i>Cheques</i>	52.9	43.8	33.3	20.8	16.6
<i>Credit transfers</i>	54.0	58.3	32.8	21.0	17.0
<i>Direct debits</i>	35.1	58.8	98.4	164.1	224.4
<i>Petrol cheques</i>	14.6	22.5	24.7	24.7	22.7
<i>Bills of exchange</i>	4.0	7.6	10.7	24.1	46.8
STMD	0.55	0.60	0.74	0.88	0.89
Interbank loans market	0.22	0.20	0.24	0.30	0.27
Book-entry debt market	0.31	0.38	0.48	0.57	0.60
Interbank transfers	0.02	0.02	0.02	0.02	0.02

(1) Only at the Madrid Clearing House.

(2) Peseta leg of foreign exchange transactions.

(3) Large-value transfers from/to non-residents denominated in pesetas.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	ESP billions				
	1990	1991	1992	1993	1994
Clearing house	81,169	60,656	688,637	1,427,594	1,387,959
Retail payments					
<i>Cheques</i>	56,000	32,718	26,670	19,729	14,717
<i>Paper-based credit transfers</i>	-	-	-	-	-
<i>Direct debits</i>	4,300	4,979	4,996	3,764	2,586
<i>Bills of exchange</i>	20,869	22,959	23,677	21,018	18,420
Large-value payments <sup>(1)</sup>					
<i>Foreign exchange transactions</i> <sup>(2)</sup>	<i>n.a.</i>	<i>n.a.</i>	91,075	196,759	202,219
<i>Cross-border transfers</i> <sup>(3)</sup>	<i>n.a.</i>	<i>n.a.</i>	542,219	1,186,324	1,150,017
SNCE	42,946	69,483	77,251	81,506	91,826
Computer link					
<i>Cheques</i>	17,975	36,469	43,175	45,397	49,238
<i>Credit transfers</i>	-	-	6,187	11,080	14,347
Magnetic tape					
<i>Cheques</i>	11,800	15,604	12,571	8,605	8,369
<i>Credit transfers</i>	12,300	15,498	11,947	10,484	9,862
<i>Direct debits</i>	650	1,311	2,527	4,332	6,105
<i>Petrol cheques</i>	35	57	67	62	54
<i>Bills of exchange</i>	186	544	777	1,546	3,851
STMD	907,000	1,447,960	1,538,977	2,602,096	2,784,127
Interbank loans market	535,000	652,457	649,980	859,004	832,726
Book-entry debt market	357,000	773,584	862,924	1,706,043	1,909,184
Interbank transfers	15,000	21,919	26,073	37,049	42,217

(1) Only at the Madrid Clearing House.

(2) Peseta leg of foreign exchange transactions.

(3) Large-value transfers from/to non-residents denominated in pesetas.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>SACDE</b>			
Banks	137	50	134
Savings Banks	52	27	52
Credit co-operatives	34	4	34
Stockbrokers	49	45	19
Insurance companies	5	0	4
Official credit institutions	1	0	1
Mutual funds	13	0	0
International financial organisations	5	0	0
Deposit guarantee funds	1	0	1
<b>SCLV</b>			
Banks	45	45	41
Savings banks	6	6	6
Credit co-operatives	1	1	1
Stockbrokers	55	55	7
<b>ESPACLEAR</b>			
Banks	68	68	55
Savings banks	15	15	15
Credit co-operatives	1	1	1
Stockbrokers	30	29	9
Cedel / Euroclear	0	2	0

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
<b>SACDE</b>					
Government securities	10.5	9.9	7.8	7.3	6.5
CDs issued by the Banco de España	0.07	0.11	0.11	0.14	0.10
Futures and options	0.005	0.02	0.02	0.07	0.09
<b>SCLV</b>					
Bonds	-	-	-	0.5	0.1
Shares	-	-	-	4.1	4.4
Futures and options	-	-	-	0.007	0.05
<b>ESPACLEAR</b>					
	thousands				
Bonds	0.04	1.2	4.5	7.7	8.1
Commercial paper	2.2	4.5	4.9	5.1	3.5

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	ESP billions				
	1990	1991	1992	1993	1994
<b>SACDE</b>					
Government securities	689,375	950,915	1,143,434	2,249,117	2,638,171
CDs issued by the Banco de España	150,251	368,710	301,232	288,315	240,479
Futures and options	52	173	197	680	925
<b>SCLV</b>					
Bonds	-	-	-	2,287	1,805
Shares	-	-	-	6,531	18,357
Futures and options	-	-	-	2.7	7.3
<b>ESPACLEAR</b>					
Bonds	16	233	764	1,678	2,283
Commercial paper	321	810	820	908	595

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	ESP billions				
	1990	1991	1992	1993	1994
SACDE					
Government securities	15,733	17,124	18,550	25,305	27,892
CDs issued by the Banco de España	3,313	3,311	3,310	3,013	2,689
SCLV					
Bonds	-	-	-	2,878	3,372
Shares	-	-	-	3,916	4,463
ESPACLEAR					
Bonds	45	281	799	1,542	2,218
Commercial paper	485	642	785	902	711

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	270	252	241	217	209
Payments by debit and credit cards	79	98.3	141	227	253
Paper-based credit transfers	-	-	-	-	-
<i>customer initiated</i>	-	-	-	-	-
<i>interbank/large-value</i>	-	-	-	-	-
Paperless credit transfers <sup>(1)</sup>	58.5	63.2	68.3	79.2	85.5
<i>customer initiated</i>	58.0	62.6	65.8	76.2	82.5
<i>interbank/large-value</i>	0.5	0.6	2.5	3.0	3.0
Direct debits	501	575.5	634.0	695.5	758.0
Others					
<i>Bills of exchange</i>	126	128	130	122	114
<b>TOTAL</b>	<b>1,034.5</b>	<b>1,117.4</b>	<b>1,214.7</b>	<b>1,340.9</b>	<b>1,419.6</b>

(1) The data for 1990 and 1991 exclude large-value payments at the Madrid Clearing House.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	ESP billions				
	1990	1991	1992	1993	1994
Cheques issued	95,810	94,684	92,043	82,344	80,118
Payments by debit and credit cards	870	994	1,244	1,458	1,700
Paper-based credit transfers	-	-	-	-	-
<i>customer initiated</i>	-	-	-	-	-
<i>interbank/large-value</i>	-	-	-	-	-
Paperless credit transfers <sup>(1)</sup>	920,300	1,464,713	2,285,437	4,156,111	4,311,906
<i>customer initiated</i>	13,300	16,753	19,585	23,289	25,408
<i>interbank/large-value</i>	907,000	1,447,960	2,265,852	4,132,822	4,286,498
Direct debits	16,950	21,537	25,729	27,689	31,150
Others					
<i>Bills of exchange</i>	23,393	26,112	27,168	25,069	24,743
<b>TOTAL</b>	<b>1,057,323</b>	<b>1,608,040</b>	<b>2,431,621</b>	<b>4,292,671</b>	<b>4,449,617</b>

(1) The data for 1990 and 1991 exclude large-value payments at the Madrid Clearing House.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	102	111	117	117	115
of which:					
<i>members</i>	53	56	52	50	52
<i>sub-members</i>	49	55	65	67	63
<i>participants</i>	-	-	-	-	-
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	5,467,526	7,348,168	10,086,995	11,529,186	12,564,221
of which:					
<i>category I</i>	1,205,043	1,708,449	2,032,529	2,263,748	2,643,318
<i>category II</i>	1,472,952	1,852,473	3,463,874	3,926,640	4,043,649
<i>sent/received to/from domestic users</i>	496,681	1,110,773	2,518,087	2,920,843	3,086,299
Total messages received	6,347,905	7,782,839	10,019,114	11,299,175	12,158,220
of which:					
<i>category I</i>	<i>n.a.</i>	<i>n.a.</i>	2,321,360	2,515,427	2,858,001
<i>category II</i>	<i>n.a.</i>	<i>n.a.</i>	3,664,058	4,160,771	4,225,242
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>AFB</b>	French Banks' Association - <i>Association Française des Banques</i>
<b>AFEC</b>	French Association of Credit Institutions - <i>Association Française des Etablissements de Crédit</i>
<b>ASF</b>	French Association of Finance Companies - <i>Association des Sociétés Financières</i>
<b>BMTN</b>	Medium-Term Notes - <i>Bons à Moyen Terme Négociables</i>
<b>CB</b>	<i>Cartes Bancaires</i>
<b>CBV</b>	<i>Conseil des Bourses de Valeurs</i>
<b>CEC</b>	Credit Institutions Committee - <i>Comité des Etablissements de Crédit</i>
<b>CFONB</b>	French Committee for banking organisation and standards - <i>Comité Français d'Organisation et de Normalisation Bancaire</i>
<b>CNC</b>	National Credit Council - <i>Conseil national du crédit</i>
<b>COB</b>	Stock Exchange Commission - <i>Commission des Opérations de Bourse</i>
<b>CRB</b>	Banking Regulatory Committee - <i>Comité de la Réglementation Bancaire</i>
<b>CREIC</b>	Regional truncated cheque exchange centres - <i>Centres Régionaux d'Echanges d'Images-Chèques</i>
<b>CRI</b>	Centre for Interbank Funds Transfers - <i>Centrale des Règlements Interbancaires</i>
<b>FCC</b>	Central cheque register - <i>Fichier Central des Chèques</i>
<b>FNCI</b>	<i>Fichier National des Chèques Irréguliers</i>
<b>GCN</b>	<i>Groupe de Consolidation Nationale</i>
<b>GIE</b>	Economic Interest Groupings - <i>Groupements d'Intérêt Economique</i>
<b>GIE CB</b>	Bank Card Consortium - <i>Groupement des Cartes Bancaires</i>
<b>GSIT</b>	Interbank Teleclearing System Consortium - <i>GIE pour un système Bancaire de Télécompensation</i>
<b>ISB</b>	Interbroker system - <i>Inter-sociétés de Bourse</i>
<b>MATIF</b>	Future Market Authority - <i>Marché à Terme International de France</i>
<b>MONEP</b>	Paris negotiable options exchange - <i>Marché des Options négociables de Paris</i>
<b>OAT</b>	French Treasury Bond - <i>Obligations Assimilables du Trésor</i>
<b>RCB</b>	Banking Cards Network - <i>Réseau Cartes Bancaires</i>
<b>RELIT</b>	Delivery versus payment system - <i>Système de Règlement Livraison de Titres</i>
<b>RGV</b>	<i>RELIT Grande Vitesse</i>
<b>SAGITTAIRE</b>	Automated system for the integrated handling and settlement of foreign transactions by means of telecommunications - <i>Système Automatisé de Gestion Intégrée par Télétransmission de Transactions Avec Imputation de Règlement Etranger</i>

<b>SATURNE</b>	<i>Système Automatisé de Traitement Unifié des Règlements de créances NEgotiables</i>
<b>SBI</b>	<i>Broker-intermediary system - Sociétés de Bourse-Intermédiaires</i>
<b>SBF</b>	<i>Société des Bourses Françaises</i>
<b>SCR</b>	<i>Joint collection service - Service Commun de Recouvrement</i>
<b>SICOVAM</b>	<i>Société Interprofessionnelle pour la COmpensation des VAleurs Mobilières</i>
<b>SIGMA</b>	<i>Integrated, automated system for message management - Système Intégré de Gestion des Messages Automatisé</i>
<b>SIRE</b>	<i>Système Intégré de Règlement ECU</i>
<b>SIT</b>	<i>Interbank teleclearing system - Système interbancaire de télécompensation</i>
<b>SLAB</b>	<i>Delivery by mutual consent - Système de Livraison par Accord Bilatéral</i>
<b>SNP</b>	<i>Protected net system - Système Net Protégé</i>
<b>SNPC</b>	<i>National system for payments by cards - Système National de Paiement par Carte</i>
<b>TARGET</b>	<i>Trans-European Automated Real-time Gross settlement Express Transfer system</i>
<b>TBF</b>	<i>Banque de France transfers - Transferts Banque de France</i>
<b>TIP</b>	<i>Interbank payment order - Titre Interbancaire de Paiement</i>

## Introduction

In France, the administration of payment media has become an industry in its own right, notably in terms of the scale of the investments being made to modernise exchange and settlement systems. The administration of more than 9 billion cashless payments a year requires high-volume processing and represents about 35% of the banks' overhead expenses.

The activity is in the throes of far-reaching changes: it has grown at an annual rate of 10% in recent years, five times faster than GDP. Over the past ten years, considerable efforts have been made to cut the cost of bank intermediation. Prominent among these, measures have been taken to promote the automation of payment media (55.6% of cashless payments are now automated), and

the rationalisation of interbank exchange circuits.

Investment in the modernisation of exchange circuits over the past decade has lowered processing costs in constant terms. At present, automation-related productivity gains have, for the most part, been achieved for all payment instruments except cheques, 93% of which are still physically exchanged.

Finally, a risk-prevention programme for interbank settlements is being implemented. It will allow the possibility of intraday finality to be introduced for large-value payments and for the settlement of balances arising from payment and securities settlement systems.

## I. Institutional aspects

### 1.1 General legal aspects

Banking activities and the conditions in which they are carried out in France are governed by the Banking Act of 24th January 1984. Only credit institutions, the Treasury, the Post Office, the *Caisse des Dépôts et des Consignations* (public trustee office) and the Banque de France may conduct banking operations, including the issue and administration of payment media, as a regular part of their business. The Act of 16th July 1992, which supplements and amends the 1984 Banking Act, incorporated the Second Banking Directive and the principle of mutual recognition of banking authorisations in French law.

Article 4 of the new statutes of the Banque de France, derived from the Act of 4th August 1993, stipulates that the Bank's task is to ensure the smooth operation and the security of payment systems.

### 1.2 Financial intermediaries that provide payment services

#### 1.2.1 Credit institutions

Under the 1984 Banking Act, credit institutions are divided into the following categories:

- banks or commercial banks, all-purpose institutions with full authorisation to engage in a very wide range of activities. They perform all types of banking operations, including taking all types of deposits and carrying out related operations such as foreign exchange transactions and the retailing of securities and financial products. The breakdown of these banks is as follows:<sup>1</sup>
  - 391 banks conducting business in metropolitan France, of which 302 are companies incorporated under French law, including sixty-three subsidiaries of foreign banks and thirty-two institutions controlled by non-residents;
  - eighty-nine branches of foreign banks, of which forty-six are branches of EU banks and forty-three are branches of banks having their headquarters in third countries;
- a series of structured networks of banks, comprising the co-operative banks (*Banques Populaires, Crédit Agricole, Crédit Mutuel*), conventional savings banks (as opposed to the National Savings Bank - *Caisse Nationale d'Épargne* - which is run by the Post Office), and municipal credit banks, which are also authorised to receive all types of deposits but whose banking activities are limited in certain respects by the legislation or regulations by which they are governed. These banks do not usually compete with one another in the same network because each of them operates within an exclusive territorial area. At a national level, central bodies governed by the 1984 Banking Act are responsible for organising the networks and providing members with administrative, technical and financial assistance. They also have a supervisory role;
- finance companies (*sociétés financières*) which, except where specifically exempt, are not allowed to take deposits from the public for less than two years and are further restricted in their activities in accordance with their status. There are 857 such institutions. Their chief business is either lending or securities trading;
- specialised financial institutions (*Institutions Financières Spécialisées*), entrusted by the State with a permanent public interest

<sup>1</sup> Source: Comité des Etablissements de Crédit (*Credit Institutions Committee*) 1994 Report.

mission; except incidentally, they may not engage in banking operations other than those pertaining to their mission.

### 1.2.2 Other institutions

A number of institutions or bodies may administer accounts and carry out banking operations even though they are not governed by the Banking Act. Chief among them are the Post Office and the Treasury (*Trésor Public*).

#### Post Office

The Post Office's financial arm plays a significant role in the French financial system, with 9.6 million sight accounts, most of which are held on the books of the Postal Cheque Centres (*Centres de Chèques Postaux*), and 21 million time accounts opened with the National Savings Bank.

#### Treasury

The Treasury's receiving and paying officers manage bank accounts (837,000 sight accounts) and carry out a number of banking operations.

## 1.3 The role of the central bank

The new statutes of the Banque de France, promulgated on 4th August 1993, have enhanced its role with regard to the payment

system. Article 4 states that the Banque de France has to "ensure the smooth operation and the security of payment systems", while Article 5 stipulates that it has the sole right to "issue banknotes accepted as legal tender within metropolitan France". The new statutes recognise these two tasks as fundamental responsibilities of the central bank.

### 1.3.1 General responsibilities

The Banque de France plays a major role in payment media and interbank payment systems, being responsible for:

- the oversight of the payment systems;
- exercising a decisive influence through market operations and its central position as administrator (of joint services on behalf of the financial community) and as operator (mainly owing to the scale of the operations it performs on behalf of the Treasury);
- the management of security functions to ensure the soundness of the system and combat fraud;
- promoting of the modernisation of the French payment system by playing an active role in reforms introduced in consultation with the banking profession.

#### Statutory responsibilities

- Cash payments

The Banque de France is empowered with the sole right to issue banknotes which are accepted as legal tender within metropolitan France,<sup>2</sup> and it circulates coin on behalf of the Treasury.

The Banque de France itself designs and prints banknotes, replaces worn or damaged banknotes and detects counterfeit notes. Through its 211 branches, it circulates

<sup>2</sup> The geographical competence of the Banque de France is restricted to metropolitan France. The same banknotes, which also circulate in French Overseas Departments, are issued to the public in these territories by the institution that holds the privilege of issuing currency in the Overseas Departments. As regards the Overseas Territories, the banknotes in Franc CFP (*Change Pacific Franc*) are issued by the Institut d'Emission d'Outre Mer, the institution that holds the privilege of issuing currency in the Overseas Territories.

banknotes and coin and ensures that the quantity and quality meet the needs of the public.

The central bank is currently modernising the manufacture of the different banknotes in order to improve their quality and prevent counterfeiting, and is also in the process of renewing the full series of denominations in circulation.

#### ■ Administration of accounts

The Banque de France administers the account of the Treasury and as such is responsible for all Treasury payments and for the collection of receivables.

One or more current accounts are opened in its books in the name of credit institutions (see Section 1.2.1).

The Banque de France administers around 80,000 accounts in total, opened in the name of the Treasury, credit institutions, some private sector and public sector corporations and a small number of private customers, mostly central bank staff. The opening of new accounts for private individuals or companies is now limited by its statutes.

#### *Establishment of common rules*

The Banque de France participates in the creation of common rules set by the CFONB (see Section 1.4.4).

#### *Supervision and audit*

There is no specific procedure whereby the central bank monitors compliance with the rules relating directly or indirectly to interbank exchange and settlement systems, over and above the broad supervisory responsibilities assumed by the Banking Commission (see Section 1.4.3).

However, the Banque de France regularly performs audit procedures for the exchange and interbank settlement systems it administers, paying particular attention to maintaining the continuity of service.

### **1.3.2 Provision of processing and settlement facilities**

#### *Administration of interbank settlement systems*

The Banque de France administers all 102 provincial clearing houses (see Section 3.8), nine CREIC (see Section 3.7) and SAGITTAIRE (see Section 3.5). In 1994 the computer clearing centres which had been run by the Banque de France since 1969 were all replaced by the SIT (see Section 3.6), administered by an interbank consortium.

#### *Provision of settlement accounts*

To date, credit institutions have not had special accounts earmarked for interbank settlements. The Banque de France administers one or several accounts in the name of each institution, the end-of-day balance of which is used to calculate reserve requirements. All direct transactions between the banks are recorded in these accounts. The Banque de France is always the settlement agent for the net settlement systems.

These accounts are used for:

- local credit transfers between accounts through the use of special forms (Banque de France credit transfers) which are mostly used by banks and stockbrokers. These transfers are not final until the close of the accounting day;
- urgent out-of-town credit transfers, enabling same-day transfers. Funds must be available prior to the transfer, which is final upon execution.

From late 1996 onwards, TBF (see Section 3.2) operations will be isolated in special accounts (settlement current accounts). Other operations will be transacted via ordinary current accounts. The settlement of balances resulting from systems other than TBF (such as retail payment systems, or delivery versus payment systems) will be channelled to settlement accounts through TBF.

#### *Provision of credit facilities*

As overdrafts will not be allowed in TBF, intraday repos will be available to the institutions through the RGV system (see Section 4.5).

#### *Pricing policies*

The new statutes of the Banque de France (see Section 1.3) clearly state that all services provided to the Treasury or to third parties “must be remunerated in order to cover the expenses incurred by the Banque de France”.

These imply the direct charging for services with the exception of current accounts and clearing house administration costs.

### **1.3.3 Monetary policy and payment systems**

#### *Reserve requirements*

Credit institutions in France must meet minimum reserve requirements, which are calculated over a monthly period as an average of end-of-day balance. Banknotes and coin held by the banking institutions are also taken into account. The total amount of credit institutions' balances on Banque de France accounts at the end of any given day may be used during the following day to make payments.

#### *Supply of liquidity*

The Banque de France's intervention on the money market can be described in the following way:

- the two intervention techniques at official rates on the interbank market: repurchase agreement tenders, on the central bank's own initiative, the rate on which represents the lowest rate at which banks can obtain central bank money; and the 5 to 10-day repurchase facility, activated on the banks' initiative, at a rate fixed by the Banque de France, which usually constitutes the upper limit of call money fluctuations;
- the fine-tuning of market conditions: this includes open market operations to modify the volume of Treasury bills held by the Banque de France, and repurchase transactions or the withdrawal of liquidity on a short-term basis.

All repurchase transactions imply the presence of collateral, which may be either Treasury bills, or notes, or private paper (with a minimum quality rating quoted by the Banque de France services). Any collateral that is dematerialised is delivered via the SATURNE delivery versus payment system.

All these operations are settled on the accounts held by credit institutions with the Banque de France.

At present, credit institutions are entirely free to manage their cash as they wish during the day because, as a rule, their only obligation is to ensure that their current accounts on the books of the Banque de France are not in debit at the end of the accounting day. Moreover, since Paris has, as yet, no system for recording money market operations in real time, these operations are processed ex post.

The implementation, under the risk reduction programme, of TBF (see Section 3.2) will most probably alter the structure of the

banks' cash management. Treasurers will have comprehensive real-time information on movements on their accounts at the central bank and on queued operations. Liquidity will be available through daylight repurchase agreements so as to meet temporary intraday cash needs. These facilities, fully backed by securities, will be provided free of charge by the Banque de France, which will then no longer tolerate a debit balance on a credit institution's account.

## 1.4 The role of other private and public sector bodies

### 1.4.1 Representative bodies

Credit institutions are collectively represented in their relations with the public authorities through a two-tier system:

- first, institutions which are not members of banking networks (see Section 1.2.1) must belong to a professional association acting in the general interest, such as the AFB for banks or the ASF for finance companies. In the case of banking networks, this task is performed by their central body;
- second, the central bodies of banking networks and professional associations mentioned above are affiliated to the AFEC, which represents all credit institutions, provides information to its members and the public, studies all issues of common interest and prepares relevant recommendations with a view, where appropriate, to promoting co-operation between networks. It may also devise and administer services of common interest.

### 1.4.2 National Credit Council (Conseil national du crédit, CNC)

The CNC is chaired by the Minister of the Economy, Finance and Budget. Its vice-chairman is the Governor of the Banque de France. The CNC studies the conditions in which the

banking and financial system operates, particularly its relations with customers, as well as the management of payment media.

The CNC serves as a forum for wide-ranging consultation between the representatives of all parties involved in the economic and financial life of the country. As regards payment instruments, it has studied new electronic payment media, especially the electronic purse.

### 1.4.3 Regulatory committees

There are three regulatory committees:

- the CRB issues general regulations applicable to credit institutions (on credit policy), security standards, rates and terms for financial operations, and regulations governing the setting-up of banking networks;
- the CEC is primarily responsible for taking all administrative decisions concerning individual credit institutions, such as the granting of authorisations or exemptions;
- the Banking Commission (*Commission Bancaire*) is responsible for supervising credit institutions. Chaired by the Governor of the Banque de France, it has a mandate to oversee credit institutions, monitor their operating conditions and ensure the quality of their financial situation. The Banque de France provides the General Secretariat of the Banking Commission with the staff and resources required to carry out these supervisory duties.

### 1.4.4 Other bodies

Several bodies have been established to study problems arising from the evolution of the payment system, primarily in terms of technical change and standardisation. The Banque de France plays an active role in these bodies.

The main bodies concerned are:

- the Committee for banking organisation and standards (CFONB). This Committee has set up a large number of working groups to study issues of common interest relating to the simplification of banking operations and the rationalisation and codification of methods and documents used by banks;
- a number of Economic Interest Groupings (GIE), notably the S.W.I.F.T. users' group in France, the GSIT (see Section 3.6) and the GIE CB (see Section 2.2.4);
- the Centre for Interbank Funds Transfers (CRI), a corporation with the Banque de France and eleven banks as shareholders. Its purpose is to act as a forum in the field of large-value operations. It will also administer a technical platform for large-value payments (see Section 3.2).

## 2. Payment media used by non-banks

### 2.1 Cash payments

Both banknotes and coin are legal tender, but the acceptance of coin is compulsory only within certain limits.

There were five denominations of banknotes (FRF 20, 50, 100, 200 and 500) and ten denominations of coin (5, 10, 20 and 50 centimes; and FRF 1, 2, 5, 10, 20 and 100<sup>3</sup>) in circulation at the end of 1994.

The percentage of cash in circulation in the M1 monetary aggregate is a little under 15%, compared with 18% ten years ago and 30% twenty years ago, while its share in M3 stabilised at 4.7% in 1994 - due to the relatively slow growth of M3 in recent years - after having fallen steadily (6.2% in 1987, 4.7% in 1992).

The exact annual number of cash transactions is not known. Cash payments prevail in terms of volume (more than 80% of all payments), while in value terms their share represented a little under 5% in 1994.

Customers use two principal means to withdraw cash:

- cards (see Section 2.2.4) which, for security reasons, have a standard withdrawal ceiling of FRF 2,000 per seven-day period;
- cheques.

The current volume of banknotes and coin in circulation is not expected to change substantially in the foreseeable future.

### 2.2 Non-cash payments

Customers of banks enjoy access to a wide range of payment media. The cheque predominates, despite increasing recourse to automated payment instruments to the detriment of traditional paper-based forms of payment.

Most of the payment media described below are considered to be universally accepted in the exchange system, meaning that the paying institution is bound to accept them whenever they are presented. Other operations, such as truncated cheques and specific funds

<sup>3</sup> Silver FRF 100 coins are rarely used for payments.

transfers, require prior agreement between receiving and presenting banks.

### 2.2.1 Credit transfers

With 1.6 billion operations in 1994, credit transfers rank third behind cheques and cards by number of transactions. They account for 17% of exchanges (bank transfers and postal transfers).<sup>4</sup>

For the most part, this instrument is used for payments made by companies, government agencies and local authorities, but seldom by individuals.

Almost 98% of all operations were automated by 1994 and all credit transfers will be in a paperless form by late 1996.

Ordinary transfers are settled on the day of presentation, while credit transfers for payment on a due date (which remain rare) are presented two or three days in advance of interbank settlement.

Various types of automated transfers were introduced in 1993 to meet specific needs. Referenced credit transfers (*Virement Référéncé*, VR) are initiated through a home banking service in settlement of an invoice and contain all the references for the creditor. Credit transfers from abroad (*Virement d'Origine Extérieure*, VOE) enable a bank established in France to send a transfer received from abroad via the SIT (see Section 3.6) to the payee's bank, along with the information needed by the payee, such as the exchange rate applied and the commission charged. Credit transfers by electronic data interchange (*Virement Echange de Données Informatisées*, VEDI) contain message references in EDIFACT format. Special cash management credit transfers (*Virement Spécifique Orienté Trésorerie*, VSOT) make it possible to apply same-day value to interbank settlements for sums up to FRF 5 million.

### 2.2.2 Cheques

The cheque remains the most widely used payment instrument in France: approximately 4.9 billion cheques were written in 1994, representing 51% of all cashless payment media.

The decline in the relative share of cheques (in number) in all instruments observed in recent years has continued, falling to 51% in 1994, compared with 69% in 1984. However, the share is tending to stabilise at around 50%. This decline may be attributed primarily to very rapid growth in the use of cards for face-to-face payments and, to a lesser extent, to the growing use of automated payment media (direct debits and Interbank Payment Orders) for remote payments.

However, bank customers (companies and government agencies as well as individuals) clearly prefer cheques because they are easy to use, free of charge and versatile, whether for remote payments (of bills, for example) or for face-to-face payments to retailers.

According to available estimates, individuals write an average of 120 cheques a year, and 50% of cheques are for amounts less than FRF 300 (ECU 46). Face-to-face payments and remote payments account for 3.3 billion and 1.6 billion operations respectively.

Efforts by the banking industry have considerably lowered the cost of processing cheques:

- use of magnetic ink character recognition technology (CMC7 standard) and reader-sorter machines;
- circulation restricted to truncated cheques within most of the major networks;

<sup>4</sup> Credit transfers represent a high percentage (70.2%) of total cashless instruments in value terms, but this statistic has little significance owing to the use of this procedure for high-value transfers.

- simplification of interbank exchange, physically through clearing houses (93.3%) or electronically through CREIC (6.7%) (see Section 3.7).

Cheques are generally free of charge for the drawer, even if their administration represents a substantial expense. However, attempts by banks to charge for cheques have been blocked by consumers' associations asking in return for interest to be paid on sight deposits, which is currently prohibited.

To render this instrument secure, the Banque de France manages two databases:

- the FCC, which is administered by the Banque de France, centralises all information relating to payment incidents and to bank or court-ordered prohibitions, and informs all banks holding an account for the same customer. Account-holding institutions are required to consult the register before issuing the first cheque book to a new customer. Access to the FCC is restricted to banks;
- the FNCI. On the basis of mandatory reports from institutions on which cheques are drawn, this register keeps a record of lost or stolen cheques, and the details of closed accounts, the details of accounts opened in the name of a customer under a bank or court-ordered prohibition. This database is open to retailers.

The Act on cheque security, which came into effect on 1st June 1992, provides for preventive measures including verification by the FCC before cheque books are issued, and for the possibility to consult the FNCI before cheques are accepted. In order to encourage the settlement of debts, the law stipulates the instantaneous removal of the name of the person dishonouring a cheque from the databases.

### 2.2.3 Direct debits

Since their introduction in 1967, direct debits have been very successful (over 10% of all transactions in 1994, with 1 billion operations). They are used for recurring payments such as electricity, gas, telephone and water bills, etc., and for monthly income tax payments. They are popular because of the advantages they offer to banks (being fully automated, processing costs are relatively low), as well as to the utility companies themselves (by simplifying their accounting administration and allowing them to collect money on their own initiative), and even to individuals (by simplifying the payment).

Initiators of direct debits must be approved by a bank. The sender must also obtain a signed authorisation from the payer, which is then sent to the payer's bank. Before transmitting the direct debit order to its bank for collection, the sender must notify the payer of the amount and date of the debit (by sending an invoice, for example), to enable the latter to make sure there are sufficient funds on his/her account or to contest the order if he/she so wishes.

#### *The Interbank Payment Order (TIP)*

Use of the TIP (*Titre Interbancaire de Paiement*) has grown steadily since its introduction in February 1988. A TIP works in the same way as a direct debit, except the payer is required to assent to each payment by signing the TIP form which is sent with the corresponding invoice, as with a cheque.

The TIP allows creditors to rationalise and optimise the collection of receivables and banks are able to process them automatically at one of the thirteen centres approved by the CFONB before they are exchanged by the SIT. The TIP is expected gradually to replace most recurrent remote payments made by cheque.

#### 2.2.4 Payment cards

The three main categories of cards in use in France are bank cards, international travel and entertainment cards, and retailer cards. 1.7 billion bank card payments were made in 1994, representing 18% of all cashless transactions.

##### *Debit cards*

Bank cards are mostly debit cards<sup>5</sup> which generally enable the holder to benefit from deferred payment, since purchases are debited from the holder's account in the month following the date of the operation. Cash withdrawals from automatic cash dispensers are debited upon receipt of the corresponding transaction by the cardholder's bank.

Credit institutions issue cards either individually or through the Bank Card Consortium (GIE CB) created in 1984 to develop a common interbank service for payments, known as the SNPC (*Système National de Paiement par Carte*). This bank card's interoperability has been the main driving force behind the development of debit cards in France.

There were 23 million interbank cards, called *Cartes Bancaires* (CB) in circulation at end-1994. Approximately 16 million of these<sup>6</sup> also allow payment to be made abroad (to merchants affiliated to either VISA or Eurocard/MasterCard).

Recent years have consecrated the success of microprocessor technology, reducing bank card fraud to a quarter of its former level (to 0.037% in 1994).

A specific network, the Banking Cards Network (RCB), is used for the transmission of authorisation for withdrawals and payments. This real-time network enables an ATM or a POS terminal to obtain authorisation from the computer centre of the bank which has issued the card to

complete the operation. With the RCB, there is no need to set up a nationwide authorisation centre managing a national database.

Card payments are currently collected on completion of a complex procedure administered by interbank processing centres. Collection through the SIT started to be phased in from the second half of 1995.

##### *Credit cards, travel and entertainment cards*

These cards are issued by bodies which do not, in principle, take deposits, but which have credit institution status in France in accordance with the 1984 Banking Act (see Section 1.1).

##### *Retailer cards*

An estimated 20 million cards are issued by retailers or service providers in order to secure customer loyalty and, in some cases, grant credit facilities. The credit is repaid by debiting the customer's bank account, to which the card issuer does not have direct access. However, once such cards are used to obtain credit, or whenever they can be used at outlets other than the issuer's own, the card must be issued by a credit institution, even if the retailer's name generally features prominently on the card.

##### *Prepaid cards*

Besides phonecards issued by France Télécom and a number of similar projects (for the Paris Metro, airlines, etc.), a wide range of municipal card projects are currently in progress, involving approximately 18% of

<sup>5</sup> Although French bank cards are debit cards, banks may grant credit facilities to their customers on the accounts to which the bank cards are attached.

<sup>6</sup> 579,000 of the 15.9 million international cards are so-called prestige cards.

towns with more than 10,000 inhabitants. These cards provide access to various municipal services such as parking, school canteens, leisure facilities, transport, day-care centres, sports amenities, etc. In Paris, a special card issued by the city authorities is available for parking meters.

The Bank Card Consortium is also considering the introduction of a prepaid card, particularly suitable for certain types of customer, notably young people, and of an electronic purse reserved for small payments.

#### *ATM and POS networks*

There are 20,500 ATMs and cash dispensers in France. Automated Teller Machines (ATMs) may be used to request new cheque books, make teletransfers between two accounts held by the same account holder at the same institution, and consult account movements and balances, etc., services which are generally available only to the particular institution's customers (or to customers of the network or group), and to make cash withdrawals.

The retailers are equipped with electronic terminals (400,000 point-of-sale terminals at end-1994) and a few with manual printers to record transactions. Over 90% of transactions in 1994 were made via an electronic terminal. Retailers affiliated to the system enjoy guaranteed payments under certain conditions. Since the end of 1992 any transaction performed without verification of the PIN has not been guaranteed.

#### **2.2.5 Postal instruments**

Postal instruments are identical to the instruments used by the banks, except for the postal cheque which can also be used as a postal giro.

#### **2.2.6 Other payment instruments**

##### *Bills of exchange*

Bills of exchange now play a relatively small role, with companies preferring credit transfers: approximately 154 million transactions have been exchanged, on an exclusively paperless basis, since 1994.

Prior to each payment date, the payer receives a list of bills for which payment is due. The payer then transmits its instructions to the paying agent by returning the list appropriately annotated.

### **2.3 Recent developments**

#### **2.3.1 Telematic services**

Telepayment may be defined as a payment in which the two parties to the transaction are not face-to-face but linked by telematic means or by telephone.

At present telepayment remains a payment method of limited scope. First, not all creditors and banks display the same level of commitment to telepayment, because home banking is one element whereby competing banks differentiate the services they offer to customers. Second, it takes time for the general public to get used to new payment methods. Third, the procedures are sometimes still not sufficiently secure: in the absence of a signature or PIN, customers making a payment by card are still frequently identified only by the bank card number they give over the telephone or enter in the videotex terminal (known as a Minitel).

The CFONB launched two new telepayment instruments in 1993-94: the electronic payment order (*Titre Electronique de Paiement*, TEP), which works in the same way as a direct debit except that the payer assents to the debit with the creditor by telematic means for each payment; and the referenced

telepayment order (*Télévirement Référencé*, TVR), where the order, initiated through a telematic link with the bank, includes a reference number allowing the payee to identify the transaction upon receipt.

### 2.3.2 The use of EDIFACT messages

Despite the growing number of experiments and projects involving non-banking EDI (Electronic Data Interchange), such as exchanges between companies, between companies and government agencies, and

even between companies and the Banque de France for the statistics and reports needed to draw up the balance of payments, French banks are reticent about any joint initiative in this area.

Lastly, the CFONB, aware of company treasurers' need for additional information during payment operations, has decided to create an "EDI credit transfer" standard which can be exchanged through existing systems. It will offer the payee specific reference fields in the EDIFACT format. Operations of this kind can be exchanged through the SIT.

## 3. Interbank exchange and settlement systems

### 3.1 General overview

The current structure of the French payment system, excluding securities settlement systems (which are dealt with in Section 4), is divided into two main areas:

- retail payments: clearing houses, regional truncated cheque exchange centres (CREIC) and the interbank teleclearing system (SIT). Paper is being phased out as electronic exchange systems progress (57% of interbank exchanges are automated);
- large-value payments: the Paris Clearing House, SAGITTAIRE and Banque de France transfers. These three circuits account for most of the instruments that banks exchange with one another. The balances resulting from the first two are settled on the accounts held at the Banque de France, the latter is based on direct individual movements between these accounts. Ultimately, all of these operations will be handled in the large-value circuit.

Some transfers (about 20% of cashless payments) are made outside the official circuits governed by interbank agreements or conventions. These so-called unofficial channels are governed by bilateral agreements.

On the basis of a draft agreement published on 10th January 1995, large-value settlements will be organised via the following:

- the TBF real-time gross settlement system, offering intraday finality of payments. This will be connected to TARGET by a specific interface located within the Banque de France;
- a single network and technical platform, managed by the CRI, for sending payment instructions and receiving required information on their positions;
- furthermore, bankers are also considering the possibility of establishing a protected net payment system for large-value payments.

## 3.2 TBF system

The TBF system will be the French RTGS system and will be fully operational by December 1996.

### 3.2.1 Operating rules

Besides falling within the broad legal framework of banking activities, the TBF system is based on a set of agreements governing bilateral relations between the various players. These agreements are the following:

- TBF settlement account and service convention between the TBF administrator and individual participants;
- TBF settlement convention between the TBF administrator and each exogenous system.

The Banque de France administers and operates the TBF system. It is responsible for developing and maintaining the system hardware, software and organisation.

### 3.2.2 Participation

The following institutions may join the TBF system:

- institutions governed by Article 1 (credit institutions) and Article 8 (the Treasury, the Banque de France, the financial arm of the Post Office, the issuing institutes of French Overseas Territories and Departments, and the *Caisse des Dépôts et Consignations*) of the 1984 Banking Act;
- institutions holding securities accounts;
- European credit institutions benefiting from mutual recognition of authorisation.

A member may leave the system with forty-eight hours' notice. The TBF system may exclude a member without notice should that member fail to comply with the terms of the TBF settlement account and service convention.

### 3.2.3 Types of transactions handled

#### *TBF funds transfers*

TBF funds transfers allow the members to debit their settlement accounts in order to credit the account of another member. A TBF funds transfer may be initiated only by the holder of the debited account, if the holder has the necessary technical equipment, or by the manager of the group of accounts concerned. Funds transfers may be general or specific transactions to cover debit balances, reconstitute funds or level off credit balances.

#### *Central bank operations*

Central bank operations are transactions carried out by the Banque de France on the money market or foreign exchange market, or cash transactions carried out between credit institutions and the Banque de France. When these transactions are not settled by inclusion in a chaining of the RGV delivery versus payment system (see Section 4.5), they are settled through the TBF system.

#### *Settlements of payments exchanged in other systems (exogenous systems)*

Exogenous systems, in particular those allowing for the settlement of retail payments or securities using the delivery versus payment principle, transmit clearing balances to the CRI, which then reports them to participants and to the Banque de France to be processed in the TBF system.

### 3.2.4 Operation of the TBF system

#### *The TBF day*

The TBF system opens at 7.30 a.m. The Banque de France accepts instructions for intraday repurchase agreements entered in the system the previous accounting day, for execution the following day.

The banks may send orders at any time during the day, using the S.W.I.F.T. network. The CRI technical platform receives the stripped part of the message (the message itself is on hold in S.W.I.F.T.) and transmits it to the TBF system ("Y"-shaped scheme). Upon reception, the TBF system sends back notification of rejection, settlement, or queuing to the CRI. The CRI sends this notification to S.W.I.F.T. where the message is rebuilt and sent to the receiving bank. In the event of queuing, the receiver will receive notification from the TBF system, via the CRI, once the operation has been settled.

When an exogenous system settles in the TBF system, the settlements are retained during a settlement period that enables members with debit positions to raise the funds they might need. Should the Banque de France fail to settle an exogenous system, a recycling procedure is initiated; in this case, a rejection notice is sent to the CRI for the system administrator who then applies his own procedures.

#### *Close of the day*

The TBF accounting day is provisionally closed at 5.30 p.m.

After the provisional cut-off, the TBF system no longer accepts funds transfers. Each holder of a group of accounts receives the balance of that group. Each settlement account holder receives the balance of its settlement account and the balance of its group of accounts.

All operations still in the queue are rejected, while at the same time the balances of exogenous systems which, by way of exception, have not yet been settled, are returned to those systems.

The TBF system is then reopened for the adjustment period, with transfers to cover and adjust positions, taking into account outstanding intraday repurchase agreements, using three types of operation: transfers to cover debit positions, transfers to level off credit positions, and cash movements resulting from a last session of the delivery versus payment system, allowing for the repayment of intraday repurchase agreements and for overnight repurchase agreements between credit institutions.

The adjustment period enables treasurers to achieve a positive or zero balance before the end of the day.

The accounting day is finally closed at 6.30 p.m. on a decision of the administrator, after the last cash file from SICOVAM has been recorded to enable intraday repurchase agreements to be repaid.

#### *Queue management*

Two FIFO queues are managed by the TBF system as follows for each group of accounts:

- queue for priority I operations (high): central bank operations and exogenous system settlements;
- queue for priority 0 operations (low): all other TBF operations.

Before settlement, each operation is checked against the consolidated balance of the group of accounts and not against the balance of the individual settlement account.

### 3.2.5 Technical environment

The S.W.I.F.T. transmission network is the link between the participants and the CRI technical platform. It performs the following functions:

- secure message transmission in order to transport large-value payments and accounting information to the platform for use by the TBF system or the protected net system (SNP). The network time-stamps the transfers issued and guarantees that messages are always delivered to the recipient in the order in which they are sent. It can also store and hold messages for recipients;
- the network transmits an extract of the transfer to CRI (to be routed to the TBF system or SNP) and of the entire transfer to the recipient, on an ongoing basis (“Y”-shaped formation).

The CRI technical platform is the unifying component of the large-value payment system since all of the operations directed towards the TBF system or SNP, including those from exogenous systems, must pass through it.

The platform is responsible for routing funds transfers to the TBF system or SNP, routing information from either system to participants, carrying out a certain number of verifications, and performing statistical, management and administrative functions.

The CRI and TBF systems have full external backup on standby, enabling a restart in less than one hour in the event of problems on the main system.

### 3.2.6 Settlement procedures

TBF operations are carried out exclusively between settlement accounts, on which no other type of operation may be recorded.

TBF operations are kept in a single currency. As from the start of Economic and Monetary Union, this currency will be the euro, and all operations received by the system will have to be denominated in euro.

In principle settlement accounts are considered as a part of a group of accounts, even if the group contains only one account. A group of accounts has a consolidated balance equal to the sum of the individual balances of the accounts that make up the group. Each TBF participant has a single group of accounts. All the settlement accounts belonging to a participant are attached to its group of accounts.

Participants decide how many settlement accounts they wish to hold, subject to the agreement of the Banque de France.

Certain groups of accounts may be consolidated within National Consolidation Groups (*Groupes de Consolidation Nationale, GCN*).

### 3.2.7 Credit and liquidity risk

Overdrafts are not permitted on settlement accounts. However, TBF members can obtain liquidity from the Banque de France during the day through intraday repurchase agreements.

Any TBF participant holding for its own account securities that the Banque de France might accept as collateral for intraday liquidity may, at any time before the provisional cut-off, enter into an intraday repurchase agreement with the Banque de France. This operation is carried out at zero interest through the RGV delivery versus payment system.

Intraday repurchase agreements are designed to allow institutions to cope with any lags between debits and credits that may appear on participants' accounts during the day. The terms of intraday repurchase agreements will

therefore provide for their repayment by final cut-off at the latest.

In the very unlikely event that an institution is unable to repay an intraday repurchase agreement, the Banque de France will grant an overnight repurchase agreement at a very high penalty rate.

Eligible securities should take into account all market needs (particularly TBF and RGV). They are evaluated by the Banque de France on the basis of the last known official valuation, with a haircut to guard against any fall in price.

The system is designed to offer users maximum flexibility. At the beginning of the day, execution of instructions for intraday repurchase agreements in the overnight chaining (see Section 4) means that the corresponding funds are available when the TBF day starts. The possibility of instituting repurchase agreements during the first chainings of the morning allows TBF members to make immediate use of the securities released by repayment of the overnight or short-term repurchase agreements negotiated with the Capital Markets Department of the Banque de France.

During the day, and until the provisional cut-off, the large number of specific RGV chainings for central bank operations means that intraday repurchase agreements can be set up or repaid according to the institutions' needs.

### 3.2.8 Pricing

In consultation with the CRI, the Banque de France is considering a billing system for TBF participants on a full cost basis, along the following lines:

- membership fees;
- traffic: these charges cover most of the operating costs. They are based on a charge per message (transfers or requests), and are reviewed annually;

- specific services: these marginal charges concern specific services provided to a given participant.

The price structure will also have to take into account the rules drawn up in this field by European Union central banks.

## 3.3 Protected large-value net settlement system (*Système Net Protégé, SNP*)

The creation of a protected large-value net settlement system that could be used alongside the TBF system is currently under consideration by the banks. This system would be protected according to the Lamfalussy standards and the payment would become final only after end-of-day netting and settlement of balances via the TBF system.

## 3.4 Paris Clearing House

### 3.4.1 Operating rules

The Paris Clearing House (*chambre de compensation des banquiers de Paris*) is a non-profit-making association administered by a fifteen-member Management Committee. It is the only French Clearing House not managed by the Banque de France. Its operations are described in its regulations.

Exchanges are made in two sessions, at 10.30 a.m. and 12.15 p.m., and settlements take place at 3.15 p.m.

### 3.4.2 Participation

Direct participation is limited to thirty-eight members. In addition, a special company represents institutions which are not present or represented in Paris. Relations between the members and the 395 sub-participants are governed by bilateral agreements.

### 3.4.3 *Types of transactions handled*

The Paris Clearing House, concurrently with the provincial clearing houses, handles the exchange of paper payment instruments.

Unlike the other clearing houses, the Paris Clearing House handles, specifically and temporarily, the exchange of large-value payments stemming either from interbank market operations or from transactions in connection with international transfers. These payments are presented in the form of cash transfers (*virements de trésorerie*).

When the new large-value settlement system is implemented, it will drain off all the large-value transactions exchanged through the Paris Clearing House.

These measures will lead to a substantial reduction in the value of operations exchanged through the system, the main activity of which will then be cheque clearing.

### 3.4.4 *Settlement procedures*

Balances are settled across the participants' accounts at the Banque de France. They become final at the close of the accounting day (6.30 p.m.).

### 3.4.5 *Credit and liquidity risk*

Should an institution be unable to settle its accounts, the regulations provide for the cancellation of the day's clearing. In this event, which has never occurred to date, an extraordinary session would be held without the defaulting member (unwinding).

### 3.4.6 *Pricing*

Participants pay a membership fee which corresponds to their share of the clearing house's expenses.

## 3.5 SAGITTAIRE

SAGITTAIRE has handled the settlement of payments relating to international transfers in French francs since 1984. In 1994 it received 4 million payments representing a total of FRF 110.8 billion, giving an average value of FRF 27.7 million per transaction.

SAGITTAIRE is administered by the Banque de France. The S.W.I.F.T. network is used as a message carrier.

### 3.5.1 *Operating rules*

Operation of the SAGITTAIRE system is governed by bilateral conventions between the members and the Banque de France. A special SAGITTAIRE office, where both the members and the administrator are represented, is responsible for administering the system.

### 3.5.2 *Participation*

SAGITTAIRE is open to credit institutions operating in France that are members of the S.W.I.F.T. network. The system currently has sixty members.

### 3.5.3 *Types of transactions handled*

The system handles credit transfers relating to the settlement of foreign exchange transactions in French francs exclusively.

### 3.5.4 *System operation*

Orders are transmitted via the S.W.I.F.T. network throughout the accounting day, which lasts from 8 a.m. to 1 p.m., which is also the deadline for sending same-day instructions. Orders sent after 5.30 p.m. are stored by S.W.I.F.T. and processed at the start of the next day.

The sender cannot cancel an order once it has been sent. However, exchanges conducted through SAGITTAIRE can be revoked by the Banque de France: if, at the end of the day, a bank does not have sufficient funds to settle its debit balance, the central bank may cancel certain transfers issued by the defaulter. This would happen in reverse chronological order and the sending and receiving members would be notified immediately.

### **3.5.5 Technical environment**

The system is based on a central computer application. Backup procedures ensure that members will never have to repeat more than two hours of exchanges should any incident occur. Orders are transmitted via S.W.I.F.T.

### **3.5.6 Settlement procedures**

The net positions of SAGITTAIRE members are drawn up after the close of the system's exchange period (1.00 p.m.) but do not become final until after the close of the Banque de France's accounting day (6.30 p.m.).

### **3.5.7 Credit and liquidity risk**

The absence of risk control mechanisms have led the Banque de France and the commercial banks to schedule the disuse of SAGITTAIRE in the near future (1998). From then onwards, payments will be directed to the large-value payment systems TBF and SNP (see Sections 3.2 and 3.3).

### **3.5.8 Pricing**

As the initial investment has now been recovered, only the operating costs (excluding transmission costs) are charged to the members in the form of an annual fee based

on the number of S.W.I.F.T. messages sent and received by each member. Transmission costs are passed on to members individually on the basis of the real cost of messages sent by SAGITTAIRE to each member and invoiced by S.W.I.F.T. to the Banque de France.

### **3.5.9 Projects under development**

No major development is planned for SAGITTAIRE owing to the fact that it is to be shut down in a few years' time.

## **3.6 Interbank Teleclearing System (SIT)**

The SIT is designed to allow the exchange of all dematerialised retail payment instruments, including, in future, cheques (which are currently exchanged in physical form). The system is a remote transmission network providing direct bilateral links between credit institutions' computing centres under the supervision of common centres.

The work to implement the system was carried out by an interbank group called GSIT, formed in June 1983. The Banque de France is a member of GSIT and of its decision-making and research bodies.

Some 10 million transactions per day are exchanged on average, representing an annual volume of around 2.4 billion transactions. The gradual incorporation of card transactions is likely to add a further 2 billion transactions.

### **3.6.1 Operating rules**

The operations of the system are ruled by an agreement which is binding on all the participants.

### 3.6.2 Participation

All banks sending or receiving payments eligible for the SIT must participate in the system as either direct or indirect participants:

- the maximum number of direct participants has been limited to twenty-five in view of the system's technical and organisational capabilities. A direct participant must send and receive, for its own account, at least 0.20% of the volume exchanged annually via the SIT, and show a sufficient level of solvency. The responsibilities of direct participants are both financial and technical and extend to the institutions they represent;
- indirect participants send and receive payments via a direct participant.

Institutions exchanging less than 5,000 automated payments eligible for the SIT annually may opt for non-SIT or SIT-unknown status, thus enabling them to use a participant to process some or all of their operations.

### 3.6.3 Types of transactions handled

The SIT handles most retail payments between banks excluding cheques (credit transfers, direct debits, bills of exchange, etc.). It can also handle non-accounting transactions such as payment requests for home savings plan premiums, administrative operations for bank cards, and payment instrument incident reports, etc.

### 3.6.4 System operation

Deployment of the SIT began in February 1991 and the switch from the existing clearing computer to the SIT began in 1992, in line with a staggered closure programme for the computer clearing centres which ended in September 1994.

The SIT operates twenty-one hours a day from Monday to Saturday. SIT working days start at midnight and end at 9 p.m. During the working day, all direct participants are obliged to receive the interbank operations addressed to them. The cut-off time for same-day settlement is 2.30 p.m. for exchanges ending at 1.30 p.m.

The exchange of payment transactions between sending and receiving credit institutions automatically triggers the transmission of accounting messages to the network accounting centre, which calculates daily clearing balances to be forwarded to the Banque de France.

### 3.6.5 Technical environment

Each direct participant has one or more processing centres, where terminals dedicated exclusively to the SIT serve as access points to the network. The terminals are connected to all of the joint centres (administration, accounting and backup). Each terminal comprises two kinds of logical units, the SI (Sending Installation) and RI (Receiving Installation), which communicate with those of the SIT and the other participants.

The SIT joint centres, which provide a full backup, perform specific functions: monitoring the network, controlling the flow of operations and the maintenance of software coherence and security, accounting and computing of balances, and providing the final backup for receiving institutions. The network is designed to support 250 terminals.

Data are transferred via the TRANSPAC public packet-switching network.

### 3.6.6 Settlement procedures

SIT accounts are closed at the end of each accounting day and net balances for debiting and crediting to the accounts of system

participants are transmitted to the Banque de France at the same time.

### 3.6.7 Credit and liquidity risk

At present the SIT has an unwinding rule in the event of the failure of one of the direct participants. Moreover, the number of direct participants is limited to twenty-five members, all of which are financially responsible for the institutions they represent. The banking community has finally arranged to set up, in the future, additional measures for risk management.

### 3.6.8 Pricing

The pricing of the system is based on fixed fees (according to the level of membership, the number of gateways and the number of installations) and variable fees, according to the number of operations exchanged (number of operations and number of groups of operations). Specific services are charged if used.

### 3.6.9 Projects under development

As mentioned above, the SIT is gradually incorporating card transactions.

## 3.7 Regional truncated cheque exchange centres (CREIC)

The CREIC are located in nine major cities.<sup>7</sup> Administered by the Banque de France, they allow their members to exchange cheque data via magnetic media without physically exchanging the forms, which are retained by the presenting institution.

Apart from the Banque de France and the Post Office, only institutions with a regional or local structure currently belong to these centres. Between them, they handled some 260 million truncated cheques in 1994, representing 6.7% of all cheques exchanged.

### 3.7.1 Operating rules

The rules are agreed upon locally and are described in a model convention signed by the institutions agreeing to take part in the paperless system.

Members are obliged to carry out the following operations:

- verify that the cheque complies with legislation concerning cheques and regulations on banking practice, in accordance with CFONB recommendations;
- ensure the accuracy of the information transmitted;
- keep the cheque or an exact copy thereof;
- be able to provide a copy for ten years following the exchange date, even if it withdraws from the system or goes out of business in the meantime.

The current operating rules state that the rejection of a truncated cheque is equivalent in all cases to requiring the physical presentation of cheques through a clearing house. A decision not to honour a cheque may be taken only after the physical form has been seen.

### 3.7.2 Participation

Members must be authorised drawee institutions agreeing to receive truncated cheques drawn on accounts at any of their branches.

<sup>7</sup> Bordeaux, Lille, Lyons, Marseilles, Metz, Nantes, Rennes, Strasbourg and Toulouse.

### 3.7.3 *Types of transactions handled*

Each participant may deliver one or more magnetic tapes containing the presentation of truncated cheques, rejection of truncated cheques and sight requests.

Except where a bilateral agreement provides otherwise, the value of an individual cheque may not exceed FRF 5,000.

A rejection has to be made within six days.

Sight requests are made in the form of magnetic records and have to be answered within five working days with a copy of the front and back of the cheque.

### 3.7.4 *System operation*

When an institution receives a cheque for payment drawn on a CREIC member bank, it makes a record of the cheque, including the magnetic line and its amount, and then stores the physical form. The transactions recorded on magnetic tape or, in some cases, transmitted remotely are presented for clearing. The settlement of net balances is made across the Banque de France's books.

Clearing takes place at around 12 noon on each cheque-clearing day of the area served by the CREIC, under the responsibility of the administrator.

### 3.7.5 *Technical environment*

The software is provided by the Banque de France, which is the sole owner of the source code. Various computers are used locally to process the clearing.

### 3.7.6 *Settlement procedures*

As provided in the relevant agreements, participants may choose to have transactions settled either on the business day following

the session for all of the instruments exchanged, or one or two days later, depending on whether or not the cheques are payable locally.

At the end of the clearing process, multilateral net balances are calculated. The balances are posted on the current accounts of the participants with the Banque de France.

### 3.7.7 *Credit and liquidity risk*

The exchange of payments is revocable until the balances of participating banks are definitively settled on the Banque de France accounts.

### 3.7.8 *Pricing*

The Banque de France, as administrator of the CREIC centres, passes operating costs on to members in proportion to the number of truncated cheques drawn on them, the number of rejections and the number of sight requests presented by them.

### 3.7.9 *Projects under development*

In order to automate procedures and reduce participants' administrative costs, the possibility of authorising final rejection of truncated cheques, in some cases allowing institutions to decide not to honour a cheque from the truncated cheque record alone, is under consideration. Today, a rejection of a truncated cheque brings about a systematic exchange of the cheque itself at the clearing house.

## 3.8 **Provincial clearing houses**

There are 103 clearing houses located outside Paris:

- 102 provincial clearing houses placed under the authority of the Banque de France and operating on its premises;

these are located in the capitals of the departments and in ten other major cities;

- the clearing house of the Principality of Monaco, under the authority of a local bank.

A total of 3.7 billion instruments were presented in 1994, including 3.6 billion cheques and 2 million bills of exchange to 2nd May 1994, when the electronic exchange via the SIT became compulsory, and 7 million paper-based credit transfers.

### **3.8.1 Operating rules**

Under the terms of various regulations and agreements, payment instruments must be presented to a specified clearing house, depending on their place of payment. For cheques, however, which represent 97.3% of all instruments exchanged, a specific procedure called the "outside-area cheque exchange agreement" has been in operation since 1984: the presenting bank may exchange outside-area cheques at the clearing house of its choice, irrespective of the place of payment. This procedure allows cheques to be presented for collection as close as possible to their place of encashment. It leaves to the drawee institution the choice of the optimum method of routing cheques to the paying branch, particularly by eliminating the internal circulation of cheque forms.

### **3.8.2 Participation**

All institutions on which cheques are drawn are bound by regulations to participate in the clearing houses, either directly or as an indirect participant.

### **3.8.3 Types of transactions handled**

Following a series of reforms designed to automate procedures, only cheques and certain credit transfers are now exchanged in paper form through the clearing houses.

### **3.8.4 System operation**

One clearing house session is held every working day between 11 a.m. and 12 noon. Credit transfers and rejections are settled the same day and cheques are settled after an agreed period of time.

Banks that have signed the outside-area cheque exchange agreement but which are not represented at all 103 clearing houses may ask the Banque de France to receive the cheques on their behalf and to forward them. This function is performed by the SCR (joint collection service), which acts simply as an intermediary between the presenting bank and the drawee bank; it does not guarantee finality of payment.

The leading credit institutions are members of the outside-area cheque exchange agreement. In 1994, 805 million cheques, or 22% of all cheques cleared, were handled under this procedure.

### **3.8.5 Technical environment**

The exchange of payment orders is conducted in paper form. The net balances are calculated on microcomputers with the data given by participants on computer-readable forms.

### **3.8.6 Settlement procedures**

For each clearing house, members' clearing balances are calculated at the end of the session and settled daily across the accounts administered locally by the Banque de France.

### 3.8.7 Credit and liquidity risk

The amounts arising from credit clearing balances become final only at the end of the Banque de France's accounting day (6.30 p.m.). Failing this, clearing operations may be cancelled by applying the revocability clause governing the exchanges. The clearing is then repeated, this time without the defaulting member.

### 3.8.8 Pricing

Services in the 102 clearing houses administered by the Banque de France are currently provided to banks free of charge.

### 3.8.9 Projects under development

The banking industry decided to ban paper credit transfers from clearing houses from 1st January 1996. Such transfers now have to be presented electronically so that they can be exchanged through the SIT.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Since the Market Act of 1988, regulatory power has been divided between two entities:

- the *Conseil des Bourses de Valeurs* (CBV) is responsible for drawing up the general rules governing the financial markets, for admitting new brokerage firms, and for registering new securities on the Official List and the Second Market;
- the *Société des Bourses Françaises* (SBF) is charged with supervising the regularity of trades and quotations and enforcing the general rules of the CBV.

The legal framework for money market securities is as follows:

- negotiable securities (certificates of deposit and commercial paper) were created by the Act of March 1985;

- the Act of July 1991 made far-reaching changes to the features of negotiable securities (their definition, compulsory dematerialisation of the securities, creation of medium-term notes).

The complete dematerialisation of securities was decided by the Act of 30th December 1981 and by the decree of 2nd May 1983. Accordingly, all securities transactions are now settled through book entries.

#### 4.1.2 The role of the central bank

The Banque de France is involved in the Securities Settlement System since it ensures the settlement of the cash corresponding to securities deliveries on the accounts opened by commercial banks.

The Banque de France is the central depository for Treasury bills and notes, and operates the SATURNE system (see Section 4.3), which is the settlement system for these kinds of securities, as well as the other money market securities.

Moreover, the Ordinance of February 1992 states that the Banque de France is responsible for ensuring that issuers of money market securities comply with the legal terms of issue.

#### 4.1.3 The role of other public sector bodies

The task of the *Commission des Opérations de Bourse* (COB) is to protect securities investors by supervising the information given to them and by monitoring the smooth running of the financial markets.

The *Société Interprofessionnelle pour la Compensation des VAleurs Mobilières* (SICOVAM) acts as the French Central Securities Depository and administers the RELIT system used to settle equity and bond transactions.

This central depository is also authorised to draw up and enforce accounting principles that must be adhered to by the financial intermediaries. Thus, a new custodians' code of conduct (incorporated in SICOVAM's General Regulations) was set up in October 1994. This code establishes procedures and security guidelines, particularly from an accounting point of view.

#### 4.1.4 The role of other private sector bodies

The *sociétés de bourse* (brokerage firms) are private companies which are authorised by the CBV to trade securities. These firms are members of the clearing house managed by the SBF, which ensures the completion of the trades through an automatic securities lending/borrowing system.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of the different securities markets

French capital markets have expanded considerably since 1983 with the encouragement of the authorities. In particular, new instruments (negotiable debt securities, futures, traded options, etc.) and new markets (MATIF, MONEP, etc.) have been created, while new exchange systems (RELIT and SATURNE) have been introduced.

There is now a broad range of instruments in use:

- transferable securities traded on a centralised market. However, the vast majority of trades involving fungible Treasury bonds (OATs) are over-the-counter transactions that are settled through the RELIT system;
- Treasury bills and notes, issued by the Treasury, and negotiable debt securities (*Titres de Créances Négociables*, TCN) with maturities of ten days to one year inclusive, issued by credit institutions (certificates of deposit issued by banks and bills issued by specialised institutions and finance companies) or companies (commercial paper), and medium-term notes issued by either of these two categories of issuers with maturities of more than one year (*Bons à Moyen Terme Négociables*, BMTN). These are traded on an over-the-counter basis on the money market. Most of the trades in these securities are settled through the SATURNE system;
- futures and options, each traded on their specific market: MATIF for financial and commodity futures, and MONEP for traded options on shares;
- other instruments traded on the financial market, including interest rate swaps,

forward rate agreements (FRA), caps, floors, and collars, etc.

## 4.3 SATURNE

### 4.3.1 Major regulations

A 1945 Ordinance conferred on the Banque de France the task of managing the current accounts for financial institutions' holdings of book-entry Treasury notes and bills.

In September 1988, the Banque de France set up a delivery versus payment system for operations in Treasury bills and notes called SATURNE, which is designed to improve the security and speed of settling transactions in these securities.

SATURNE was subsequently extended to include operations in other categories of negotiable debt securities, such as bills issued by specialised financial institutions and financial companies, certificates of deposit, commercial paper and negotiable medium-term notes. The system redeems issues automatically and pays any coupons as they fall due. Furthermore, the data communications facilities set up in the first quarter of 1993 make it possible for new issues to be entered into the system as they are launched to build up or reinforce a pool of fungible securities, or else to meet the issuers' financing needs as they arise.

The system has also handled transactions in ECU-denominated Treasury notes since they were first launched by the French Treasury in March 1993. The cash leg of these transactions is handled within the framework of SIRE (the integrated ECU settlement system).

The SATURNE system can also handle securities denominated in foreign currencies: in such a case it processes only free transfers of securities since the Banque de France does not offer cash accounts denominated in foreign currencies.

### 4.3.2 Participation in the system

The SATURNE system now manages some 400 securities accounts for credit institutions, securities houses, brokerage firms, foreign central banks, and international financial institutions, and International Central Securities Depositories (CEDEL and Euroclear).

The accounts in the SATURNE system are sub-divided to facilitate compliance with professional ethics and to make statistical analysis easier.

In addition, each participating institution can customise SATURNE through further subdivisions for their different accounts, their customers' accounts, or simply the accounts of their largest customers, while at the same time being able to protect the anonymity of the real owners of securities and cash, if they so wish.

### 4.3.3 Types of transactions handled

In addition to transactions on the primary, grey and secondary markets, the SATURNE system also records other operations for settlement, such as free transfers, in which only securities are transferred, and repurchase agreements with delivery of the securities that are traded between institutions under the terms of the Act of 31st December 1993.

SATURNE also handles a wide range of securities lending and borrowing transactions, also on an over-the-counter basis, to meet the needs of the counterparties: unsecured loans, loans secured by pledges of cash or securities, and loans backed by securities.

The SATURNE system also offers complete handling of repurchase agreements with delivery of securities and loans of securities, from the initial specifications of transactions to repayment. At maturity, the system automatically generates the transfers of securities and cash, as well as the payment of any interest due from either of the counterparties.

Repurchase agreements with delivery of securities and loans of securities can also be recorded in the system without the maturity dates being set beforehand. These operations are equivalent to call money transactions that are rolled over by tacit agreement until one of the counterparties gives notice otherwise.

From the outset, the SATURNE system has been responsible for handling the open market operations of the Banque de France: outright buying and selling and, since 15th September 1990, the settlement of repurchase agreements with the delivery of Treasury notes and bills concluded with the Banque de France in its calls for tender, as well as its 5 to 10-day repurchase agreements, or other short-term repurchase agreements.

The volume of transactions handled increased considerably in 1994: 220,000 transactions per year for a total value of FRF 24,700 billion (+16.5%) (ECU 3,750 billion), not including repurchase agreements on Treasury bills and notes concluded with the Banque de France.

#### **4.3.4 Operation of the transfer system**

The system handles operations involving a transfer of securities and a transfer of cash. It matches the delivery and payment operations and executes them on the same date.

The SATURNE system primarily executes transfers of cash and securities on the appropriate settlement dates following the auctions of Treasury notes and bills. No intervention is required on the part of successful bidders because, as the auctioneer, the Banque de France knows which transfers are to be made as soon as the auction is over.

The same principle applies to over-the-counter transactions on the grey market and the secondary market; however in such cases, the counterparties must inform the Banque de France before the appropriate transfers can be made by the SATURNE system.

Dual notification is required for any over-the-counter transaction settled using the SATURNE system. This means that for any type of transaction, both counterparties must notify the system operator.

The first step in processing a transaction is to match the notifications received. This means that a search is made to find a "twin" for every notification. The twin must have exactly the same characteristics, except, of course, that it will be for the transfer in the opposite direction. The matching process is carried out for each notification as it is received, even for transactions with long maturity dates.

After matching, the transaction is put on hold until the settlement date agreed between the counterparties. It is then settled in one of the three daily chainings held at set times: 9 a.m., 11.45 a.m. and 2 p.m. If circumstances warrant it, one or more "catch-up" chainings can take place in the late afternoon in order to eliminate any backlog of transactions.

Transactions for same-day settlement are usually settled in the settlement chaining that follows the matching of the notifications, while transactions with forward settlement dates are settled in the first processing on the settlement day.

During each chaining, the SATURNE system makes a real-time check to see if the seller actually has the securities on its account. If so, the securities transfer is made automatically and instantaneously, while the corresponding funds transfers are prepared for posting to the counterparties' cash accounts.

If the seller's account does not contain the securities or too few of them to complete the transaction, the operation is left outstanding, pending settlement during another chaining later the same day. If, during the final chaining of the day, the seller's account still does not contain sufficient securities, the transaction is removed from the system and the seller who has failed to deliver is required to make a penalty payment to the buyer.

#### 4.3.5 Transaction processing environment

Remote data links are used between the Banque de France and the institutions that choose this form of communication. The others use telex or paper forms. A message is left in the institution's electronic "mail box" each time the status of a transaction (received, matched, settled or outstanding) is updated. This allows the institution to use its local workstation to update its position at any time, and to detect any potential problems in settling transactions.

#### 4.3.6 Settlement procedures

Cash transfers are made on the Banque de France accounts. At a given time of the day, the system transmits a file of cash balances to the accounting system.

#### 4.3.7 DVP arrangements

Transactions for same-day settlement are usually settled in the chaining that follows the matching of the notifications, while transactions with forward settlement dates are settled in the first processing on the settlement day.

During each chaining, the SATURNE system checks whether the seller actually has the securities on its account. If so, the securities transfer is made automatically and instantaneously, while the corresponding funds transfers are prepared.

If the seller's account does not contain the securities or too few of them to complete the transaction, the operation is left outstanding, pending settlement during another chaining later the same day. If, during the last chaining of the day, the seller's account still does not contain sufficient securities, the transaction is removed from the system and the seller who has failed to deliver is required to make a penalty payment to the buyer.

#### 4.3.8 Credit and liquidity risk control measures

The rate of unsettled transactions on the SATURNE system is less than 0.01%. This very low rate of failed transactions is due to:

- the multiplication of the chaining cycles on the same value date, which makes it possible for a temporarily defaulting seller to borrow the securities on an over-the-counter basis;
- a high penalty rate for each unsettled transaction at the end of the day, which encourages participants to borrow the securities at the same value date.

Deliveries of securities and transfers of funds are processed on the same value date.

However, securities transfers remain provisional until cash transfers have become final. Finality is confirmed by the Banque de France at 6.30 p.m.

SATURNE has an unwinding rule in the event of the failure of one of the participants.

#### 4.3.9 Pricing

Fees for using the SATURNE system are based on four types of commission:

- a flat transaction fee is charged for each notification sent via remote data links and a fee is charged for notifications sent via telex or in paper form;
- a six-monthly account administration fee is charged for each securities account, depending on the average amount;
- general sub-accounts are opened free of charge and there are no special fees. However, an annual account administration fee is charged for each customised sub-account;

- a pro rata temporis fee is charged to securities issuers for handling their issues.

#### 4.3.10 Main projects and policies being implemented

A policy of opening SATURNE up to all money market negotiable debt securities has been followed since the system was first set up. This has led to the strong growth of the system, which now handles more than 75% of the total outstanding negotiable debt divided into more than 9,000 different issues.

An agreement between the Banque de France and SICOVAM (see Section 4.4.1) was recently concluded. It aims to implement a new and unified book-entry system, RELIT Grande Vitesse (RGV, see Section 4.5), that can settle trades between credit institutions for all types of securities. This new system will replace the existing SATURNE system.

## 4.4 RELIT

### 4.4.1 Major regulations

SICOVAM, the French central depository, is responsible for managing RELIT, the securities settlement system through which trades are cleared.

### 4.4.2 Participation in the system

The 400 participants using the RELIT system are financial intermediaries. They include credit institutions as well as brokerage firms.

### 4.4.3 Types of transactions handled

Equities, bonds, warrants and investment fund transactions are settled through RELIT. The RELIT system handles transactions on the secondary market, but also on the primary and grey markets in bonds (Euro and domestic

issues) and on the primary market in equities (privatisations).

The system processes delivery versus payment (DVP) transactions as well as transfers free of payment. There is also a service designed to manage delivered repos. Working on a DVP basis, it automatically handles the calculation of interest and return at the agreed date.

In 1994, the total value of securities transactions settled through RELIT stood at FRF 48,400 billion and 15 million instructions were processed.

### 4.4.4 Operation of the transfer system

The RELIT system is based on three separate matching and preparation systems, plus a settlement system:

- *Système Inter-sociétés de Bourse* (ISB - interbroker system);
- *Sociétés de Bourse-Intermédiaires* (SBI - broker-intermediary system);
- *Système de Livraison par Accord Bilatéral* (SLAB - delivery by mutual consent);
- *Système Commun de Dénouement* (common settlement system).

In each of the first three systems, the counterparties' agreement is recognised during an order-matching phase, enabling any necessary adjustments to be made.

#### *Système Inter-Sociétés de Bourse (ISB)*

The ISB, administered by the French Stock Exchange Association (*Société des Bourses Françaises*, SBF), is limited to stockbroker operations only. A clearing house ensures the successful completion of operations between stockbrokers by systematically lending securities or cash to brokers as they require.

*Système Sociétés de Bourse-Intermédiaires (SBI)*

The SBI, administered by SICOVAM, facilitates the timely settlement in automatic form of stock exchange transactions between stockbrokers and financial intermediaries.

*Système de Livraison par Accord Bilatéral (SLAB)*

The SLAB system, also administered by SICOVAM, processes transactions entered into by mutual consent between two parties.

*Système Commun de Dénouement*

This system ensures the settlement of transactions. It is fed by operations transacted upstream through the ISB, SBI and SLAB systems, by securities transfer orders without cash payment transmitted directly by operators, and by operations initiated directly by SICOVAM (redemption of securities on maturity, payment of coupons, adjustments, etc.).

**4.4.5 Transaction processing environment**

Since the end of 1994, the SIT/Bourse network has been replaced by a new network known as SIGMA. The SIT/Bourse stations have been scrapped and replaced by a central switching hub system. This significantly reduces software maintenance and telecommunication costs and also offers greater flexibility, by allowing quick and easy link changes whenever required by events such as mergers between participants, or changes to suppliers.

In 1994, the SIT/Bourse network processed 51 million messages.

**4.4.6 Settlement procedures**

When the settlement is being processed, securities are delivered insofar as they are available on the vendor's securities account and insofar as sufficient purchasing power

has been recorded on the buyer's account. The transactions thus processed are provisionally settled until the Banque de France gives the finality of funds transfers (at 6.30 p.m.).

**4.4.7 DVP arrangements**

There are seven chainings during the accounting day. During each chaining, securities are settled on a trade-by-trade basis. The accounting day begins at 8 p.m. the day before with two night chainings. After these two chainings, the participants are informed of their cash and securities positions, which allows them to adjust these positions. In the event of insufficient securities, the transactions are postponed to the next working day.

The cash positions of the participants resulting from the chainings are sent to the Banque de France for the transfer of funds.

**4.4.8 Credit and liquidity risk control measures**

There are two types of credit and liquidity risk control measure:

- to begin with, there is a verification of the seller's securities position. If there are insufficient securities on its account to execute the transaction, the trade is suspended and the participant responsible for this situation incurs a financial penalty;
- if a participant is unable to cover its cash debit position before the end of the accounting day (i.e. 6.30 p.m.), the central bank can cancel the securities transactions concerning the defaulter and new cash positions are computed. This procedure is referred to as chaining unwind.

#### 4.4.9 Pricing

A flat transaction fee is charged for each transfer which is free of payment, and for each delivered repo.

A variable transaction fee (decreasing with the participant's number of transactions) is charged for each DVP transaction.

#### 4.4.10 Main projects and policies being implemented

(See Section 4.5.)

### 4.5 RGV

SICOVAM, in collaboration with the Banque de France, is currently developing a new system, RGV (RELIT Grande Vitesse).

Since the system is currently under study, only the main principles of RGV are described below.

RGV will be a single system for all interest rate instruments (OATs, Treasury bills and notes, negotiable debt securities), with a possible extension to other types of securities (blocks of shares, private sector bonds, international issues, etc.). RGV will be specially designed to handle all over-the-counter transactions: delivery versus payment, transfers without cash settlement, repurchase agreements with delivery of securities, securities loans, cross-border transactions and Banque de France operations. In particular, operations currently settled in SATURNE will be processed in RGV.

Each participant will have a purchasing power consisting either of cash in central bank

money or securities accepted by the Banque de France as guarantee. In the event of a net buyer of securities being short of cash, the Banque de France will automatically enter into a repo with this participant, the securities being transferred to an account in its name on SICOVAM's books. Moreover, the participants will have the opportunity during the day to transfer cash from RGV to the TBF system, for example in order to revise securities that have previously been used as collateral and transferred to the Banque de France account in a repo procedure. By the end of the day, every intraday repo procedure with the Banque de France will have to be reimbursed, otherwise a very high penalty rate will be applied.

Through a system of guarantees built into RGV, users can be certain that their operations are definite and final upon settlement. Irrevocable settlement will be guaranteed by the Banque de France.

In order to ensure that processing is carried out as quickly as possible, instructions will be compared with a view to matching as soon as they are issued. Confirmation will be sent immediately. Settlement procedures will be carried out:

- at frequent intervals throughout the day so that urgent transactions, particularly those with same-day settlement, are settled in the hour following matching;
- overnight, for all transactions not requiring same-day settlement.

RGV will enable the effective management of the collateral necessary to secure the payment system. In particular, RGV will manage intraday repos, providing liquidity in central bank money to the TBF system.

France

FR

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population (thousands) <sup>(2)</sup>	56,735.1	57,055.4	57,373.6	57,654.8	57,794.5
Gross domestic product (FRF billions)	6,509.5	6,776.2	7,010.5	7,082.8	7,376.1
Exchange rate vis-à-vis ECU <sup>(2)</sup>	6.9141	6.9733	6.8484	6.633	6.5835

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

(end of year)

	FRF billions				
	1990	1991	1992	1993	1994
Notes and coins	255.5	254.4	255.5	252.4	252.2
Transferable deposits <sup>(1)</sup>	1,433.0	1,354.7	1,351.6	1,376.9	1,419.7
of which held by:					
households	782.9	715.3	743.7	742.2	748.0
corporate sector	346.3	367.5	352.8	381.7	414.7
other	303.8	271.9	255.2	253.0	257.0
Narrow money supply (M1) <sup>(2)</sup>	1,688.5	1,609.2	1,607.1	1,629.4	1,671.9
Memorandum item:					
Transferable deposits in foreign currencies	25.5	24.8	34.4	37.2	35.5

(1) Excluding deposits in foreign currencies.

(2) Narrow money supply (M1): coins, French franc-denominated sight deposits held by non-banks (French overseas territories excluded).

**Table 3**
**Settlement media used by deposit-taking institutions**

(end of year)

	FRF billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	59.10	40.15	7.5	8.3	8.2
of which can be used for settlement	-	-	-	-	-
Free reserves held at central bank	1.30	1.26	0.52	0.88	0.84
Transferable deposits at other institutions <sup>(2)</sup>	2,936.2	2,846.9	2,482.9	2,631.5	2,839.6
Memorandum item:					
Broad money aggregate	5,024.9	5,160.7	5,312.4	5,162.3	5,282.2

(1) December monthly average.

(2) Time deposits are included.

**Table 4****Banknotes and coins***(total value, end of year)*

	FRF billions				
	1990	1991	1992	1993	1994
Total banknotes issued	263.3	264.0	265.3	263.6	266.7
of which <sup>(1)</sup> :					
FRF 500	132.8	134.1	134.2	133.8	129.9
FRF 200	67.6	70.3	73.4	74.5	81.0
FRF 100	55.3	52.4	50.6	47.8	48.3
FRF 50	5.9	5.9	6.0	6.5	6.5
FRF 20	1.2	1.2	1.1	1.0	1.0
FRF 10	0.4	-	-	-	-
Coins issued <sup>(2)</sup>	17.1	17.3	18.2	17.1	17.8
Notes and coins held by credit institutions <sup>(2)</sup>	14.3	15.3	15.6	14.8	15.8
Notes and coins in circulation outside credit institutions <sup>(3)</sup>	255.5	254.4	255.5	252.4	252.3
Memorandum item: Banknotes held in French overseas territories	10.6	11.5	12.4	13.5	16.4

(1) Including banknotes issued in French overseas territories.

(2) Excluding French overseas territories.

(3) Banknotes issued in French overseas territories are not included.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (FRF billions)
Central bank	1	211	66	3.2
Commercial banks	427	10,428	18,905	550.9
Savings banks <sup>(1)</sup>	36	4,263	8,623	129.4
Co-operative and rural banks <sup>(2)</sup>	161	10,701	23,504	408.8
Post office	1	16,919	9,608	164.1
Treasury	1	4,102	947	149.2
<b>TOTAL</b>	<b>627</b>	<b>46,624</b>	<b>61,653</b>	<b>1,405.6</b>
Branches of foreign banks	93	n.a.	n.a.	n.a.
of which EC-based	46	n.a.	n.a.	n.a.

(1) Including *Caisses des Dépôts et Consignations*.(2) Including *Caisses de Crédit municipal*.

**Table 6**

**Cash dispensers, ATMs and EFTPOS terminals**  
(end of year)

	1990	1991	1992	1993	1994
Cash dispensers and ATMs					
Number of networks	1	1	1	1	1
Number of machines	14,428	16,134	17,432	18,735	20,533
Volume of transactions (thousands) <sup>(1)</sup>	547,720	633,544	694,364	765,734	818,665
Value of transactions (FRF millions) <sup>(1)</sup>	242,822	295,515	316,492	334,083	347,406
EFTPOS terminals					
Number of networks	1	1	1	1	1
Number of points of sale <sup>(2) (3)</sup>	180,000	203,000	320,000	429,000	437,000
Volume of transactions (thousands) <sup>(3)</sup>	933,000	1,051,000	1,300,000	1,400,000	1,505,000
Value of transactions (FRF millions) <sup>(3)</sup>	303,515	346,650	430,000	460,000	481,000

- (1) Including interbank cash withdrawals and cash withdrawals processed through selected interbank payment systems.  
(2) Number of machines.  
(3) Estimated figures.

**Table 7**

**Number of payment cards in circulation <sup>(1)</sup>**  
(end of year)

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	19,469	19,820	21,072	21,812	22,812
Cards with a debit/credit function	19,393	19,743	20,892	21,466	22,240
of which:					
<i>cards with a debit function</i>	19,393	19,743	20,892	21,466	22,240
<i>cards with a credit function</i>	276	345	453	512	579
Cards with a cheque guarantee function	86	82	192	193	n.a.
Retailer cards <sup>(2)</sup>	20,000	20,000	20,000	n.a.	n.a.

- (1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.  
(2) Estimated figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Clearing houses	3,589.4	3,625.9	3,652.0	3,677.4	3,659.0
<i>Cheques</i>	3,547.9	3,597.0	3,633.4	3,663.5	3,650.0
<i>Credit transfers</i>	7.2	5.6	3.8	2.8	2.2
<i>Bills of exchange</i>	25.8	17.8	9.5	6.0	1.9
<i>Avals de trésorerie</i>	0.6	0.6	0.4	0.5	0.4
<i>Large-value credit transfers</i>	7.9	4.9	4.9	4.6	4.5
CREIC <sup>(1) (2)</sup>	201.6	214.8	230.8	252.6	259.9
Ordinateur de compensation <sup>(2)</sup>	1,722.7	1,874.7	1,811.0	1,467.8	635.7
<i>Credit transfers</i>	742.5	802.2	781.4	657.0	341.7
<i>Paperless bills of exchange</i>	124.1	126.8	124.3	102.1	49.8
<i>Direct debits</i>	560.2	620.1	588.1	455.8	156.0
<i>Titres Interbancaires de Paiement</i>	9.0	17.0	41.2	47.1	23.0
<i>ATM withdrawals</i>	256.2	269.8	229.2	192.7	65.0
<i>Card payments</i>	30.7	38.8	46.8	13.1	0.2
Système Interbancaire de Télécompensation (SIT) -	43.7	301.8	764.5	1,791.8	
<i>Credit transfers</i>	-	18.0	107.5	292.3	679.8
<i>LCR and paperless bills of exchange</i>	-	3.6	10.5	30.5	88.7
<i>Direct debits</i>	-	8.2	90.3	258.2	636.5
<i>Titres Interbancaires de Paiement</i>	-	0.2	2.5	20.0	55.4
<i>ATM withdrawals</i>	-	13.7	91.0	163.5	331.4
Cartes Bancaires <sup>(2)</sup>	1,147.2	1,288.8	1,397.0	1,554.0	1,677.0
<i>ATM withdrawals</i>	-	-	1.3	2.6	4.8
<i>Card payments</i>	1,147.2	1,288.8	1,395.7	1,551.4	1,672.2
Banque de France	48.2	46.8	42.7	37.6	34.3
<i>Public Treasury transfers</i>	45.2	44.0	39.6	34.9	32.0
<i>Interbank credit transfers</i>	0.5	0.4	0.9	0.4	0.4
<i>Large-value credit transfers</i>	1.7	1.5	1.3	1.1	0.9
<i>Telegraphic credit transfers</i>	0.8	0.9	0.9	1.2	1.0
SAGITTAIRE	2.5	2.9	3.3	3.9	4.1

(1) Centres Régionaux d'Echanges d'Images-Chèques (truncated cheques).

(2) Automated clearing houses.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	FRF billions				
	1990	1991	1992	1993	1994
Clearing houses	128,205.4	120,023.5	128,371.3	156,788.5	150,624.1
Cheques	11,357.2	11,634.9	11,582.0	11,130.4	11,300.9
Credit transfers	1,150.6	1,228.3	1,275.5	1,277.5	1,244.5
Bills of exchange	663.0	509.3	316.1	199.0	36.3
Avals de trésorerie	80,861.0	71,354.0	73,179.0	79,277.8	71,416.5
Large-value credit transfers	34,173.6	35,297.0	42,018.7	64,893.8	66,625.9
CREIC <sup>(1) (2)</sup>	111.1	119.8	129.1	140.6	143.4
Ordinateur de compensation <sup>(2)</sup>	6,398.5	7,178.6	7,661.6	6,731.4	3,463.7
Credit transfers	2,639.4	3,104.3	3,458.6	3,292.5	1,913.5
Paperless bills of exchange	2,774.6	2,969.3	3,065.5	2,521.6	1,230.5
Direct debits	850.1	959.7	991.2	786.3	267.4
Titres Interbancaires de Paiement	21.1	29.0	47.2	54.1	28.4
ATM withdrawals	106.8	107.9	88.7	73.9	23.8
Card payments	6.4	8.4	10.4	3.0	0.1
Système Interbancaire de Télécompensation (SIT) <sup>(2)</sup>	-	98.8	234.9	1,618.2	5,454.5
Credit transfers	-	43.8	103.8	783.1	2,518.6
LCR and paperless bills of exchange	-	39.1	23.9	434.7	1,825.8
Direct debits	-	9.8	69.0	320.6	929.0
Titres Interbancaires de Paiement	-	0.6	2.6	15.3	59.1
ATM withdrawals	-	5.5	35.6	61.5	122.0
Cartes Bancaires <sup>(2)</sup>	373.9	428.3	465.7	510.0	537.6
ATM withdrawals	-	-	0.8	1.7	3.3
Card payments	373.9	428.3	464.9	508.3	534.2
Banque de France	37,054.1	40,378.3	42,547.8	44,346.3	41,741.8
Public Treasury transfers	746.7	691.8	467.8	457.8	429.8
Interbank credit transfers	160.0	158.6	131.3	199.8	190.5
Large-value credit transfers	28,589.7	32,015.4	34,466.4	36,022.6	38,107.1
Telegraphic credit transfers	7,557.7	7,512.5	7,482.3	7,666.1	5,014.4
SAGITTAIRE	35,393	43,845	59,219	108,750	110,847

(1) Centres Régionaux d'Echanges d'Images-Chèques (truncated cheques).

(2) Automated clearing houses.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>SATURNE</b>			
Banks	200	200	200
Stockbrokers	40	40	40
Securities houses	)	)	)
Insurance companies	1	1	1
Foreign central banks	55	55	55
Cedel / Euroclear	2	2	2
Others	54	54	54
<b>RELIT</b>			
Banks	200	200	200
Stockbrokers	48	48	48
Securities houses	)	)	)
Others	9	9	9

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
SATURNE					
Government securities	102,374	109,837	126,904	172,254	182,109
CDs	-	8,378	6,048	11,597	18,170
Medium-term notes	-	-	3,639	9,542	7,859
Commercial paper	-	-	112	4,212	14,472
RELIT					
	n.a.	n.a.	n.a.	13,000,000	15,000,000

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	FRF billions				
	1990	1991	1992	1993	1994
SATURNE					
Government securities	3,971	5,204	10,200	19,673	23,306
CDs	-	373.3	322.3	936.6	1,470.9
Medium-term notes	-	-	174.74	436.7	290.3
Commercial paper	-	-	20.6	232.5	696.0
RELIT					
Government securities	n.a.	n.a.	11,000	20,600	25,250
Bonds	n.a.	n.a.	n.a.	n.a.	4,050
Shares	n.a.	n.a.	n.a.	n.a.	6,200

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	FRF billions				
	1990	1991	1992	1993	1994
SATURNE					
Government securities	547.4	557.0	714.7	769.8	898.9
CDs	94.8	134.8	69.2	232.0	304.8
Medium-term notes	-	-	156.2	279.3	305.6
Commercial paper	-	-	3.9	47.3	81.5
RELIT					
Government securities	2,800	3,000	3,100	3,800	3,650
Bonds	)	)	)	)	)
Shares	1,600	1,700	2,100	3,000	2,700

**Table 14**

Indicators of use of various cashless payment instruments: <sup>(1)</sup>  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	4,876.8	4,776.4	4,868.7	4,908.9	4,824.1
Payments by debit and credit cards	1,177.9	1,327.7	1,442.5	1,564.5	1,672.4
Paper-based credit transfers	96.7	87.0	75.2	64.8	56.9
<i>customer initiated</i>	86.5	80.0	68.6	58.6	51.0
<i>interbank/large-value</i>	10.2	7.0	6.6	6.2	5.9
Paperless credit transfers	1,243.7	1,302.7	1,404.0	1,472.8	1,556.4
<i>customer initiated</i>	1,241.2	1,299.8	1,400.7	1,468.9	1,552.3
<i>interbank/large-value</i>	2.5	2.9	3.3	3.9	4.1
Direct debits	844.8	853.7	979.6	1,057.8	1,205.1
Bills of exchange	170.0	163.3	159.3	153.6	154.9
<b>TOTAL</b>	<b>8,409.9</b>	<b>8,510.8</b>	<b>8,929.3</b>	<b>9,222.4</b>	<b>9,469.8</b>

(1) These figures relate to exchanges both in interbank funds transfer systems (official exchanges) and through other circuits (interbank exchanges).

**Table 15**

Indicators of use of various cashless payment instruments: <sup>(1)</sup>  
value of transactions

	FRF billions				
	1990	1991	1992	1993	1994
Cheques issued	18,783	16,276	16,099	15,291	14,255
Payments by debit and credit cards	380	437	475	511	661
Paper-based credit transfers	146,598	141,749	158,455	183,560	178,458
<i>customer initiated</i>	2,974	3,083	2,797	3,366	2,307
<i>interbank/large-value</i>	143,624	138,666	155,658	180,194	176,149
Paperless credit transfers	41,137	50,231	66,280	117,013	119,162
<i>customer initiated</i>	5,744	6,386	7,061	8,263	8,315
<i>interbank/large-value</i>	35,293	43,845	59,219	108,750	110,847
Direct debits	1,359	1,499	1,874	2,314	2,604
Bills of exchange	3,826	3,813	3,690	3,445	3,313
<b>TOTAL</b>	<b>212,083</b>	<b>214,005</b>	<b>246,873</b>	<b>322,134</b>	<b>318,453</b>

(1) These figures relate to exchanges both in interbank funds transfer systems (official exchanges) and through other circuits (interbank exchanges).

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	178	192	200	192	203
of which:					
members	103	105	109	98	103
sub-members	72	83	87	91	96
participants	3	4	4	3	4
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
members	1,812	1,963	2,074	2,103	2,412
sub-members	1,469	1,607	1,738	1,802	2,023
participants	63	78	91	99	188

FR

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	25,565,700	27,710,200	30,310,818	34,258,946	36,494,832
of which:					
category I	7,607,000	7,999,200	8,533,000	8,966,621	9,608,391
category II	8,493,700	9,603,300	10,450,100	11,843,080	12,253,787
sent/received to/from domestic users	7,233,600	8,226,500	9,386,200	10,963,594	11,455,375
Total messages received	23,166,600	25,896,300	28,460,152	31,836,528	33,446,733
of which:					
category I	-	-	8,753,700	9,216,560	9,910,743
category II	-	-	10,472,800	12,163,096	12,224,274
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

**Definitions**

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION



Ireland

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**List of abbreviations**

<b>CAS</b>	Central Accounting System
<b>DBC</b>	Dublin Bankers' Clearing
<b>DIS</b>	Daily Interbank Settlement
<b>FINEX Europe</b>	Financial Instrument Exchange Europe
<b>GSO</b>	Gilts Settlement Office
<b>HFA</b>	Housing Finance Agency
<b>IFOX</b>	Irish Futures and Options Exchange
<b>IFSC</b>	International Financial Services Centre
<b>IPSO</b>	Irish Payment Services Organisation
<b>IRIS</b>	Irish Real-time Interbank Settlement system
<b>ISE</b>	Irish Stock Exchange
<b>ISEQ</b>	Irish Stock Exchange Index
<b>NTMA</b>	National Treasury Management Agency
<b>POSB</b>	Post Office Savings Bank
<b>STF</b>	Short-Term Facility
<b>USM</b>	Unlisted Securities Market

## Introduction

Payments systems in Ireland are highly centralised. The cheque is the main payment instrument in the small-value payments system in Ireland, with credit transfers playing a relatively small part. Clearings of small-value items are effected through the Dublin Bankers' Clearing. The Central Bank of Ireland's part in the small-value payment

system is mainly of a monitoring nature. In the case of large-value payments and settlements, the Central Bank operates the only settlement system, entitled the Daily Interbank Settlement. In relation to the settlement of government bond transactions, the Central Bank operates the Gilts Settlement Office.

## I. Institutional aspects

### 1.1 General legal aspects

The banking system is at the centre of the money transmission system. Although entry to the banking system is supervised by the Central Bank under the Central Bank Acts, 1942 to 1989 (see Section 1.3), there is currently no specific legislation regarding the entry requirements to the payments system itself. These are determined by the rules of the two main elements of the payments system; the Daily Interbank Settlement and the Dublin Bankers' Clearing (see Sections 3.3 and 3.5).

The cheque is the major small-value payment instrument in Ireland and its issue and acceptance as a means of payment is determined by the Bills of Exchange Act and Cheques Act, 1882 to 1989, and by case law.

### 1.2 Financial intermediaries that provide payment services

Deposit-taking institutions in Ireland can be classified as follows: licensed banks, building societies, savings banks, state-sponsored credit institutions and the Post Office Savings Bank. Apart from the state-owned Post Office Savings Bank, all of the other deposit-taking institutions are supervised by the Central Bank and classified as credit institutions under supervisory Directives.

The wide range of deposit-taking institutions (excluding the Post Office Savings Bank) provide a variety of payment services through an extended network of over 1,100 branches, or one branch per three thousand of the population. More than half of this branch network is owned by the four main clearing banks. These banks also account for almost 90% of the current (sight) accounts in value terms. The TSB Bank (savings bank) and building societies, which account for a small proportion of both activity and volume in the

payments system, are primarily domestically orientated. Two of the four main clearing banks are domestically owned and these account for the major proportion of domestic banking business. These banks also have substantial foreign interests, particularly in the United States and United Kingdom. About one-quarter of the rest of the deposit-taking institutions are subsidiaries of the main clearing banks, while two-thirds are wholly owned subsidiaries or branches of foreign banks. Of the foreign-owned institutions about two-thirds have their parents in other EU Member States.

The building societies were given powers, in 1989, to engage in money transmission business. To date three of these institutions provide a money transmission system via agency arrangements with direct members of the Dublin Bankers' Clearing.

The Post Office Savings Bank is under the direct control of the Minister for Finance. It is not a credit institution as defined under EU Directives and only provides a limited payments service, a strong deposit-taking service and, in addition, sells savings instruments on behalf of the Minister. This institution is largely a savings institution but it does provide a facility to purchase payment orders in return for cash through its extensive network of over 1,300 post offices.

ACCESS (MasterCard/Eurocard) and VISA are the main credit cards issued in Ireland.

Large-value interbank payments within Ireland are notified and agreed through the S.W.I.F.T. messaging system.

### 1.3 The role of the central bank

#### 1.3.1 General responsibilities

##### *Statutory responsibilities*

The Central Bank of Ireland has, by law, the general function and duty of taking such steps as are deemed appropriate and advisable towards “safeguarding the integrity of the currency and ensuring that, in what pertains to the control of credit, the constant and predominant aim shall be the welfare of the people as a whole”. It also has responsibility in relation to the proper and orderly supervision of banking as well as the orderly functioning of the financial markets.

Currency notes are issued by the Central Bank under the Central Bank Act, 1989. The Irish pound is the only form of legal tender and the currency consists of legal tender banknotes and coins. The banknotes are of the following denominations: IEP 5, 10, 20, 50 and 100. These are printed and issued by the Central Bank.

The Central Bank issues coinage on behalf of the Minister for Finance under the Decimal Currency Acts, 1969 to 1990. The coins are issued in the following denominations: IEP 1, 50 pence, 20 pence, 10 pence, 5 pence, 2 pence and 1 penny (100 pence = IEP 1).

The Central Bank administers a deposit protection scheme, under the European Communities (Deposit Guarantee Schemes) Regulations, 1995, which covers deposits in the licensed banks and building societies.

##### *Banking supervision and payment systems oversight*

The Central Bank Acts, 1942 to 1989, provide the Central Bank with general powers in relation to the granting of banking licences and the supervision of banks. The Central Bank also has supervisory powers in respect of building societies (under the Building

Societies Act, 1989), the savings banks (under the Trustee Savings Banks Act, 1989) and the two state-sponsored credit institutions - ACC Bank (under the ACC Bank Act, 1992) and ICC Bank (under the ICC Bank Act, 1992). The Central Bank does not have a supervisory role in relation to the Post Office Savings Bank.

The Central Bank also has a supervisory role in relation to certain other financial institutions: stock exchanges (the Irish Stock Exchange), financial futures and options exchanges (the Irish Futures and Options Exchange (IFOX) and FINEX Europe); moneybrokers; collective investment schemes, including UCITS, and certain entities established in the International Financial Services Centre (IFSC).

The Central Bank supervises (and operates) both the Daily Interbank Settlement system and the Gilts Settlement Office.

The Central Bank has statutory responsibilities under the Central Bank Act, 1971, for ensuring access to cheque clearing facilities and in respect of the charges applied by clearing banks to non-clearing entities/institutions. The purpose of the legislation is to ensure that all deposit-taking institutions are in a position to clear cheques at competitive prices. Similar explicit legislative provisions do not exist in respect of the clearing of credit items, which reflects the fact that they are not an important non-cash means of payment compared to cheques.

The Consumer Credit Act, 1995, places responsibility for bank charges under the Director of Consumer Affairs.

The Central Bank plays a monitoring role in respect of the clearing of retail items - via the Dublin Bankers' Clearing - ensuring that entry requirements for new members to the clearing arrangements are not restrictive.

Responsibility for the supervision of the Dublin Bankers' Clearing rests with its

members. In turn, the member institutions are supervised by the Central Bank. The principles for participation in the Dublin Bankers' Clearing were reformulated in 1989 and were affirmed by the Central Bank. However, the application of prudential, supervisory and reporting requirements and conditions by the Central Bank does not constitute a warranty as to the solvency of the Dublin Bankers' Clearing or its members. In other words, the Central Bank would not be liable in respect of any losses incurred through the insolvency or default of any of the members of the Dublin Bankers' Clearing.

The Daily Interbank Settlement across the settlement accounts of participants at the Central Bank is subject to rules made by the Central Bank, which are amended from time to time. Before being allowed to hold a settlement account a prospective participant is examined by the Central Bank and kept under review. Moreover, the operation of the settlement account system is kept under review.

In view of the changing environment in relation to financial services generally, the Central Bank keeps the nature and magnitude of the risks in the clearing and settlement systems for debit items, credit items, equities and government bonds under review. (See Section 1.3.4 regarding proposed reforms in the payments industry.)

A further Central Bank Act is actively being considered. This proposed legislation aims to ensure that the Central Bank of Ireland meets a number of the requirements set out in the Maastricht Treaty. This will include, inter alia, providing for an explicit statutory role in relation to the oversight of payment systems.

### *1.3.2 Provision of processing and settlement facilities*

The 1942 and 1971 Central Bank Acts provide the Central Bank with powers to operate accounts for credit institutions. In 1980 the Central Bank established the Daily Interbank Settlement system and through this the Central Bank provides settlement account services to twenty-three institutions - licensed banks, branches of other EU banks, building societies and other supervised credit/financial institutions. It is through these accounts that the institutions settle for clearings, large-value interbank transactions and transactions with the Central Bank. The Central Bank also acts as banker to the Government for large-value Irish pound and foreign exchange transactions. Government small-value payments are made mainly through the Paymaster General which clears its Payable Orders (analogous to cheques) bilaterally with the members of the Dublin Bankers' Clearing (see Section 2.2.6).

The Central Bank also holds accounts for foreign entities such as central banks, the European Commission, EBRD and the Bank for International Settlements.

In 1989 the Central Bank established the Gilts Settlement Office for the settlement of government bond transactions (see Section 4).

The settlement account system in the Central Bank is fully described in Section 3.3 and all interbank settlements are made through it. Large-value interbank payments are settled gross at the end of the day. Settlement for the Dublin Bankers' Clearing is made across settlement accounts at the Central Bank on a net net basis.

The final settlement of government bond transactions is effected through the Gilts Settlement Office operated by the Central

Bank: related cash settlement is made across the (settlement) accounts of the settlement banks at the Central Bank on a net net basis.

Payments for other securities are made through the small-value clearing system and are settled on a net net basis, as part of the settlement of the small-value clearings. If a large-value payment is involved it can be settled gross with a Special Presentation (see Section 3.4).

There is no direct charge for the provision of settlement account services at the Central Bank but a minimum balance of IEP 25,000 (ECU 31,500) must always be held on each account.

### **1.3.3 Monetary policy and payment systems**

The Central Bank has three main means of providing Irish pound liquidity: underlying market support through collateralised lending, foreign exchange swaps and the Short-Term Facility (STF), which is also buttressed by government bonds as collateral. Underlying support comprises loans secured by government bonds and these loans can be for any maturity from overnight to one month. They can be effected on an auction basis or on a bilateral basis. In the bilateral case the Central Bank has discretion as to the credit institution to which it will lend funds.

In addition to underlying market support lending, the Central Bank provides support to the members of the Daily Interbank Settlement system when required at the close of business. It does this through the facility described as the Short-Term Facility (STF) to which the Central Bank's minimum overnight lending rate, known as the STF rate, is applied, i.e. the STF is an overnight secured loan facility on which the credit institutions rely for residual shortages of settlement funds. Drawings by a credit institution on this facility must be secured with government bonds equal to 110% of

the amount drawn. The funds available under the STF are limited to Central Bank settlement account holders who are required to have government bonds continuously available in the Central Bank. In addition, each settlement account holder is subject to a quota on the amount which may be borrowed under the STF.

A facility is available for Secured Advances in exceptional circumstances, e.g. if a credit institution has drawn its full STF quota, the deadline for the main collateralised lending operations (3.30 p.m.) has passed and it cannot come to any arrangement with another market participant (i.e. the market is very short), a secured advance may be provided by the Central Bank. The advance is subject to security similar to the STF drawings and the rate charged is the STF rate or overnight market rate, whichever is greater.

All Irish pound shortages in the money market are funded using the foregoing credit mechanisms. By this means, settlement accounts at the Central Bank of institutions are put in credit and thus the banking system is funded to match the supply of Irish pounds with that being demanded.

The rate paid on the STF is the key monetary policy interest rate. Market interest rates can also be influenced by the Central Bank being less accommodating in its funding through underlying support.

In addition to the foregoing liquidity provision mechanisms the Central Bank also provides deposit facilities. Overnight deposits are normally accepted between 12.30 p.m. and 3.30 p.m. each day. The minimum amount that can be placed is IEP 25,000 (ECU 31,500). In surplus market conditions the Central Bank can also invite deposits for fixed terms (normally up to one month). The rate applied is normally market-related but, as with underlying rates, slightly off-market rates can be used for signalling purposes.

### ***1.3.4 Main projects and policies being implemented***

#### *Reform of the Daily Interbank Settlement (DIS) system*

The DIS will be changed to a real-time gross settlement system by the end of 1996. This project is described fully in Section 3.2.

#### *Reform of the structure of the payments industry*

Following a detailed legal, risk and contingency audit of, inter alia, the Dublin Bankers' Clearing, it is proposed to set up a new body to be known as the Irish Payment Services Organisation (IPSO). This will act as the umbrella organisation of the payments industry in Ireland.

This initiative by the clearing banks in Ireland recognises the changing payment systems market-place in Ireland and the public policy desires in Europe and elsewhere to ensure that payment, clearing and settlement systems in all countries should continue to meet appropriate standards of safety, integrity and competitive openness.

The new structure proposed for Ireland would see the establishment of initially four clearing companies for the operation of the separate retail and wholesale clearing functions, viz. cheques, credit transfers, electronic clearing and high-value payments.

The overall aim is that the IPSO would be

recognised by the financial community as the central representative and co-ordinating body for the payments industry in Ireland. Before this system is put in place a full consultation process will be carried out within the financial community. At this point the new organisation's rules and structure will be subject to the approval of the Central Bank as overseer of the payments system (see also Section 3.5.7).

## **1.4 The role of other private and public sector bodies**

The Dublin Bankers' Clearing Committee, which is a private association established in 1845, is the cheque clearing organisation in Ireland. The Dublin Bankers' Clearing Committee formulates and applies the rules for entry to the Dublin Bankers' Clearing. Rules regarding participation were reformulated in 1989 and affirmed by the Central Bank (see also Section 1.3.4).

The Irish Bankers' Federation represents the general interests of licensed banks.

Building societies' interests are represented by the Irish Mortgage and Savings Association.

An ombudsman scheme established jointly by licensed banks, building societies, the savings bank, and the two state-sponsored credit institutions is available to investigate complaints from individuals, and from limited companies with an annual turnover of up to IEP 250,000 (ECU 315,000).

## 2. Payment media used by non-banks

Since the early 1980s credit cards have grown in importance and technological developments are having an increasing influence with the more widespread use of, inter alia, automated teller machines (ATMs), transfers via magnetic tape media and processing on MICR encoding and reading equipment.

### 2.1 Cash payments

While currency (banknotes and coin) as a percentage of GNP has declined from 7% in 1980 to 5% in 1995, banknotes and coin continue to play an important role in making payments in Ireland. Retail payments are made, and wages continue to be paid, predominantly in banknotes and coin but to a diminishing extent (see Section 2.3). The amount of coin acceptable as legal tender in any one transaction is limited to twenty times the face value of the individual coin by the Central Bank Act, 1989.

### 2.2 Non-cash payments

The use of payment instruments, other than banknotes and coin, recorded substantial growth in the 1980s, reflecting an expansion in the banking habit, especially among the self-employed, farming and employee sectors. Current (sight) accounts are the predominant accounts on which non-cash payment instruments are drawn for making domestic small-value payments. These accounts are usually non-interest-bearing. However, most banks operate arrangements whereby if the account is kept in credit for a pre-specified amount and period, no charges will be made for transactions across these accounts. Balances on interest-bearing deposit accounts in the major clearing banks can be transferred with little difficulty, on demand, to current accounts.

#### 2.2.1 Credit transfers

The use of credit instruments is limited. Ireland, unlike some of its European partners, is not a large user of credit transfers or giro banking.

#### 2.2.2 Cheques

While the trend in the number of cheques used is downward, this instrument continues to be the most important and widely used payment mechanism for many purposes. The inauguration of a debit card scheme (see Section 2.2.4) in 1996 may accelerate the downward trend. Cheques are not yet truncated.

Cheque guarantee cards, of which over three-quarters of a million have been issued, are not payment instruments but they support payments, as their sole purpose is to guarantee the payment of a cheque up to the limit of IEP 100 (ECU 126). Some banks issue dual-function cards which may be used to operate ATMs as well as to guarantee cheques.

#### 2.2.3 Direct debits

While cheques are the predominant non-cash payment instrument, the banks are promoting other paperless payment media, such as direct debits and standing payment orders. This is pursued through the enhancement of these payment services and through the related pricing policy for their usage. Banks are also actively encouraging large organisations that generate or receive high volumes of recurring payments to use paperless electronic transfers, e.g. by direct debiting of firms' accounts and direct crediting of salaries.

### 2.2.4 Payment cards

#### *Debit cards*

Two of the major clearing banks have initiated a project for a debit card scheme - LASER. Following a pilot scheme in late 1995, all other credit institutions will be invited to participate in the scheme, which is expected to commence in 1996.

#### *Credit cards, travel and entertainment cards*

The generic term credit card covers:

- credit cards of the VISA and ACCESS (MasterCard/Eurocard) type, and
- the charge (i.e. travel and entertainment) card, generally, with no extended credit facility (as issued by American Express and Diners Club).

There are almost one million credit cards issued in Ireland, i.e. one for every 2.5 adults. Most of the credit cards (ACCESS and VISA) are issued by the members of the Dublin Bankers' Clearing.

Credit available as a result of the issue of ACCESS and VISA amounts to ECU 1,040 million, of which ECU 203 million was outstanding in December 1994. This latter figure amounts to approximately 10% of total personal credit (excluding mortgages) provided by the deposit-taking institutions.

#### *Retailer cards*

No information is currently collected for these instruments, though there is a trend to replace sole retailer cards with ACCESS/VISA cards branded for the retailer.

#### *Prepaid cards*

There are no prepaid card schemes in Ireland at present (apart from a number of single-use schemes such as telephone cards) though the debit card scheme mentioned above may be the precursor of a prepaid card scheme.

#### *ATM and POS networks*

The use of ATMs, especially for cash withdrawal, has shown substantial growth. ATMs have been in operation in Ireland since the early 1980s. At this stage there are over 850 ATMs in service throughout the country, i.e. about one ATM per four thousand of the population. The four major members of the Dublin Bankers' Clearing have provided 723 ATMs in aggregate which are interlinked. So far, the savings bank has installed sixty-four ATMs which are interlinked with one of the main clearing banks. The building societies have introduced an interlinked network of seventy-five ATMs. While the technical specifications of the building-societies' network are fully compatible with those of the clearing banks, which would facilitate ATM interlinking between most institutions in the future, and indeed some building societies have interlinked their individual ATM networks with individual bank ATM networks, full interoperability between the three ATM networks does not yet exist.

The services available on ATMs include cash withdrawal, lodgement, account enquiry, statement and cheque book requests. Bill payment facilities are also available through the ATM network of one of the clearing banks, to settle electricity, telephone and credit card indebtedness. A number of ATMs also provide a foreign exchange service in appropriate locations. Customers of major UK clearing banks may also use their cash cards at the ATM networks in Ireland for cash withdrawals. The major banks have introduced online counter terminals which provide bank customers access to their

account held either at that branch or at another branch of the same bank. These terminals are accessed via the normal ATM card. Cash lodgements and withdrawals using counter terminals have immediate effect upon a customer's balance. VISA and ACCESS credit card holders can use the major ATM network for cash withdrawals.

In Ireland, there are some 5,000 POS terminals for credit cards and emerging debit cards. Some POS stations, which are linked to a central computer, provide immediate authorisation and give immediate effect to normal credit card transactions, while others collect data and information for the purposes of subsequently debiting the customers' accounts with the credit card company. The data are sent, via a telecommunications network, for processing at the end of each business day. While facilities for full electronic funds transfer at point of sale (EFTPOS) are at present in a rapid state of change, such facilities do not yet exist in Ireland. Banks are evaluating the commercial viability of introducing such facilities in the future (see *Debit cards* above).

### 2.2.5 Postal instruments

The Post Office Savings Bank (POSB) is operated by the state company - An Post - which operates the national postal service. The POSB provides retail money transmission services for government departments, the national communications company and other public bodies as well as for the personal sector. The main payment instruments currently provided by the POSB are Postal Orders and Money Orders, which are essentially the same as bank drafts. Other services, less important in terms of activity, include sterling drafts and the services of the EUROGIRO system (see Chapter 16). The development of the payment services of the postal authority has not kept pace with those

of the banks but a number of improvements in the money transmission area are under consideration to take advantage of the POSB's large network of branches and modern electronic funds transfer technology. This could lead to greater competition in the provision of domestic payments services. However, at present the POSB only operates savings accounts. Their only formal connection to the payments system is through the issue of Postal and Money Orders which, if they are lodged to the banking system, are settled bilaterally through an account held by the POSB with one of the clearing banks.

### 2.2.6 Other payment instruments

Payable Orders, which are another form of debit instrument, are issued by the Paymaster General for the payment of civil service salaries and for goods and services. These instruments are treated similarly to cheques insofar as they are collected through the banking system and settled bilaterally between the collecting bank and the Paymaster General via settlement accounts at the Central Bank.

## 2.3 Recent developments

Cheque truncation is not practised in Ireland yet. However, it is planned to implement it and some steps in that direction have already been taken in that paid cheques are no longer returned to personal customers but are retained at the (paying) branch where the drawer's account is held (see Section 3.5.5).

There is an increasing trend for wages and salaries to be credited directly and electronically to bank accounts. There has also been some exploratory discussion of the possibility of state welfare and health benefits being paid in a similar manner.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

The project to convert the current large-value payment and settlement system to RTGS is set out in detail in Section 3.2. The current system for interbank payments and settlements, and settlement for the clearings and for other large-value payments, is set out in Section 3.3. The Special Presentation system is described in Section 3.4. There is one retail clearing in Ireland, the Dublin Bankers' Clearing, which is described in Section 3.5. A schedule of the timings of the various payments and settlements is given in Annex I.

#### 3.2 Real-time gross settlement (RTGS) system: the IRIS system

The project to establish real-time gross settlement (RTGS) for large-value interbank payments by end-1996 proceeded throughout 1994 and 1995 in conjunction with the credit institutions. Under a system of real-time gross settlement, payments between these institutions, and between them and the Central Bank, are processed and settled individually in real time as they occur throughout the day. This contrasts with the present system - the Daily Interbank Settlement (DIS) system (see Section 3.3) - where payments are communicated throughout the day but remain unsettled until the end of the day.

As part of the preliminary moves to RTGS, and in the interest of efficiency and safety generally, the use of the telephone to make payments between credit institutions, and between the Central Bank and credit institutions was eliminated in 1994. Instead, all large-value payments are now notified using the electronic messaging system developed by S.W.I.F.T. (see Section 3.3). The exclusive use of S.W.I.F.T. for this purpose was completed early in 1995. It is now a

condition for the holding of a settlement account at the Central Bank that the institution be a member of S.W.I.F.T.

The RTGS system will be known as the IRIS - Irish Real-time Interbank Settlement - system.

##### 3.2.1 Functioning rules

Some or all of the operating rules of the system may have to be set down in the form of legally binding contracts. The type of rules that will need to be agreed, legally or otherwise, include: membership criteria; daily deadlines; revocability and finality provisions; settlement obligations; message standards; the responsibilities and liabilities of participants; collateral arrangements; and a clear position on the provisions to cover for technical risk.

The rules for the operation of the system and, where appropriate, legal agreements will be drawn up and agreed by mid-1996.

##### 3.2.2 Participation in the system

It is expected that the current participants in the Daily Interbank Settlement system (see Section 3.3.2) will become participants in IRIS.

##### 3.2.3 Types of transactions handled

The types of same-day transactions which will be handled by the IRIS system are as follows:

###### *Interbank payments*

- interbank money market transactions, e.g. interbank loans and deposits;

- commercial interbank payments, e.g. for customers;
- settlement of interbank clearings, i.e. Dublin Bankers' Clearing and Gilts Settlement Office.

*Payments between the Central Bank, settlement account holders and government accounts held at the Central Bank*

- currency issue/withdrawal;
- changes in primary liquidity deposits (reserves);
- Central Bank and government accounts at the Central Bank, clearings (tax, government expenditure);
- government bond issues, redemptions and dividends;
- Irish pound side of government foreign exchange transactions.

*Central Bank: monetary policy operations*

- underlying liquidity support;
- STF;
- fixed deposits;
- overnight deposits.

Clearings, e.g. Dublin Bankers' Clearing and Gilts Settlement Office, will be settled by the net debtors making payments to the Central Bank. The Central Bank will then make the payments due to the net creditors in the clearing.

In exceptional situations, the Central Bank will have the ability to apply manual entries to the settlement accounts in the CAS.

### 3.2.4 Operation of the transfer system

An IRIS payment will be initiated by the sending member submitting a S.W.I.F.T. payment message (MT100, MT202, etc.) to the destination member. The payment message will be marked as requiring settlement via IRIS. The payment message will be intercepted by the S.W.I.F.T. Y-Copy Service and will be held awaiting settlement by the Central Accounting System - CAS. The Y-Copy Service sends a partial copy of the payment message - the amount and identity of the sending and receiving member - to the CAS, which will check to see that the sending member has adequate funds on its settlement account in the CAS to cover the payment. If so, the CAS will settle the payment in real time by transferring funds between the settlement accounts of the sending and destination members, and will inform the S.W.I.F.T. Y-Copy Service that the payment has been settled. The S.W.I.F.T. Y-Copy Service will then forward the payment message to the destination member. If the sending member does not have adequate funds on its settlement account, the payment is queued in the CAS until sufficient funds become available on it.

#### *Queuing*

The CAS will stack payments that are ready for settlement in a queue if it is busy or if the queue is blocked by a lack of available funds. Otherwise it will endeavour to settle the payment immediately. There is one payment queue per settlement account. Settlement requests and account transfers (i.e. manual entries by the Central Bank) are handled in the same queue. Participants can assign a business priority to payments.

#### *Order of settlement*

Payments will be taken from a specific payment queue in order of arrival and within a particular business priority. As there will be

one queue per member account, this means that the normal order of settlement for each member's settlement account will be FIFO within each business priority. Overall, the effective order of settlement will be that of payment arrival within a particular business priority.

#### *The accounting process*

The payment queues will contain settlement requests and account transfers. These transactions will be single debit/single credit accounting transactions. Both entries will be posted together, i.e. in the same unit of work. Each entry of the same unit of work will be time-stamped with the same calendar date and time.

#### *Gridlock*

Gridlock occurs when two or more payment queues are blocked due to a shortage of funds although in aggregate, or throughout the system, there may be no shortage. Gridlock can be resolved through an injection of liquidity into the system, for example by adding funds from an additional purchase by the Central Bank of securities from the member or by raising the overdraft limit. If there is no overall shortage of funds then it is not necessary to increase liquidity. It may be possible that funds movements from some or all of the waiting payments can be offset.

The CAS will resolve gridlock using its own algorithm. This will be initiated periodically by the CAS at a frequency determined by a configuration parameter. It can also be initiated on demand by a Central Bank user.

Provided that there is more than one queue, the CAS will examine blocked payment queues and will apply its algorithm. This will choose a set of payments that can be settled. This may be all the payments, a sub-set of the payments or none of the payments. Selected payments will be settled as a single

unit. All the account entries and all the audit records will carry the same time-stamp. The CAS selection process will guarantee that, within each queue, payments are made in consecutive order of arrival within each business priority starting from the head of the queue. Within this constraint, the sub-set selected will be optimal.

#### *Enquiries and monitoring*

Comprehensive enquiry facilities will be provided so that members can find out the status of their operations. Members may submit enquiries using S.W.I.F.T. messages addressed to the CAS which will receive an automatic response. Central Bank users may also submit enquiries from a workstation. Workstation enquiries will receive a response at the workstation.

Members will only be able to obtain information that relates to their own business transactions, their own accounts, their own outgoing queued payments and settled payments to/from their own accounts.

A Central Bank user at a workstation can obtain information about any member.

### **3.2.5 Transaction processing environment**

The IRIS system will consist of two major components, viz. the Central Accounting System (CAS), which will carry out the real-time settlement of all payments made within the IRIS system, and the Y-Copy Service of the S.W.I.F.T. network, which will be responsible for managing the communications between IRIS members and the CAS.

The IRIS system will be a fully automated system, with manual intervention by the Central Bank only in exceptional circumstances.

### 3.2.6 Settlement procedures

Each IRIS member will have a single settlement account in the CAS, used to settle all its IRIS payments. The member will be allowed an overdraft limit on the settlement account. The size of a member's limit will be a matter for negotiation between the member and the Central Bank. The limit must be fully collateralised (see Sections 3.2.1 and 3.2.4).

### 3.2.7 Credit and liquidity risk

In the IRIS system settlement risk is effectively eliminated. Money is not moved unless the debit settlement account has sufficient funds available. When funds are available, the payment settles and account entries are posted. The payment becomes irrevocable. However, putting the Irish pound payment and settlement system on an RTGS basis will have implications for participating institutions, and the Central Bank, in the area of liquidity. In the current system, the positions between participating institutions, and between the system and participating institutions, are inclined to fluctuate much more within a day than from day to day.

The present end-of-day settlement system allows for complete freedom in the way payments are scheduled throughout the day. This means that if, for example, one participating institution receives a large number of payments in the morning and makes payments towards the end of the day, this institution would have deposits in the system throughout the day. On the other hand, an institution could make a large number of payments in the morning. Under the present system this institution has the freedom to owe money to the system throughout the day. A move to real-time gross settlement of payments would mean that the latter institution would have to borrow from the system. If no such borrowing facility existed, the system could not function, i.e. gridlock would result. This is because greater mismatches of payments and receipts

could occur in a real-time system than are experienced with the present end-of-day settlement system. As a result, a participating institution may not have funds at a particular instant to make payments. This could lead to a situation in which no banks could make payments because they are all awaiting payments which are queued in the system. Therefore, in an RTGS system measures have to be taken to ensure that adequate liquidity exists.

The level of the liquidity requirement in IRIS which is necessary to prevent gridlock will not be clear until further monitoring of the intraday payments has been completed in early 1996. This means that the precise details of liquidity provision cannot be fully worked out until this study is completed. While the precise amounts of liquidity required are not clear at this stage, however, the paragraphs below describe what would in general be intraday measures which it might be necessary to take to avoid gridlock. It should be emphasised that between the close of the system in the evening and the re-opening of the system in the morning, the provision of liquidity would revert to the overnight STF or other mechanisms (see Section 1.3.3) which exist at present. The objective behind all the measures would be to encourage an efficient scheduling of payments throughout the day, and to minimise the amount of extra credit to be supplied by the Central Bank and the amount of collateral which would be needed by the financial institutions, both during the day and at the close of business.

Both main means of ensuring sufficient liquidity lie in the hands of the participants, namely the rescheduling of payments and the development of an intraday interbank market. In the current end-of-day settlement arrangements, the latter already occurs in the form of the agreement by one credit institution to draw down its STF (or part thereof) for lending to another institution requiring liquidity, or by lending in the interbank market rather than putting funds

on overnight deposit at the Central Bank. This could be extended for use throughout the day. The Central Bank would encourage the use of such intraday interbank credit by its pricing of the rate it would pay on deposits, so that credit institutions which have surplus funds during the day would be anxious to lend to other credit institutions.

The Central Bank might also consider providing the extra intraday credit. To maintain present (and EU) standards, as with overnight credit, this credit would have to be fully collateralised. Possible means of providing this extra credit have to be fully investigated by the Central Bank. Access to liquidity deposits (reserves) on an intraday basis might be another option.

The principal benefit of RTGS is the improvement in participants' ability to monitor and manage intraday credit risks. Moreover, the move to RTGS should bring about a large reduction in the risks inherent in the present end-of-day settlement system.

### **3.2.8 Pricing**

The project for IRIS is a co-operative one between the Central Bank and the participating credit institutions. The costs of developing and building the system are being shared among the participants, including the Central Bank. The level of contributions from participants was based on a survey of the use of the current system taking both volume and value into account.

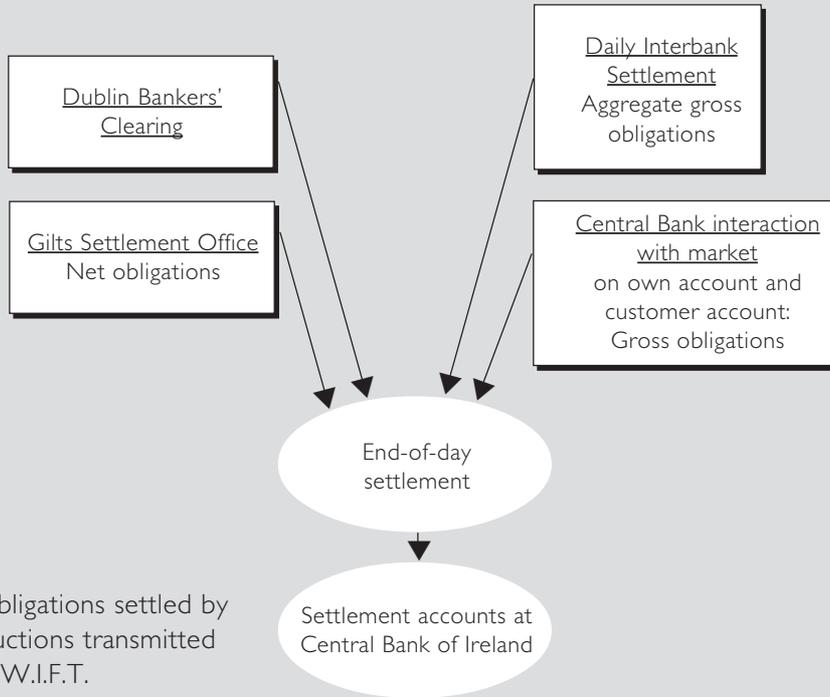
The system will operate on the basis of full cost recovery.

### **3.2.9 Main projects and policies being implemented**

See the RTGS project described above in Sections 3.2 - 3.2.8. Charts 1 and 2 illustrate the current and future large-value settlement procedures, respectively.

**Chart 1**

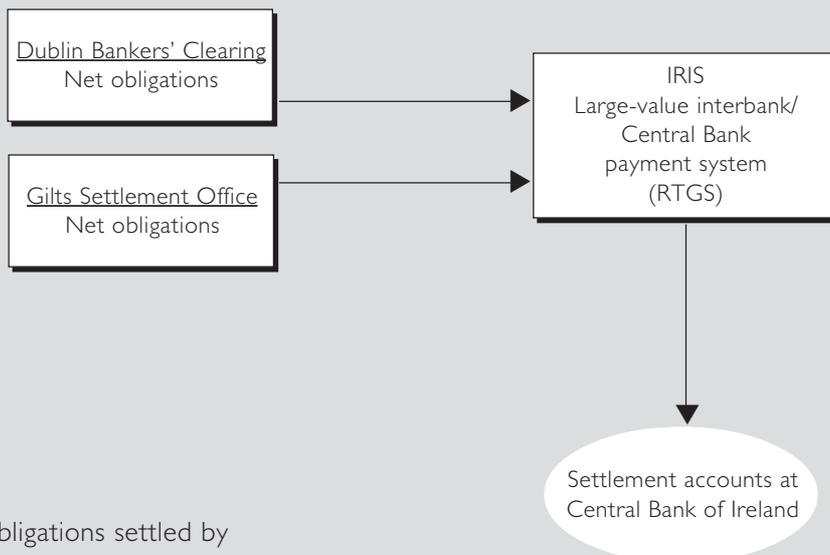
Interbank exchange and settlement systems in Ireland - current situation



IE

**Chart 2**

Interbank exchange and settlement systems in Ireland - end-1996



### 3.3 The Daily Interbank Settlement (DIS) system

Currently large-value funds transfers between financial institutions take place across the settlement accounts maintained by a number of financial institutions with the Central Bank. A minimum balance of IEP 25,000 (ECU 31,500) must always be held on this account. At present, thirteen licensed banks, four branches of other EU banks, the two state-sponsored credit institutions, one savings bank and three building societies hold settlement accounts at the Central Bank - twenty-three institutions in total - and participate in the DIS system.

This system was set up by the Central Bank in 1980 and involves the settlement of payments in Central Bank funds between participating institutions. It is a formal structure whereby institutions with settlement accounts at the Central Bank transmit instructions via S.W.I.F.T. to debit their Central Bank settlement accounts for the total value of payments which have been notified and agreed with other participants via S.W.I.F.T. throughout the day (see Section 3.2.3 for types of transactions handled). The system is an end-of-day gross settlement system.

#### 3.3.1 Functioning rules

The operations of the DIS and settlement accounts at the Central Bank are subject to the rules set by the Central Bank.

#### 3.3.2 Participation in the system

The Central Bank will normally provide a settlement account for credit institutions with regard to an institution's need for such a facility because of its market dealing. However, not all licensed banks/credit institutions have such accounts. Out of a total of thirty-nine licensed banks, thirteen have settlement accounts at the Central Bank. Four branches of other EU banks (out

of a total of twelve), one savings bank, the two state-sponsored credit institutions and three building societies (out of a total of five) also have settlement accounts at the Central Bank.

In its role as government banker, the Central Bank also holds accounts for the government which include the Collector General's (tax) accounts and the Exchequer Account. The Central Bank also holds the Paymaster General's accounts which are funded by the Exchequer Account. The Paymaster General effectively operates as a bank, clearing its own cheques, known as Payable Orders, bilaterally with the credit institutions. The final settlement to credit institutions is across the Paymaster General's account at the Central Bank (see Section 2.2.6).

The Central Bank also participates in this daily settlement system, on its own behalf and on behalf of its public sector and international customers, making and receiving payments to/from banks. Moreover, the Central Bank's operation in the money market (e.g. lending to, or receiving deposits from institutions), interventions by the Central Bank in the Dublin foreign exchange market and withdrawals/lodgements of currency notes by banks, are also settled through this system.

#### 3.3.3 Types of transactions handled

Transactions handled are described in Section 3.2.3.

#### 3.3.4 Operation of the transfer system

Daily interbank payments are settled bilaterally and on a gross basis by means of S.W.I.F.T. debit instructions on accounts at the Central Bank by the paying institution. Each debit instruction is a single payment from the payer to the payee institution and represents the sum of payments made - notified via S.W.I.F.T. - throughout the day

by the payer institution to the payee institution. In arriving at the aggregate debit, or single payment, no netting occurs. The Central Bank's rules for settlement accounts require an institution to make only one S.W.I.F.T. payment (i.e. an aggregate payment) drawn in favour of another institution in respect of all interbank transactions with that institution, notified bilaterally by S.W.I.F.T. This part of the settlement system is aggregate gross. Final settlement is effected in the Central Bank at the end of the day.

Payments or receipts in respect of Central Bank transactions with account holders are also transacted on a gross basis across settlement accounts at the end of the day.

The settlement of the retail clearings (Dublin Bankers' Clearing) and the Gilts Settlement Office are also transacted across the settlement accounts at the end of the day. The settlement of retail clearings relates to cheques delivered to the paying bank on the same day. The gilts settlement relates to government bond transactions negotiated on the previous day. These settlements are net net, and represent a member's overall debit or credit position for that clearing. The Dublin Bankers' Clearing and the Gilts Settlement Office are only involved in the large-value payments system to the extent that they provide settlement figures for the participants in these systems. The Central Bank then processes these payments on the participants' settlement accounts, having received debit instructions via S.W.I.F.T.

### **3.3.5 Transaction processing environment**

The Daily Interbank Settlement system is a wholly manually operated paper-based system. The Central Bank manually enters the transactions on the participants' settlement accounts from instructions received via S.W.I.F.T., with the resulting balances being made available by late evening. Similarly, the Central Bank's interbank market operations and the settlement of clearings

are manual systems, in which the Central Bank enters the individual transactions, authorised by instructions from participants via S.W.I.F.T., into its accounting system. If the S.W.I.F.T. system is not available, the backup procedure is a reversion to former manual end-of-day paper-based procedures.

### **3.3.6 Settlement procedures**

All large-value transactions are processed through the settlement accounts held at the Central Bank. While the settlement payment instructions are sent throughout the day via S.W.I.F.T. notifications to the Central Bank, the transactions are processed after 4 p.m. All transactions are considered to be settled simultaneously at the close of business. Institutions making or receiving payments for their customers throughout the day will give same-day value.

### **3.3.7 Credit and liquidity risk**

#### *Credit risk vis-à-vis non-bank customers*

As it operates at present, the Daily Interbank Settlement system could pose some risks for participating institutions in the monitoring and controlling of customer credit exposures. Institutions advise each other of payments via S.W.I.F.T. throughout the day. Settlement takes place at the end of the day over their settlement accounts at the Central Bank. A receiving institution will not know that it has received all payments due in Central Bank funds until the settlement is agreed and notified by the Central Bank at the end of the day. An institution allowing a customer to draw on this payment that day will incur an intraday exposure.

#### *Credit risk vis-à-vis institutions*

Credit risk between institutions with settlement accounts at the Central Bank could be incurred because of the delay

between the time at which institutions issue payment instructions via S.W.I.F.T. and the time at which payments are effected on settlement accounts at the Central Bank in the Daily Interbank Settlement after 4 p.m. If a paying institution could not obtain interbank funds due to credit limit problems, or Central Bank funds due to an inability to provide government bonds as security (see Section 1.3.3 for the Central Bank's means of providing credit), there might be the risk that that institution might not be able to settle for its own debit position unless the Central Bank decided to intervene. This would involve unwinding or lending between institutions to avoid systemic risk problems. In such circumstances the payee institution might have to borrow and have an overnight, or longer, exposure to the paying institution. Institutions monitor and control this risk by having overnight bilateral limits vis-à-vis each other, particularly in the Dublin interbank foreign exchange and Irish pound interbank deposit markets. However, the magnitudes of the institutions' bilateral and multilateral intraday positions are not controlled as closely.

#### *Liquidity risk*

Liquidity risk arises in the various large-value payments if an institution is temporarily unable to fund its settlement account at the Central Bank. The risk is that the Central Bank would be unwilling to make the overnight advance required to fund this position. This situation could lead to a perceived need to unwind the settlement of one or more of the clearings or other debit instructions from that institution. This would pose additional risks to other participants involved directly or indirectly in the payments system. If an institution with a net debit position for all settlements had insufficient funds on its settlement account at the Central Bank and was unable to borrow overnight from other institutions, the overall settlement of all clearings could only be completed by means of the Central Bank providing funds to

the institution concerned. The Central Bank would have to make a judgement on whether to lend to an institution or force an unwind. With processing on settlement accounts taking place mainly at the end of the day, this could be managed directly and sensitively, if required. No credit has ever been provided by the Central Bank without security and the system has never been faced with an unwind.

The institution of RTGS for large-value payments and settlements will substantially reduce the above risks (see Section 3.2.7).

#### **3.3.8 Pricing**

All direct participants in the large-value payment system have settlement accounts at the Central Bank, on which a minimum interest-free credit balance of IEP 25,000 (ECU 31,500) must be maintained. No overdrawn balances are permitted and net debit positions with the system are funded (to include the minimum balance) with secured accommodation from the Central Bank (see Sections 1.3.3 and 3.3.7). No transaction fees are charged. Institutions do not charge other institutions for same-day payments among themselves. Institutions making same-day value payments on behalf of customers generally charge a fee in the region of IEP 20 (ECU 25) per transaction.

#### **3.3.9 Main projects or policies being implemented**

The DIS system will be replaced by the IRIS system (see Section 3.2).

### **3.4 Further large-value payment systems**

#### *Special Presentations system*

There is a payment facility for large-value Irish pound cheques known as the Special Presentations system. Cheques for

IEP 500,000 (ECU 630,000) or more (increased from IEP 100,000 (ECU 126,000) in 1994), drawn on nominated bank branches located in central Dublin, may be "specially presented" at these offices up to 3 p.m. daily for same-day value in Central Bank funds. Payment is effected by the bank on which the cheque is drawn, by making an interbank payment via a S.W.I.F.T. instruction to the payee institutions. Furthermore, cheques of similar magnitude drawn on a branch that is not nominated, may be presented to that branch and the bankers' payment obtained in return may be presented at a nominated branch before 3 p.m., in return for which an interbank payment is made via a S.W.I.F.T. instruction, as above. This facility is available on a reciprocal basis to all licensed banks on which cheques are drawn. Cheques for which value is given/received in this manner are settled on a gross basis in the Daily Interbank Settlement system, as opposed to other cheques cleared through the Dublin Bankers' Clearing which are settled on a net net basis.

Cheques paid via the Special Presentations system cannot be subsequently returned unpaid, i.e. the system provides both finality and value. However, it is expected that this system will be discontinued once the RTGS system becomes fully operational.

The charge for this same-day collection of cheques for customers is on a scale of fees depending on the amounts involved and volume of business.

### 3.5 Dublin Bankers' Clearing

There is only one retail clearing system in Ireland: the Dublin Bankers' Clearing (DBC). While this system may be classified as a retail or small-value system, there is currently no upper limit on the value of any individual instrument which may pass through this mechanism. The Dublin Bankers' Clearing is a private members' association formed in 1845.

At present there are three main types of retail clearings catered for in the DBC:

- debit or cheque clearing;
- credit transfer clearing;
- electronic clearing.

In terms of volumes of transactions, the cheque clearing dominates with 84%. Credit transfers and electronic clearing account for the balance of 16%.

Up to 1994 there were two cheque clearing systems - the Central Exchange and the DBC. As part of the pursuit of efficiency in the arrangements for the clearing and settlement of cheques and other retail payments, the Central Bank-sponsored Central Exchange was subsumed into the DBC towards the end of 1994 to form a single cheque clearing organisation. Previously, 98% of the cheques were processed through the DBC while only 2% were processed through the Central Exchange. The Central Exchange had been inaugurated by the Central Bank in 1972 to facilitate those banks - mainly foreign banks - which were not members of the DBC. The Paymaster General (see Section 2.2.6), which was a member of the Central Exchange, now operates on a bilateral basis with credit institutions under a set of rules and procedures analogous to those of the DBC.

#### 3.5.1 Functioning rules

The Dublin Bankers' Clearing Committee formulates and applies the rules and procedures for the operation of the Dublin Bankers' Clearing.

The central office of the Dublin Bankers' Clearing is used to a very limited extent as the physical location for the central exchange of items collected by participating banks. Its main function is in relation to the calculation of settlement obligations. The vast majority

of items are exchanged bilaterally between the clearing departments of the participating banks. The clearing is effectively, therefore, a formalised series of bilateral exchanges of paper and electronic data, which have been established according to commonly agreed rules and procedures (see also proposed reforms - Section I.3.4).

### 3.5.2 Participation in the system

The Dublin Bankers' Clearing comprises four clearing banks, one savings bank and the Central Bank. In addition, nine other banks, previously members of the Central Exchange, have an interface with the DBC for the clearance of paper debits. Banks and other supervised credit/financial institutions, which are not members of the Dublin Bankers' Clearing, can use a member bank to act as their agent. In such a case, the items are drawn on the non-member's account at the member bank and the account is treated in the same way as the account of a customer at that bank from a value and settlement point of view. The Central Bank is a member for the purposes of clearing items arising from transactions effected both on the public sector accounts held at the Central Bank and on its own behalf.

Direct access to the DBC system is granted subject to current minimum conditions, agreed with the Central Bank, which include:

- (i) volume criteria (minimum of 6,000 paper items per day);
- (ii) technical criteria (e.g. technical expertise, standard specifications for cheque paper, micro-encoding, etc.);
- (iii) the payment of an entry fee, to include the impact on costs to existing members in changing systems to accommodate new members.

(See also Section I.3.4 for proposed reforms, which will result in revised conditions.)

### 3.5.3 Types of transactions settled

The main function of the Dublin Bankers' Clearing is to facilitate the exchange and settlement of paper debits (e.g. cheques), credit items and electronic funds transfer (EFT) transactions (e.g. direct debits and credits), which are collected through the individual bank's clearing centres or departments.

### 3.5.4 Operation of the transfer system

There is no central clearing house as such. The system operates to strict time-scales, rules and procedures. All items cleared during the day are settled through settlement accounts maintained by DBC participants at the Central Bank.

In general, paper processing takes place in Dublin, in the clearing department of each bank, following the transfer of the paper each day from branches in courier vans, the costs of which are shared between the banks. According to the rules, twice a day - at 10.45 a.m. and 2 p.m. - members agree the values to be exchanged between them. The afternoon exchange is for items of IEP 20,000 (ECU 25,200) or more, and for mis-sorts, i.e. correction of mistakes, from the 10.45 a.m. exchange.

At present there are fifteen banks and the Paymaster General involved in cheque clearing. Cheques are lodged by the payees on their bank accounts throughout the country. A cheque drawn on the same bank branch at which it is lodged, and at which the account of the lodging customer is also located, does not leave the branch and the lodging customer is given value and value is taken from the payer on the day of lodgement. In the case of banks with an extensive branch network, cheques drawn on a different branch of the same bank or on a different bank are sent by van on the same day from all over the country to the clearing centre of the bank at which the cheque was lodged.

*Outgoing clearings*

When the lodged cheques arrive at a particular bank's clearing centre, the cheques are machine-sorted into bundles by bank, in the case of other banks, and by branch, in the case of the particular bank. The bundles of cheques drawn on other banks are then sent bilaterally to these banks (including the Paymaster General) along with a total amount in each case. Notification of the associated aggregate funds expected from these other banks are also sent by the clearing centres to the central office of the Dublin Bankers' Clearing. These figures are then totalled by the officer of the DBC and the net amounts due to/from each bank are provided to the participants and to the Central Bank for the debiting/crediting of settlement accounts at the Central Bank.

The Paymaster General is not involved in receiving remittances, i.e. it is an issuer only, so is not involved in clearing lodged cheques. The Paymaster General settles bilaterally with each bank on the basis of the totals of its cheques lodged at the individual banks and delivered to its office by the individual clearing centres of the banks.

*Incoming clearings*

Subsequent to the above procedures, the bundles of cheques delivered by the clearing centres to the payer bank clearing centres, and, in some cases, directly to the payer banks (including the Paymaster General), are again machine-sorted to debit individual customers' accounts by branch and account and, where appropriate, the cheques are then sent to the individual branches for storage and, where appropriate, for verification of signatures.

*The clearing cycle*

The clearing cycle for cheques drawn on and lodged at the same branch of a bank is one business day. The clearing cycle for all other domestic items, including cheques/credits destined for other branches of the same bank or branches of other banks, is three business days.

On Day 1 a customer lodges a cheque direct to his/her account at his/her own branch and it is recorded under that date.

On Day 2 the cheque is processed in the clearings in Dublin and the bank receives/gives value for it at the close of business on that day across its settlement account at the Central Bank.

On Day 3 the cheque is debited to the account of the drawer (the party who wrote the cheque), backdated to Day 2 for value purposes. For the calculation of interest, banks apply value to their customers' balances at the close of business on Day 2 of the clearing cycle, where the lodgement was made directly at the account-holding branch.

For a variety of reasons, not all cheques are paid on first presentation, e.g. if there are insufficient funds on the drawer's account to meet the cheque. Under the clearing rules, a bank has until the close of business on Day 4 by which time it must either pay the cheque irrevocably or return the cheque unpaid by the next post. Subject to the efficient operation of the postal service's next-day delivery service, the unpaid cheque will be received by the bank on which it was drawn on Day 5. For the above reasons, all banks advise their customers not to draw against cheques which have not been fully cleared, i.e. paid irrevocably. It is not certain that the funds will be cleared for at least five business days.

### 3.5.5 Transaction processing environment

Once cheques have been sorted electronically, their data are read electronically in the bank, and they are then exchanged between the clearing departments of the clearing banks. While cheques account for the bulk of transactions processed through the clearing system, there are other types of transaction and the underlying process for each differs. For example, electronic funds transfer (EFT) services, such as direct debiting, are fully automated and value passes between the payer and payee on the same day. On the other hand, the processing of paper-based credit transfers is not automated - due to the low volumes and the lack of pre-encoded information on the instruments - and the time-cycle for transferring value is longer. In the case of a lodgement by credit transfer to an account at a branch other than the account-holding one, value is received by the customer at the close of business on Day 3 of the clearing cycle.

Further technical improvements in the clearing system could be made by truncation, whereby cheques would not be delivered back to the branches on which they are drawn. Truncation is possible under Irish law. The banks have been encouraged to pursue this, though it is not seen as a priority at present.

### 3.5.6 Settlement procedures

Settlement, on the basis of presenting participants' listings of cheques, etc., and associated aggregate funds, is struck on the day of exchange. An officer employed by the DBC calculates the net balances due to, or from, each participant and communicates these via fax to each participant. Value and settlement are given on the day of the exchange, and settlement is effected on the same day across settlement accounts maintained at the Central Bank. The settlement basis at the DBC is multilateral net settlement (or net net settlement).

### 3.5.7 Credit and liquidity risk

Clearing and settlement operate according to a set of long-standing, and accepted, rules and procedures. Settlement has always taken place and an unwind has never occurred.

The precise nature of the relationships and responsibilities of participants, however, had not been fully clarified until recently. In order to clarify such issues a detailed legal, risk and contingency audit of the DBC was performed. Other reasons for this initiative include recognition of the changing payment systems market-place in Ireland and the public policy desires in Europe and elsewhere to ensure that payment, clearing and settlement systems in all countries should meet appropriate standards of safety, integrity and competitive openness. It is accepted that all payment systems should have a sound legal basis and agreements should exist between all members as to their contractual rights, obligations and responsibilities.

In order to meet the above requirements it is proposed to restructure the organisation of the payments industry in Ireland, which would include, inter alia, the setting-up of a new body to be known as the Irish Payment Services Organisation (IPSO). This would be an unincorporated association which would act as the umbrella organisation for the payments industry in Ireland; and the establishment of initially four clearing companies to execute the separate retail and wholesale clearing and settlement functions, viz.:

- paper debits, i.e. cheques;
- paper credits;
- bulk electronic payments;
- high-value, or RTGS, payments.

Each of the clearing companies would have its own published access criteria. It is expected that the concept of separate functional

clearing companies should promote increased openness of access to clearing in that different credit institutions would wish to specialise in segments of money transmission business, whilst having no, or perhaps very limited, involvement in others. Criteria would provide, where appropriate, for both direct and indirect participation.

Each individual clearing will be an independent self-standing body under the control of its respective members but subject to some degree of guidance from IPSO. Membership of IPSO will not, however, automatically entitle a member to membership of the separate clearings. To do so, an institution must meet the respective access criteria of the clearing companies involved. These criteria will be notified to all institutions. Each institution, in turn, will be required to give a commitment to co-operate with IPSO in all matters relating to payment and clearing systems and, in particular, in matters relating to integrity, security, efficiency, standards, action to be taken in an emergency, and the settlement of disputes, etc.

The overall aim is for IPSO to be recognised by the financial community as the central representative and co-ordinating body for the payments industry in Ireland.

The setting-up of IPSO will involve full consultation with the Irish financial community as a whole to include both current and potential participants in the payments industry in Ireland. This consultation will take place in 1996.

### **3.5.8 Pricing**

The central costs of the operation of the DBC, which include the cost of the one officer employed on a part-time basis, plus the costs of legal, policy and research work, for example, for which staff are shared with the Irish Bankers' Federation, are shared among the members. These central costs are marginal owing to the fact that there is no central clearing house operation.

There are no member-to-member charges for clearing operations.

(See Section 3.5.2 in relation to entry costs.)

### **3.5.9 Main projects and policies being implemented**

(See Sections 1.3.4 and 3.5.7.)

## **3.6 Further retail payment systems**

When credit card vouchers, which have been accumulated by accepting merchants, are lodged by the merchant to their own bank accounts, they are entitled to same-day value. Vouchers pertaining to credit cards that have been supplied by the merchant's own bank may be cleared through that bank's normal internal clearing procedures. This simplified process results in the credit card holders' accounts being debited within the shortest possible time following the lodgement of the vouchers with the bank.

Where the credit card vouchers are associated with banks, including those located abroad, other than the merchant's own bank, the information contained on the vouchers is transferred to magnetic tape and dispatched to the respective credit card companies. These companies then prepare further tapes for transmitting the data to the individual banks who issued the credit cards. Such tapes contain information for these banks about their own customers' credit card purchases, which is then transmitted through their internal clearing systems to be debited the next day to the credit card users' accounts. On average this process takes longer than the presentation and debiting of cheques.

A feature of the bilateral ATM arrangements between the four main clearing banks is that each bank's system automatically produces figures each day for the amounts owed to/due from the other clearing banks as a result

of customers' withdrawals and lodgements via interlinked ATMs. The debit items resulting from the use of ATMs during the day or over a weekend are settled the next working day through the DBC.

There is a National Eurocheque Clearing Centre in Ireland for the processing of eurocheques which have been negotiated abroad by Irish residents and foreign ATM withdrawals. The centre processes these eurocheque transactions on behalf of all

banks in Ireland and then transmits them through the banks' clearing departments for next-day debiting to the drawees' accounts. ATM withdrawals and eurocheques negotiated by non-residents in Ireland, up to the equivalent of IEP 800, (ECU 1,000) are processed through the National Eurocheque Clearing Centre. Eurocheques for more than the equivalent of IEP 800 (ECU 1,000) are sent for collection by the bank at which the eurocheque is lodged to the bank on which the eurocheque is drawn.

## 4. Securities settlement systems

### 4.1 Institutional aspects

In Ireland, securities can be divided into three classes - government paper (government bonds, exchequer notes and exchequer bills), certificates of deposit (CDs) issued by deposit-taking institutions, and commercial paper. Commercial paper can be divided between equities and non-equity commercial paper. Government bonds are issued by the National Treasury Management Agency (NTMA) as the agent for the Minister for Finance (see Section 4.1.3). The market in government bonds and equities is managed through the Irish Stock Exchange. The purchase and sale of Irish pound CDs is managed in the money market. There is a growing market in non-equity commercial paper in Ireland which is carried out mainly in the interbank market.

Financial futures and options trading takes place in the Irish Futures and Options Exchange and FINEX Europe.

The settlement of transfers of government bonds and their associated payments takes place through the Gilts Settlement Office (see Section 4.1.2). Payment for equities is

settled (made) through the ordinary domestic payment system using cheques, drafts, or a same-day interbank payments.

#### 4.1.1 General legal aspects

Under recent legislation - the Stock Exchange Act, 1995 - the Central Bank is the competent authority for the supervision of stock exchanges in Ireland and their member firms. The Act implements, in part, the EU Investment Services and Capital Adequacy Directives for investment firms.

The supervision by the Central Bank of financial futures and options exchanges is governed by the Central Bank Act, 1989. Members of futures and options exchanges may also fall within the scope of the Investment Intermediaries Act, 1995, which implements the remainder of the Investment Services Directive and Capital Adequacy Directive. The Investment Intermediaries Act, 1995, provides that all investment firms operating in Ireland are subject to regulation either by the Central Bank or by the Department (Ministry) of Enterprise and Employment.

The law relating to the issue of and trading in equities generally comprises the Companies Acts, 1963 to 1990, the Stock Transfer Acts, 1963, and case law. Various statutory instruments implement EU Directives in relation to listing. The law relating to insider dealing is set out in the Companies Act, 1990. The Stock Exchange is the competent body in relation to listing and insider dealing.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

The Central Bank maintains the register of government bonds on behalf of the Government. This function includes the payment of dividends and redemption monies. The Central Bank also established, and operates, the Gilts Settlement Office (see Section 4.3).

The Stock Exchange Act, 1995, provides for the approval of stock exchanges and the authorisation of their member firms by the Central Bank. The main provisions of the Act are as follows:

- granting of approval to stock exchanges including the approval of the rule book, which contains, inter alia, rules of conduct for stockbrokers;
- the authorisation of their member firms;
- imposition of conditions or requirements on approved stock exchanges and authorised member firms, in particular client money requirements and capital adequacy requirements;
- inspection powers;
- disciplinary powers.

Under this Act, the Central Bank is responsible for the approval of stock exchanges

established in Ireland and the authorisation of their member firms. It is also responsible for the detailed financial and prudential regulation of stock exchanges and their member firms. There is, at present, only one stock exchange in Ireland. The Irish Stock Exchange Limited was approved by the Central Bank in December 1995. The Exchange is responsible for monitoring compliance with its rules by member firms.

In relation to futures and options exchanges, the Central Bank Act, 1989, provides that an exchange may not be established in Ireland unless its rules have been approved by the Central Bank. In approving rules, the Central Bank may impose conditions on the exchange and its members. There are two futures and options exchanges in Ireland - the Irish Futures and Options Exchange (IFOX) and FINEX Europe. These are described in Section 4.2.1.

The Central Bank monitors the activities of IFOX on a day-to-day basis using an online computer link. Since FINEX Europe is a branch of FINEX in New York, the Central Bank has established a mechanism for the supervision of members operating on FINEX Europe and for approving exchange rules in conjunction with the Commodity Futures Trading Commission in the United States.

Some members of futures exchanges fall within the scope of the Investment Intermediaries Act, 1995, and, as such, are directly regulated by the Central Bank. Furthermore, IFSC companies, for which the Central Bank is directly responsible under the Central Bank Act, 1989, established to engage in activities on FINEX Europe which do not fall under the supervision of the Investment Intermediaries Act, 1995, are subject to direct regulation under the former Act. The nature of prudential supervision which applies to these companies depends entirely on their activities.

*Provision of settlement and operational facilities*

The Central Bank operates the Gilts Settlement Office (see Section 4.3) and the Daily Interbank Settlement (see Section 3.3).

*Monetary policy operations and securities settlement systems*

Government bonds pledged to the Central Bank as part of its monetary policy operations are noted on the register of government bonds at the Central Bank. (Pledges of exchequer notes are noted by the issuer - the National Treasury Management Agency.) The settlement systems involved are currently manual end-of-day operations, see also Sections 1.3.3, 3.3 and 4.3.

*Main projects and policies being implemented*

The possibility of having more than one daily settlement cycle for government bonds and the scope for real-time DVP following the introduction of RTGS (see Section 3.2) is being investigated.

**4.1.3 The role of other public sector bodies***Stock exchange authorities*

Under the Stock Exchange Act, 1995, the Central Bank is the competent public body in relation to the supervision of stock exchanges and their member firms in Ireland. This supervision is carried out subject to guidelines issued by the Minister for Finance with the consent of the Minister for Enterprise and Employment.

*National Treasury Management Agency (NTMA)*

In 1990 legislation was enacted to provide for the establishment of the National Treasury Management Agency (NTMA) to manage

Ireland's national debt and borrowing programmes.

The Agency came into being on 3rd December 1990. Under the National Treasury Management Act, 1990, the borrowing and debt management functions of the Minister for Finance and related operational responsibilities were delegated to the Agency. The Agency operates under the general control of the Minister for Finance and is subject to whatever directions and guidelines the Minister may give.

As part of its obligations, the NTMA implemented new issuance and debt management arrangements in December 1995. These included the appointment of six primary dealers (market-makers) and an inter-dealer broker. Primary dealers are obliged to continuously quote two-way prices in certain (benchmark) government bonds. In return, they have exclusive access to tap issues and may be granted switching facilities, at the discretion of the NTMA, to facilitate the liquidity of the government bond market.

*Housing Finance Agency (HFA)*

The HFA is a company promoted by the Minister for the Environment under the Housing Finance Agency Act, 1981. The Agency has issued bonds on the Irish Stock Exchange and lent the proceeds to the housing authorities. The register of HFA bonds is maintained by the Central Bank.

*Ulysses Securitisation plc*

Ulysses Securitisation plc was incorporated following the passing of the Securitisation (Proceeds of Certain Mortgages) Act, 1995. It provides for the securitisation of certain mortgage debts owed to local authorities. The proceeds of securitisation are used by the government to meet extraordinary expenditure items. The register of bonds

issued under this programme is maintained by the Central Bank.

#### *Department of Enterprise and Employment*

The Department (Ministry) of Enterprise and Employment is responsible for the supervision of investment firms which: (a) provide investment services in collective investment scheme instruments; (b) act as a deposit agent or deposit broker; or (c) transmit orders for shares in publicly quoted shares, bonds or private bonds. The firms subject to supervision by the Department of Enterprise and Employment do not have discretionary control over client funds.

#### **4.1.4 The role of other private sector bodies**

##### *Central Securities Depository*

Apart from the Gilts Settlement Office, there is no other central securities depository system in Ireland.

##### *Clearing house*

There is no relevant clearing house in Ireland.

##### *The Irish Stock Exchange*

The Irish Stock Exchange Limited separated from the International Stock Exchange of the United Kingdom and the Republic of Ireland on 8th December 1995, and the Central Bank approved the Irish Stock Exchange Limited under the Stock Exchange Act, 1995, on 21st December 1995.

The Irish Stock Exchange is responsible for monitoring compliance with its rules, which include the conduct of business (relationships between stockbrokers and clients) and market regulation (relationships between brokers). The Irish Stock Exchange is the competent body in relation to listing and insider dealing.

##### *Irish Futures and Options Exchange (IFOX) and FINEX Europe*

IFOX and FINEX Europe are responsible for monitoring compliance with their respective rules, which relate to matters such as membership, dealings on the exchanges, position limits, price limits, margining, guarantee fund arrangements, and default procedures, etc.

FINEX Europe is a branch of the Financial Instrument Exchange (FINEX), which is a division of the New York Cotton Exchange (NYCE).

## **4.2 Summary information on securities markets**

### **4.2.1 Main features of different securities markets**

#### *The Irish Stock Exchange (ISE)*

Equities and government bonds are traded on the ISE. The ISE has four markets:

- listed securities - these comprise domestic issues of government bonds and shares in mature companies;
- unlisted securities market (USM), i.e. the stock of smaller, less mature companies;
- exploration securities market, i.e. the stock of exploration companies;
- Irish smaller companies market, i.e. the stock of small new companies.

A primary dealer or market-making system operates for some government bonds (see Section 4.1.3).

The Irish Stock Exchange's index (ISEQ) gives an overview of the market's performance and is published on Reuters continuously throughout the day.

*Equity settlement*

Irish equity transactions are currently settled via the TALISMAN system (see the Chapter on the United Kingdom), which is operated by the London Stock Exchange. This system is due to be phased out from mid-1996 when the new CREST system is scheduled to come on stream. CREST will incorporate settlement facilities for Irish equities in Irish pounds through arrangements with Irish settlement banks.

*Government bond settlement*

Irish government bond transactions are settled through the Gilts Settlement Office at the Central Bank (see Section 4.3).

*Irish Futures and Options Exchange*

IFOX, established in 1989, is a screen-based system trading interest rate futures contracts based on Irish government bonds and the Dublin interbank offer rate.

A market in options has not yet been developed. IFOX provides its own clearing arrangements and its rules cover risk management. Membership of IFOX consists of banks, brokers, fund managers, and treasury operations. The National Treasury Management Agency has trading rights on IFOX.

*FINEX Europe*

FINEX Europe, established in 1994, operates on an open outcry basis and trades a variety of dollar-based currency and cross-currency (except Irish pound) futures and options contracts. FINEX Europe's membership is drawn from a wide spectrum of financial institutions and includes individual entrepreneurs.

**4.2.2 Basic quantitative aspects (basic statistics)***Equities*

Total equity turnover on the Irish Stock Exchange amounted to approximately IEP 6.5 billion (ECU 8.2 billion) for 1994.

*Futures and options*

- (i) The total number of contracts traded on IFOX in 1995 was 6,647.
- (ii) The total number of contracts traded on FINEX Europe in 1995 was 269,184. (FINEX Europe was set up in June 1994, so this figure represents trading for six months only. Moreover, this figure includes contracts which are traded on FINEX in New York - a separate figure for the exchange in Dublin is not available.)

**4.2.3 Financial intermediaries operating in the different securities markets**

(See Sections 4.1.4 and 4.2.1.)

**4.2.4 Recent developments**

(See Sections 4.1.3 and 4.1.4.)

**4.3 Gilts Settlement Office (GSO)****4.3.1 Major regulations**

The Gilts Settlement Office (GSO) was established by the Central Bank in 1989. It is administered by the Central Bank and was established through a set of mutual contracts. Its purpose is to provide a secure and guaranteed system for settling deals in the wholesale market in government bonds. There is no limit on the value of deals settled through the GSO.

All participants in the GSO are required to sign legally binding agreements. The agreements also encompass a structured code of rules which govern the detailed day-to-day operation of the GSO service. Changes to these rules are agreed with the participants through a consultative committee which also advises the Central Bank on the development of the system.

Each member is required to appoint a settlement bank to act on its behalf and to make and receive assured payments in relation to transfers of bonds, through the GSO service, to and from that member. There are six GSO settlement banks.

#### **4.3.2 Participation in the system**

The current membership (forty-six) comprises the authorities (i.e. the National Treasury Management Agency - which manages the national debt, see Section 4.1.3 - and the Central Bank), IFOX, stockbrokers, institutional investors and credit institutions. Investors in government bonds may become direct members of the GSO or may participate indirectly as clients of a nominee company.

No stock certificates are issued to GSO participants and the government bonds settled through the GSO are in dematerialised form. The GSO therefore has the status of a Central Securities Depository (CSD). At least 75% of all government bonds are held by nominee companies which act as a lower tier of depository, mostly on behalf of institutional investors (both resident and non-resident). Nominee companies (primarily subsidiaries of credit institutions) and stockbrokers therefore account for the bulk of settlements.

#### **4.3.3 Types of transactions handled**

All transactions in government bonds between members of the Gilts Settlement Office may be settled through the Gilts

Settlement Office; transactions of IEP 100,000 (ECU 126,000) or more in nominal value must be settled by members through the Gilts Settlement Office at the Central Bank.

The GSO provides net settlement of payment for government bond transactions between GSO members. GSO settlements account for more than 80% of the turnover in the Irish government bond market.

#### **4.3.4 Operation of the transfer system**

Transactions in government bonds are usually settled in a two day cycle; the contracts are made on Day 1 and are settled on Day 2. Contracts may provide for a longer cycle in the event of it not being possible to settle on Day 2; for example, a foreign investor may require extra time to convert foreign currency into Irish pounds.

Transactions may take place either in the primary market, i.e. the National Treasury Management Agency acting through a market-maker, or in the secondary market, i.e. investors dealing through one or two brokers.

Each contract is settled separately. For example, in the case of a secondary market transaction, the seller must transfer bonds to a stockbroker and the stockbroker must pay the seller; similarly, the stockbroker must transfer bonds to the purchaser and the purchaser must pay the stockbroker. A further transfer (between two stockbrokers) is interposed if the seller and buyer have contracted with different stockbrokers.

#### *Operations*

Each member of the GSO maintains a dematerialised securities account at the Central Bank and also holds a specific cash account at one of six settlement banks. Each settlement bank, in turn, settles its cash position across its settlement account at the Central Bank (see Section 3.3).

The GSO operates on the basis of schedules of transactions submitted by members, usually by fax, each day. On a settlement day, a member sends a Form for Designated Stock Transfer to the GSO listing the deals with other members to be settled that day. This form details the nominal amount of a particular bond purchased or sold, the counterparty involved, the corresponding cash amounts (consideration), the net purchase or sale in each bond issue, and the net cash receipt or payment due for that day. Details of the net receipt or payment are also sent by the member on a separate schedule to its settlement bank together with details of any payments due from non-members.

In the GSO, each deal on a member's form is matched to its corresponding entry on the Form for Designated Stock Transfer of the counterparty member. If any differences are detected the members are contacted to confirm the details and any changes required are received from the members on an amendment form. The Central Bank confirms that a member has sufficient bonds on its account to meet any net sales. That amount of bonds is frozen on the member's account until GSO settlement is completed at 3 p.m. If a member does not have a sufficient balance, the sale items involved are reduced or deleted and the schedules of any other affected members are amended accordingly.

If a member purchases bonds from a non-member for sale to another member, a transfer form from the non-member and the corresponding certificate must be lodged with the Central Bank by 11 a.m. If bonds are purchased by a member from another member for onward sale to a non-member, a guaranteed payment must be lodged with the member's settlement bank by 2 p.m. The GSO holds the relevant stock transfer until payment is confirmed by the settlement bank.

Stock transfer forms in respect of sales to non-members on a member's Form for

Designated Stock Transfer must be delivered to the GSO by 12 noon.

#### *Settlement*

The GSO contacts the settlement banks at 2 p.m. to confirm their net cash positions for the day and to check that payments due from non-members have been received. At 2.30 p.m. the settlement banks bring schedules of the cash positions for each member customer to the GSO. If these agree with similar schedules prepared in the GSO, payment instructions are transmitted via S.W.I.F.T. and the settlement banks' settlement accounts at the Central Bank are debited or credited at 3 p.m. with the net payment or receipt. The members' securities accounts are credited or debited in respect of each individual bond transaction at the same time.

#### *Volumes and values of transactions*

In 1995 the GSO processed approximately 41,000 transactions with a gross nominal value of approximately IEP 139.6 billion (ECU 176 billion).

#### *Non-GSO transfer and settlement arrangements*

The arrangements set out below apply to secondary market deals where neither investor is a member of the GSO.

- The seller completes a stock transfer form which contains the stock title, the nominal amount and the names of the transferor (the investor) and the transferee (the broker). The transfer form, together with a certificate sufficient to cover the nominal amount of the transfer, is collected by the broker.
- The broker completes a stock transfer form in favour of the buyer and brings both transfers to the Central Bank.

- The Central Bank certifies on the buyer's transfer form that the amount of stock on the transfer is held on the broker's account at the Central Bank. The amount of stock thus certified cannot be transferred to anyone else.
- The broker pays the seller on receipt of the certified transfer form or may make a net settlement if it has a number of deals with that investor for settlement the same day. Payments are made by cheque or by credit transfer.
- The buyer pays the broker on sight of the certified transfer form or may make a net settlement with the broker if there are a number of deals to be settled that day.
- The broker lodges the buyer's transfer with the Central Bank for registration.

#### **4.3.5 Transaction processing environment**

Although the records of GSO members' securities accounts are held on computer (i.e. dematerialised), clearing and settlement is a clerical procedure. A computer link with members has been considered but volumes have not yet merited a computer link. However, the position is currently under review, taking into account recent market developments. These include the introduction of market-making and an increase in the level of repurchase activity.

#### **4.3.6 Settlement procedures**

Settlement for payment or receipt in respect of government bonds bought or sold through the GSO is effected by entries through the banks' settlement accounts at the Central Bank (see Section 4.3.4). All deals between non-members of the GSO are settled next day, or on an agreed future date, through the ordinary domestic payment system.

#### **4.3.7 DVP arrangements**

Delivery versus payment occurs simultaneously at 3 p.m. (see Section 4.3.4).

#### **4.3.8 Credit and liquidity risk control measures**

Credit exposure is an unavoidable feature of the settlement process. Under the terms of the Assured Payment Agreement, the settlement banks carry the credit exposure which arises in the operation of the system. As the size of the credit exposure is indeterminate, the GSO provides that bonds passing through the system will be available as security for credit extended by the settlement banks. This arrangement is embodied in Secured Loan Agreements between members and their settlement banks.

The Secured Loan Agreement provides for a first fixed charge in favour of the settlement bank over bonds for which settlement is being made through the GSO on a settlement day. The charge relates only to bonds being purchased by a GSO member client on that day and no element of the charge survives once final settlement is made at 3 p.m. The charge is intended to collateralise the credit exposure which the settlement bank incurs in respect of each purchase by its GSO member clients. Settlement banks may make a request to the GSO by 2.15 p.m. to have bonds, subject to the charge and for which funds have not been received from the client, transferred to the settlement bank.

In exercising the Secured Loan Agreement, the settlement bank may, instead of relying on the charge, rely on other forms of security. Such security could include bank guarantees, third party indemnities, etc. The GSO has never, in fact, been called upon to transfer bonds to a settlement bank in such circumstances.

#### **4.3.9 Pricing**

The GSO is operated by the Central Bank on a non-profit-making basis. Net operating costs are recovered from members.

#### **4.3.10 Main projects and policies being implemented**

While the GSO is operated manually, a review conducted in 1990 of the operations found the system to be satisfactory. A

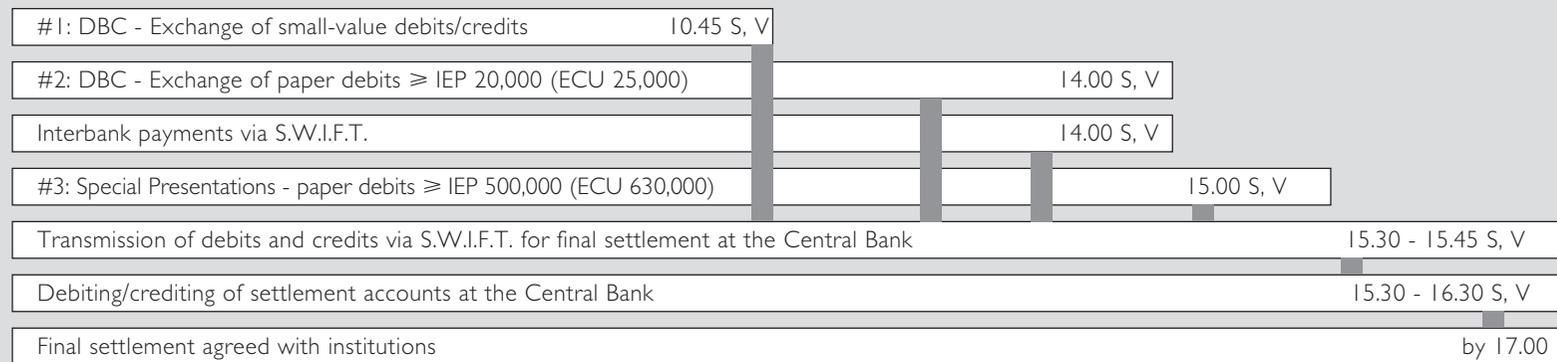
consultative committee chaired by the Central Bank has been established to advise the Central Bank about the development of the system. The committee comprises representatives of GSO members, settlement banks, the Irish Association of Investment Managers and the Central Bank. The move to RTGS in the large-value cash payment system (see Section 3.2), and the need for efficient cross-border settlement facilities in the context of Stage Three of EMU will give rise to consideration of real-time securities settlement arrangements.

**1. Banking transactions**

	<b>TYPE # 1</b>	<b>TYPE # 2</b>	<b>TYPE # 3</b>
Customer transactions today with:	DBC Members	DBC Members	All licensed banks
Type and value of items:	Debits other than #2 & #3 and all credit items (S-1); Debits (V-1); Credits (V-2)	Paper debits $\geq$ IEP 20,000 (ECU 25,000)	Paper debits $\geq$ IEP 500,000 (ECU 630,000)
Day to settlement/value:	S, V	S, V	S, V

Note i) Type #1 items lodged today by customer and exchanged by clearing participants next day.

Note ii) In respect of items #2 and #3, receipt by the bank in good time on the day is necessary in order to meet the strict deadlines needed to achieve S and V on the day.

**2. Timing of settlements**

S-1 = one day before settlement day, etc.  
V-1 = one day before value day, etc.

S = settlement day      DBC = Dublin Bankers' Clearing  
V = value day

Ireland

IE

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	3,506.9	3,526.9	3,549.9	3,563.9	3,571
Gross domestic product (IEP billions)	27.1876	28.2634	29.9718	32.1735	34.7414
Exchange rate vis-à-vis ECU <sup>(2)</sup>	0.7677	0.7678	0.7609	0.7996	0.7935

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

(end of year)

	IEP billions				
	1990	1991	1992	1993	1994
Notes and coins	1,303.1	1,365.8	1,386.1	1,539.4	1,656.1
Transferable deposits	1,870.5	1,828.8	1,833.7	2,394.4	2,798.6
Narrow money supply (M1)	3,173.6	3,194.6	3,219.8	3,933.8	4,454.7

**Table 3**
**Settlement media used by deposit-taking institutions**

(end of year)

	IEP millions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	910.7	676.9	455.8	681.9	682.0
<i>of which can be used for settlement</i>	0	0	0	0	0
Free reserves held at central bank	1.4	1.9	1.3	27.2	2.6
Transferable deposits at other institutions	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 4**  
**Banknotes and coins**  
*(total value, end of year)*

	IEP millions				
	1990	1991	1992	1993	1994
Total banknotes issued	1,421.5	1,429.8	1,458.4	1,629.0	1,756.0
of which:					
IEP 100	7.1	6.5	5.8	5.2	4.8
IEP 50	144.9	156.5	164.0	186.8	191.2
IEP 20	909.8	921.2	978.9	1,119.8	1,264.1
IEP 10	260.3	250.2	222.3	231.4	201.8
IEP 5	77.7	78.4	71.3	70.3	79.1
IEP 1 (1)	21.0	16.3	15.4	14.8	14.3
Other notes <sup>(1)</sup>	0.7	0.7	0.7	0.7	0.7
Coins issued	128.2	137.8	145.3	144.5	149.9
Notes and coins held by credit institutions	246.6	201.8	217.6	234.1	250.1
Notes and coins in circulation outside credit institutions	1,303.1	1,365.8	1,386.1	1,539.4	1,656.1

(1) In the course of withdrawal from circulation.

**Table 5**  
**Institutional framework**  
*(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands) <sup>(1)</sup>	Value of accounts (IEP millions) <sup>(1)</sup>
Central bank	1	1	neg.	19.8
Commercial banks	30	785	1,763	2,882
Savings banks <sup>(2)</sup>	4	126	772	97.7
Building societies	5	205	-	-
Post office	1	1,369	-	-
<b>TOTAL</b>	<b>41</b>	<b>2,486</b>	<b>2,535</b>	<b>2,999.5</b>
Branches of foreign banks	14	108	n.a.	n.a.
of which EU-based	11	n.a.	n.a.	n.a.

(1) These are current accounts. Increasingly payments can be made through deposit accounts.

(2) Trustee Savings Bank and state-sponsored credit institutions.

**Table 6**
**Cash dispensers, ATMs and EFTPOS terminals**  
*(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	2	3	3	3	3
Number of machines	534	670	755	785	862
Volume of transactions (millions)	33.48	45.3	53.7	55.7	56.3
Value of transactions (IEP millions)	1,477	2,013	2,524	2,799	3,178.4
<b>EFTPOS terminals</b>					
Number of networks	0	0	0	0	0
Number of points of sale	0	0	0	0	0
Volume of transactions	0	0	0	0	0
Value of transactions	0	0	0	0	0

IE

**Table 7**
**Number of payment cards in circulation <sup>(1)</sup>**  
*(end of year)*

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	2,460	2,752	3,000	3,145	3,359
Cards with a debit/credit function	617	664	709	880	974
<i>of which:</i>					
<i>cards with a debit function</i>	0	0	0	0	0
<i>cards with a credit function</i>	617	664	709	880	974
Cards with a cheque guarantee function	891	913	954	876	830
Retailer cards	n.a.	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
Dublin Bankers' Clearing	139,480.0	143,489.4	136,734.5	147,194.4	151,356.5
<i>Cheques</i>	109,749.5	109,680.4	92,619.0	91,291.2	91,688.6
<i>Direct debits</i>	6,504.2	9,953.8	20,204.4	18,273.3	18,863.1
<i>Credit transfers - paper</i>	13,915.1	10,320.3	12,034.6	15,304.0	17,652.9
<i>Credit transfers - electronic</i>	9,311.2	13,534.8	11,876.7	22,325.9	23,151.9
The Central Exchange (cheques)	4,109.7	3,543.2	6,326.5	4,305.0	4,678.0
Special presentations (large-value cheques)	23.0	13.8	11.0	9.1	7.4
Daily Interbank Settlement (paper-based large-value interbank credit transfers)	159.3	181.3	154.5	150.1	152.6

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	IEP billions				
	1990	1991	1992	1993	1994
Dublin Bankers' Clearing	202.4	156.7	137.8	171.4	313.3
<i>Cheques</i>	156.3	145.7	112.7	133.4	130.7
<i>Direct debits</i>	4.3	2.2	5.5	5.2	5.6
<i>Credit transfers - paper</i>	40.3	7.0	17.8	28.5	172.2
<i>Credit transfers - electronic</i>	1.4	1.9	1.9	4.3	4.8
The Central Exchange (cheques)	10.7	6.1	10.7	7.2	9.1
Special presentations (large-value cheques)	17.2	16.0	8.6	7.6	8.4
Daily Interbank Settlement (paper-based large-value interbank credit transfers)	577.0	539.0	519.5	929.6	853.1

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
Gilts Settlement Office (GSO)			
Banks	10	-	6
Stockbrokers	8	-	-
Securities houses	16	16	-
Insurance companies	7	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	2	-
Authorities	2	-	2
Irish Futures and Options Exchange	1	-	-

## Notes:

- 1) Banks and building societies are included in the "bank" category.
- 2) Nominee companies are classified as securities houses. Nominee companies' holdings account for approximately 75% of total stock outstanding.
- 3) Data for banks and securities houses reflect nominee companies of licensed banks operating several accounts under one GSO membership. Banks in this instance are not direct members of the GSO, but hold stock on their own behalf and on behalf of customers.

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
Gilts Settlement Office (GSO)					
Government securities	19,938	20,912	21,517	30,515	29,052

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	IEP millions				
	1990	1991	1992	1993	1994
Gilts Settlement Office (GSO)					
Government securities	34,739	48,811	52,449	66,158	79,320

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	IEP millions				
	1990	1991	1992	1993	1994
Gilts Settlement Office (GSO)					
Government securities	13,104	13,727	13,253	14,144	14,439

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1)</sup>	162.5	148.1	151.4	164.3	155.8
<i>of which truncated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Payments by debit and credit cards	18.0	17.7	20.1	21.1	22.7
Paper-based credit transfers	23.6	20.4	20.0	37.6	38.1
<i>customer initiated</i>	23.4	20.2	19.8	37.4	37.9
<i>interbank/large-value</i>	0.2	0.2	0.2	0.2	0.2
Paperless credit transfers	15.4	25.1	24.1	33.2	35.3
<i>customer initiated</i>	15.4	25.1	24.1	33.2	35.3
<i>interbank/large-value</i>	0	0	0	0	0
Direct debits	11.7	24.2	33.2	31.4	32.4
<b>TOTAL</b>	<b>231.2</b>	<b>235.5</b>	<b>248.8</b>	<b>287.6</b>	<b>284.3</b>

(1) This category does not include the use of payment instruments to obtain cash and does not include travellers' cheques.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	IEP billions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1)</sup>	267.0	250.3	263.7	323.4	342.1
<i>of which truncated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Payments by debit and credit cards	0.8	0.8	0.9	0.9	1.0
Paper-based credit transfers	645.1	578.2	565.7	1,187.5	1,119.2
<i>customer initiated</i>	68.1	39.2	46.2	257.9	266.2
<i>interbank/large-value</i>	577.0	539.0	519.5	929.6	853.1
Paperless credit transfers	2.4	4.1	4.2	32.3	35.3
<i>customer initiated</i>	2.4	4.1	4.2	32.3	35.3
<i>interbank/large-value</i>	0	0	0	0	0
Direct debits	9.3	13.8	10.9	33.7	36.4
<b>TOTAL</b>	<b>924.6</b>	<b>847.2</b>	<b>845.4</b>	<b>1,577.8</b>	<b>1,534.0</b>

(1) This category does not include the use of payment instruments to obtain cash and does not include travellers' cheques.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	15	18	21	24	38
<i>of which:</i>					
<i>members</i>	4	4	5	7	11
<i>sub-members</i>	8	12	14	15	18
<i>participants</i>	0	2	2	2	9
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
<i>of which:</i>					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	1,189,175	1,254,286	1,558,560	1,701,064	2,002,311
<i>of which:</i>					
<i>category I</i>	217,262	241,826	310,777	337,317	426,779
<i>category II</i>	486,016	458,818	477,387	513,719	587,531
<i>sent/received to/from domestic users</i>	144,044	171,506	258,420	293,511	414,670
Total messages received	1,432,702	1,595,235	1,810,614	1,973,674	2,206,878
<i>of which:</i>					
<i>category I</i>	<i>n.a.</i>	<i>n.a.</i>	471,115	531,871	628,096
<i>category II</i>	<i>n.a.</i>	<i>n.a.</i>	261,543	280,613	338,556
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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## List of abbreviations

<b>ABI</b>	Italian Bankers' Association - <i>Associazione Bancaria Italiana</i>
<b>BI-COMP</b>	Banca d'Italia Clearing System - <i>Banca d'Italia Compensazione</i>
<b>BI-REL</b>	Banca d'Italia Real-Time Gross Settlement System - <i>Banca d'Italia Regolamento Lordo</i>
<b>BISS</b>	Banca d'Italia Continuous Settlement System
<b>CAT</b>	Centralised Securities Accounts - <i>Conti Accentrati in Titoli</i>
<b>CICR</b>	Interministerial Committee for Credit and Savings - <i>Comitato Interministeriale per il Credito e il Risparmio</i>
<b>CIPA</b>	Interbank Convention on Automation - <i>Convenzione Interbancaria per i Problemi dell'Automazione</i>
<b>Consob</b>	Companies and Stock Exchange Commission - <i>Commissione Nazionale per le Società e la Borsa</i>
<b>FIB</b>	Futures Market for the Stock Exchange Index - <i>Futures sull'Indice di Borsa</i>
<b>LDT</b>	Securities Net Settlement Procedure - <i>Liquidazione Dei Titoli</i>
<b>ME</b>	Electronic Memoranda Sub-system - <i>Sottosistema Memorandum Elettronici</i>
<b>MID</b>	Screen-based Interbank Deposit Market - <i>Mercato Interbancario dei Depositi</i>
<b>MIF</b>	Futures Market for Government Securities - <i>Mercato Italiano dei Futures</i>
<b>MTS</b>	Screen-based Market for Government Securities - <i>Mercato Telematico dei Titoli di Stato</i>
<b>RIBA</b>	Electronic Bank Receipts - <i>Ricevuta Bancaria</i>
<b>RNI</b>	National Interbank Network - <i>Rete Nazionale Interbancaria</i>
<b>SIA</b>	Interbank Company for Automation - <i>Società Interbancaria per l'Automazione</i>
<b>SIM</b>	Securities Investment Firm - <i>Società di Intermediazione Mobiliare</i>
<b>SIPS</b>	Interbank Payment System operated by the SIA - <i>Sistema Interbancario di Pagamenti tramite SIA</i>

## Introduction

The Italian payment system has changed significantly in recent years in response to the evolution of financial markets, the initiatives of the participants and those of the authorities.

The growing use of bank and postal instruments has been accompanied by a rise in the number of bank accounts held by customers; the number of transactions effected by means of credit transfers, direct debits and payment cards has increased.

The central bank has promoted a modernisation process based on greater competition among providers of payment services and fuller integration among the different agents that participate in the system. Banks have been given considerable freedom of initiative in the field of innovative services; furthermore, their co-operation has been sought in carrying out the reform projects.

Since 1987, when the White Paper on the Payment System in Italy was published, the combined action of the Banca d'Italia, the Italian Bankers' Association and the Interbank Convention on Automation has focused on the procedures for exchanging documents and data, the integration between the banking and postal circuits and the rationalisation of the systems for interbank payments. The

new clearing and settlement system for interbank payments set up in 1989 has progressively attracted a huge volume of payments previously handled through correspondent accounts; the growing use of central bank money, a source of certainty for the whole financial system, has facilitated the operation of monetary policy. The latest step towards settlement of all payments in central bank money was the definition, in 1994, of three new specialised procedures for credit transfers which will handle respectively retail, large value, and external lire payments. All the new procedures provide for payments to be channelled into the clearing system and settled on central bank accounts at the end of the day. The procedure for retail credit transfers was launched in 1994; the other two procedures will be implemented in 1996. In an environment characterised by the integration of financial markets, a rising volume of transactions and real-time information, clearing systems have become more vulnerable. With a view to facing the problems of stability and efficiency created by the rapid growth of interbank flows, in 1994 the Banca d'Italia launched a far-reaching reform project that will lead to wider use of the real-time gross settlement system and to the adoption of risk control measures in the clearing system.

## I. Institutional aspects

### 1.1 General legal aspects

The regulation of the payment system in Italy is based on provisions of the Italian Civil Code, the 1993 Banking Law (Legislative Decree 385 of 1st September 1993) and other specific laws.

The circulation of individual paper-based payment instruments (e.g. cheques) and the discharging of financial obligations (e.g. novation and bilateral netting) are governed by the provisions of the Civil Code and other specific laws.<sup>1</sup> The law on note issuing gives the Banca d'Italia the exclusive responsibility for issuing notes and managing the clearing houses.<sup>2</sup>

The 1993 Banking Law, which became effective on 1st January 1994, entrusts the Banca d'Italia both with supervision of the banking system and with explicit responsibilities and powers in the area of the payment system. With regard to the transparency of banking services, it empowers the Banca d'Italia to control the way in which the banks deliver the information they are required to provide to customers.

Competition is safeguarded by the anti-trust law: the responsibility for avoiding restrictive practices in the banking and payment systems is entrusted to the Banca d'Italia, which is accordingly required to safeguard both stability and competition.<sup>3</sup>

Law 197/1991, later incorporated into the Banking Law, enables the Banca d'Italia to

supervise the activities of non-banks that operate in the payment system, including the operators that carry out transfers of funds via payment cards. The same Law limits the use of cash to payments up to ITL 20 million (ECU 10,448) in order to combat money laundering.

The legal status of the Postal Administration and its activities in the payment system, i.e. postal current accounts and funds transfers, are governed by specific laws and regulations.<sup>4</sup>

Securities investment business and some principles of the organisation of the securities market are covered by Law No. 1 of 2nd January 1991. It provides for the creation of multi-function securities investment firms (SIM). In the financial market, the Consob (the Companies and Stock Exchange Commission) is charged with controlling the transparency of information and the correctness of transactions, while the Banca d'Italia is responsible for ensuring compliance with the requirements designed to protect stability.

### 1.2 Financial intermediaries that provide payment services

The main providers of payment services are the banking system, the Postal Administration and the Banca d'Italia.

At the end of 1994 the banking system comprised 1,002 credit institutions with 23,120 branches; foreign banks numbered forty-five with seventy branches.

According to the 1993 Banking Law, banking activity consists of deposit-taking on a public basis and granting credit. It is confined to credit institutions only, which are also authorised to carry out the other activities subject to mutual recognition throughout the European Union under the Second

<sup>1</sup> Royal Decree No. 1345 of 21st September 1933 and Legislative Decree No. 1736 of 21st December 1933.

<sup>2</sup> Royal Decree of 6th May 1926.

<sup>3</sup> Law No. 287 of 10th October 1990.

<sup>4</sup> Presidential Decrees No. 156 of 29th March 1973 and No. 256 of 1st June 1989 and Law No. 71 of 29th January 1994.

Banking Co-ordination Directive, notably the issue and management of payment instruments.

In recent years the structure of the banking system has changed significantly. According to Law No. 218 of 30th July 1990, publicly owned credit institutions have been permitted to transfer their banking activity to limited companies, convert their capital parts into shares and merge with other banks, including those belonging to categories that were previously precluded. The law has also furthered the drive to increase the size of banks by granting tax relief for mergers. With the merger process the number of banks fell from 1,064 (at the end of 1990) to 1,002 (at the end of 1994).

The payment services provided by the Postal Administration through its 14,135 offices include postal current accounts and cash transfer facilities. The vast ramifications of the postal circuit make postal current account services particularly suited to handle retail collections and payments on behalf of public bodies and utility companies.

Law 71/1994 launched the process of privatising the Postal Administration by constituting it as a public economic entity. The reform involves an internal reorganisation and the development of new services; it also accentuates the distinction between the businesses in which the Postal Administration is a monopoly supplier and those in which it competes with other enterprises. Its new legal status is likely to enable the Postal Administration to overcome the regulatory constraints that now limit its activity in the field of payment services.

Payment services provided by non-bank operators account for only a small share of the total and are limited to innovative instruments such as payment cards and POS systems.

### 1.3 The role of the central bank

The powers invested in the Banca d'Italia enable it to exercise a controlling and guiding influence over banking activities in the field of payment services. Accordingly, the Banca d'Italia participates in the system in a number of ways:

- by overseeing the payment systems;
- by supervising the activities of the banking system;
- by safeguarding competition in the banking and payment systems;
- by directly offering instruments and services.

#### 1.3.1 General responsibilities

##### *Statutory responsibility*

The responsibilities of the Banca d'Italia in the payment system derive from a series of laws and regulations:

- the Codified Law concerning note-issuing banks (1910)<sup>5</sup> and the Banca d'Italia's Statutes govern bank transactions negotiated or executed by the Banca d'Italia; the Banca d'Italia's interest in the proper functioning of the payment system and, in particular, of interbank circuits, stems also from its role in the implementation of monetary policy and as supervisor of the banking system;
- the Royal Decree of 6th May 1926 gives the Banca d'Italia the exclusive responsibility for managing the clearing system for both payments and securities while the Decree of the Minister of the Treasury of 7th May 1991 enables the Banca d'Italia to regulate the participation

<sup>5</sup> Codified Law No. 204/1910.

of credit institutions in the clearing systems on the basis of technical, organisational and capital standards;

- the 1993 Banking Law entrusts the Banca d'Italia with specific responsibilities and powers aimed at ensuring the soundness of the payment system. Under Article 146 of the Banking Law, the Banca d'Italia has responsibility not only for ensuring the proper functioning of networks, procedures and instruments but also for the oversight of the payment system for the purpose of containing risk. The same Article authorises the Banca d'Italia to issue regulations to ensure the efficiency and stability of clearing and settlement systems.

#### *Oversight of the payment systems*

The action of the Banca d'Italia in the payment systems aims at ensuring the smooth functioning of the system in terms of efficiency (i.e. the ability to make money circulate rapidly and economically) and financial reliability (i.e. the ability to minimise financial risks associated with money circulation). In particular, the interventions concern the interbank funds transfer systems and the technical and legal features of payment instruments with regard to their circulation and their use within the payment system.

The public interest in the payment system stems from the need to ensure its stability as well as to minimise co-ordination failures which may lead to inefficiencies. Moreover, the public involvement in the payment system has to be consistent with the need to guarantee conditions of fair competition and free contracting in the market for payment services.

Traditionally, the Banca d'Italia has pursued these goals by directly providing clearing and settlement services to financial intermediaries and promoting interbank co-operation through the Italian Bankers' Association (ABI) and the Interbank Convention on Automation (CIPA) (see Section 1.4).

Following the enforcement of the 1993 Banking Law, central bank action, in addition to the promotion of co-operation, can also take the form of direct regulations. The choice of the first or second option, or intermediate forms, is made in relation to the significance of the public interests involved in the different segments of the system.

#### *Supervision and audit of the financial system*

The Banca d'Italia supervises banks, financial companies - such as investment fund management companies and securities investment firms (SIM) - and the financial intermediaries providing payment services; furthermore, it has the power to determine the information that banks and financial intermediaries are required to provide to customers, concerning disclosure of terms and conditions of contracts relating to financial and payment services.

Such activities fall within the supervisory powers exercised by the Banca d'Italia aimed at ensuring the sound and prudent management of the intermediaries and the overall stability, efficiency and competitiveness of the financial system. With this view the Banking Law empowers the Banca d'Italia to establish supervisory requirements, monitor banks through prudential returns and on-site inspections and impose sanctions where necessary.<sup>6</sup>

<sup>6</sup> *In exercising such powers the Banca d'Italia has to comply with the directives issued by the Inter-ministerial Committee for Credit and Savings (CICR), set up in 1947 and headed by the Minister for the Treasury, which is responsible for policy on monetary, financial and foreign exchange issues.*

### **1.3.2 Provision of processing and settlement facilities**

#### *Provision of settlement accounts*

The Banca d'Italia has provided deposit accounts for the banking system since its foundation in 1893. They have traditionally been used both to facilitate interbank settlement (centralised accounts) and to manage compulsory reserves.

The centralised accounts comprise both those for banks' compulsory reserves and deposits not subject to reserve requirements, and ordinary advance accounts. The opening of an account is decided at the discretion of the Banca d'Italia and in practice is strictly confined to credit institutions and certain public bodies.

Under the present regulations the reserve account and that for eventual ordinary advances are managed as a single account. Deposits are automatically used first to reduce the amount of any outstanding ordinary advances and the balance, if any, is credited to the reserve account; the order is reversed for withdrawals. However, banks may distribute their balances between the two accounts at their discretion, in accordance with their planned cash management operations. In addition, the banks receive further daily information regarding their reserves.

The Banca d'Italia has traditionally encouraged and organised the central administration of securities; it manages the centralised depository for government securities and participates, together with banks and stockbrokers, in the capital of Monte Titoli, the depository for shares and bonds. In September 1990 a gross settlement system based on centralised securities accounts was established which enables government securities to be traded in real time by debiting and crediting the individual participants' central accounts at the Banca d'Italia. This arrangement allows participants to settle transactions directly on these accounts.

#### *Provision of credit facilities*

The Banca d'Italia can offer only those credit facilities that are expressly mentioned in the relevant legislation. The facilities are governed by both the Consolidation Act of 1910 and the central bank's Statutes.

There are two principal facilities designed to guarantee the settlement of the clearing balances and the smooth functioning of the payment system: ordinary advances and fixed-term advances; both are fully collateralised. The Banca d'Italia makes ordinary or fixed-term advances to banks against collateral consisting of government or government-guaranteed securities, securities issued by banks and listed in regulated markets and securities issued by international organisations in Italy and in Italian lire. A haircut of 15% is applied to all types of securities. Banks may resort freely to ordinary advances up to a specified amount; interest is normally charged at the discount rate, which is fixed by the Banca d'Italia.

Fixed-term advances are provided at the Banca d'Italia's discretion in response to individual banks' requests; they are intended to meet even large funding requirements, but for limited periods, and are thus of considerable importance for the regular functioning of the payment system. Interest is normally charged at the discount rate plus a premium fixed by the Banca d'Italia. Furthermore, since December 1992 penalty interest rates have been applied to fixed-term advances granted, after the closure of the Electronic Memoranda procedure, to banks that otherwise would be unable to meet their settlement obligations in the national clearing procedure.

The central bank also offers a third credit facility, the discounting of bills of exchange, which, however, is not suitable for supporting the payment system. The discounting of bills of exchange used to be the main channel for refinancing but has now lost much of its importance.

*Pricing policies*

At present, pricing policy provides for a partial recovery of running costs. Charges have also aimed at stimulating operators to use the innovative procedures and at increasing the efficiency of the payment system.

Since 1990 charges have also been imposed in order to penalise delays in the regular closure of clearing operations. These consist in additional ad valorem charges applied to transfers through the Banca d'Italia Continuous Settlement System (BISS) after the closing of the Electronic Memoranda (ME) sub-system, to banks that would otherwise be unable to meet their settlement obligations in the national clearing procedure (see Section 3); a new pricing schedule, enacted at the beginning of 1994, provides for ad valorem charges that vary with the length of the delay following the closure of clearing operations.

At present, a thorough revision of the charges and pricing schemes applied to all payment services provided by the Banca d'Italia is in progress, in line with the common guidelines established by EU central banks.

**1.3.3 Monetary policy and payment systems**

The Banca d'Italia has played a leading role in the drive to modernise and rationalise the payment system; the stability, smooth functioning and efficiency of the system are among the principal objectives pursued by the central bank.

The Banca d'Italia's actions have been directed mainly at binding operators to standard rules of conduct and at encouraging settlement in central bank money. The reforms of 1989 led to the creation of four clearing sub-systems, each specialising in a different class of payments and to the introduction of the BISS. The efforts to rationalise the payment system have been flanked by action to enhance the efficiency of

the financial markets and the management of banks' reserves. At the beginning of 1990 the interbank market was given added breadth and transparency by the introduction of the screen-based interbank deposit market (MID). In October 1990 banks were allowed to mobilise up to 3% of their compulsory reserves; the amount was raised to 5% in October 1991, 7% in February 1993 and 10% in July 1995. Mobilisation has strengthened the daily bank reserves market, considerably reducing the volatility of short-term interest rates, which are therefore more reliable indicators of monetary policy.

The reforms have had a considerable impact on the procedures for conducting monetary policy and have enhanced the response of the financial markets to central bank policy action.

Specifically, the timing of market operations and of the various procedures for settling transactions has acquired greater significance in intermediaries' financial operations and in the conduct of monetary policy. The Banca d'Italia intervenes in the money market, at its discretion and on a daily basis, through outright operations, repurchase agreements and refinancing (fixed-term advances). These operations are designed to control the behaviour of bank reserves by influencing short-term interest rates. Transactions are settled on the same day on the banks' centralised accounts, either directly or through the clearing system.

The central bank's interventions in the open market, which determine the overall liquidity of the system, are concentrated in the early hours of the morning; the morning is then devoted to market transactions and clearing operations (see Section 3.3). The retail sub-system of the clearing is the first to close, at 11 a.m., followed by that for local items at 1.30 p.m. and by the SIPS sub-system (for foreign transactions) at 2 p.m. Since all banks can monitor their clearing positions up to that time, they may continue trading on the interbank market to adjust their liquidity positions until 4 p.m., when the last sub-system (ME) and national clearing close.

Refinancing operations via fixed-term advances are usually carried out towards the end of the working day, while banks can continue to transfer funds directly to their reserve and advance accounts through the BISS system, which closes one hour after the deadline for clearing (see Chart 1).

The increased breadth and enhanced efficiency of the money market have given added meaning to short-term interest rates, which are quicker to respond to impulses given by the interventions of the central bank. The ensuing increase in the operational efficiency of the financial system has tightened the links between the payment system, the money and financial markets and monetary policy. Every action by the central bank that gives rise to an accounting operation with the banking system is at the same time the completion of a payment and an act of monetary policy.

#### **1.3.4 Main projects and policies being implemented**

Important projects are being implemented in all three main areas of the payment system: instruments for retail payments, interbank procedures, and securities settlement systems. Moreover, specific initiatives are being carried out with reference to the oversight function.

In the first area action is being taken to increase customer confidence in cheques by setting up a data bank on unpaid, stolen and lost cheques; the structure of the cheque circuit is being rationalised through more extensive use of information technology; with regard to credit transfers, new procedures will lead to greater efficiency and speedier transactions for retail and large-value payments, both domestic and foreign.

With the publication of the White Paper on Interbank Payments, in May 1994, the Banca d'Italia announced its medium-term strategy for the development of the interbank payment system. The plan envisages the reform of the

clearing system, *Banca d'Italia Compensazione* (BI-COMP), and the development of a real-time gross settlement system for interbank payments, designated *Banca d'Italia Regolamento lordo* (BI-REL). The architecture of the new system will be characterised by functional specialisation, with gross settlement used for large-value payments and the clearing system for retail payments.

The main project being implemented in the field of securities settlement systems is rolling settlement: as of February 1996 all transactions in listed equities will be settled five days after the trade. With a view to granting liquidity to the new spot market a system of securities lending will be also set up.

In the field of the oversight of the payment system, the Banca d'Italia is engaged in specifying the operational and institutional framework of this function. Moreover, the Banca d'Italia is currently setting up a single database which will include the different information flows on payment systems.

#### **1.4 The role of other private and public sector bodies**

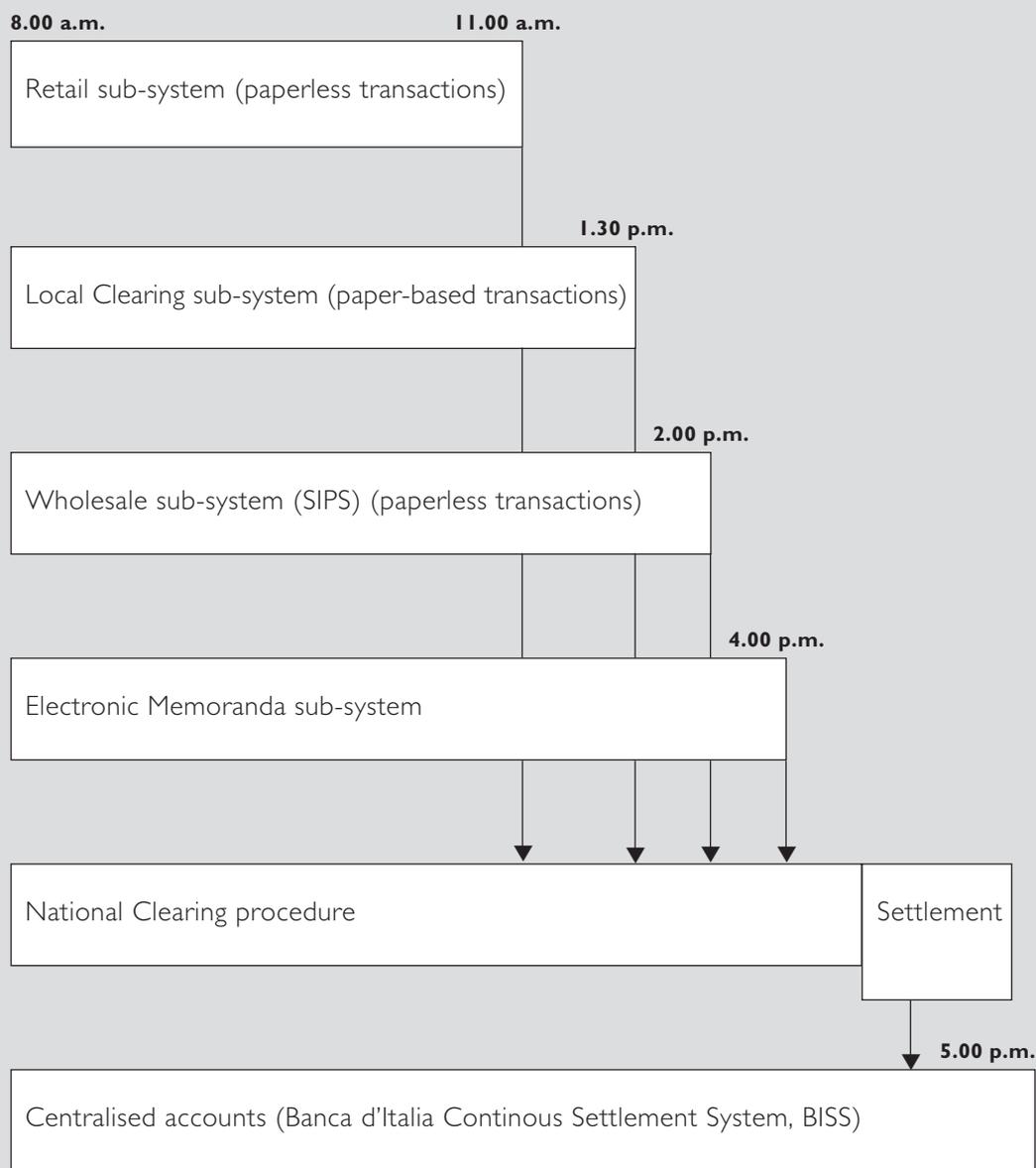
Recent years have witnessed the growth of co-operative ventures in the banking system.

The Italian Bankers' Association (ABI) has traditionally played an important role in promoting banking co-operation. The function of the ABI derives from its position as the representative body for the whole banking system. In particular, the Association is responsible for co-ordinating interbank agreements and fixing uniform operational and accounting methods in interbank relations, promoting the widest possible participation in interbank initiatives - in conjunction with the Banca d'Italia - and disseminating information.

In addition, specific bodies have been created to develop joint projects and manage services of common interest:

**Chart I**

The interbank clearing and settlement system in Italy <sup>(1)</sup>



(1) Figures indicate opening and closing times of the various systems.

- the Interbank Convention on Automation (CIPA) is an association of about one hundred banks whose Management Committee and General Meeting are chaired by a representative of the Banca d'Italia, which also provides its Secretariat. Its primary concern is to plan initiatives in the field of interbank automation. CIPA also has the task of developing joint projects, with particular regard to the provision of payment services, and of co-ordinating their implementation;
- the Interbank Company for Automation (SIA), which provides services and infrastructure of common interest to the banking system and, if necessary, operational support for the payment activities of the central bank. The Banca d'Italia holds 40% of its capital, and another 40% is held by the ABI. The restructuring plan of the interbank network, promoted in 1991, clearly defines the role of public interest played by the SIA. The plan distinguishes between the activities that have to be co-ordinated and managed by a single agent and those for which it is appropriate to ensure full competition among eligible providers; the former are assigned to the SIA. According to the plan, the SIA is the only body responsible for handling the national network for data transmission (RNI - National Interbank Network), which in the past consisted of a number of separate category-wide networks (i.e. networks of savings banks, rural and co-operative banks, etc.) interconnected by the SIA network, as well as for managing procedures of general interest, such as clearing procedures, on behalf of the Banca d'Italia. By contrast, the SIA no longer provides services that are not of general concern to the banking system;
- Monte Titoli S.p.A., is a company that provides custody and administration of transferable securities. In particular, Monte Titoli offers centralised management services for all securities except government securities, which are centralised at the Banca d'Italia. Its shareholders include the Banca d'Italia, all banks and stockbrokers and securities investment firms. The Banca d'Italia is entitled to appoint one member to the Board of Directors. The law allows shareholders to transfer shares only to the Banca d'Italia, which is the only shareholder allowed to hold more than 7% of the company's capital.

## 2. Payment media used by non-banks

### 2.1 Cash payments

The legal tender in circulation consists of banknotes in six denominations issued by the Banca d'Italia (ITL 1,000, 2,000, 5,000, 10,000, 50,000 and 100,000) and coins, currently in seven denominations, issued by the Treasury.

At the end of 1994 the ratio of the stock of currency in circulation to GDP was 5.9%. Notes and coin in circulation accounted for 16% of the money supply (M1) in 1994. Certain structural and institutional factors

favour the continuing widespread use of cash in Italy. The former include the fragmented nature of the country's distributive trades and the configuration of its labour market, while the latter include the still widespread practice of paying wages and salaries in cash. Moreover, the system is still characterised by a relatively low degree of financial sophistication, especially in certain areas of the country. In recent years developments in the banking sector and in payment systems have affected the use of cash in contradictory ways. On the one hand, the growth of bank

current accounts, fuelled in part by increasing recourse to direct payroll credit transfers, has led to greater use of bank payment services; on the other hand, the spread of automated teller machines has been accompanied by an increase in the number of cash withdrawals from current accounts. Recently, however, the reduction in the value of cash withdrawals seems to be a sign of growing efficiency in cash management.

With a view to preventing money laundering, Law 197/1991 requires payments over ITL 20 million (ECU 10,448) to be made through authorised intermediaries or by means of instruments that permit the counterparties to be identified.

#### *Other liabilities issued by the Banca d'Italia*

The Banca d'Italia issues cashier's cheques for amounts of between ITL 50,000 (ECU 26.1) and ITL 500 million (ECU 261,000) against cash payments of the corresponding amount. They are cashable at any bank branch, including branches of the central bank, and may be used for making payments to the central government and at Postal Administrations. The use of these instruments is limited, in practice, to certain non-recurring payments carried out by the central bank on behalf of public entities (tax refunds and severance pay to central government employees). In 1994 the Banca d'Italia issued about 5.8 million cashier's cheques for a total value of ITL 26,370 billion (ECU 13.8 billion).

## **2.2 Non-cash payments**

At the end of 1994 the number of current accounts amounted to 25 million (0.43 per capita), in comparison with 22 million in 1990.

Approximately 98% of all current accounts are held at banks. In fact, bank current accounts bear interest and are therefore not only transactions accounts but also a traditional form of financial investment. Over the last few years, however, bank sight deposits have increasingly been held for transactions purposes. In contrast, the use of postal current accounts to hold liquid balances or make transactions is very limited (2% of overall sight deposits). Postal current accounts bear only negligible interest and are held for transactions purposes mainly by agencies providing services or paying pensions and annuities.

In 1994, thirty-six transactions per capita were executed using instruments other than cash.

Bank instruments account for approximately 90% of the amount and 70% of the volume of non-cash payments.<sup>7</sup> Cheques and bankers' drafts are the most commonly used bank instruments, but their importance is declining while that of credit transfers and direct debits is growing. Payment cards account for only about 5% of the volume of payments; however, in recent years their number and use has been increasing. The Postal Administration plays an important role in the field of retail payments, handling over 25% of the overall volume of payments.

Since the end of the 1980s the Banca d'Italia has promoted a thorough reform of the interbank circuit of the various payment instruments. In the past, bank payment instruments were mainly handled through the interbank circuit on the basis of paper-based exchange procedures bilaterally agreed by banks and were settled through reciprocal accounts. The initiatives promoted by the Banca d'Italia in order to rationalise the exchange and settlement procedures for the various payment instruments (cheques, credit transfers, direct debits) provide for:

<sup>7</sup> Data on bank instruments are taken from a sample group of seventy-five banks accounting for approximately 80% of the sight deposits of the banking system.

- the exchange of payment instruments by means of paperless procedures, based upon the RNI;
- the settlement of payments through the clearing system and, therefore, through the accounts held by banks at the Banca d'Italia;
- the establishment of a framework of common rules and timetables governing the presentation and the return of payment instruments within the clearing system, necessary in order to ensure faster execution;
- greater transparency for customers as regards the time taken to execute transactions and the related costs.

These initiatives were promoted by the Banca d'Italia within the context of the CIPA. Furthermore, the ABI issued interbank agreements providing for the exchange of all payment instruments through the new procedures based upon the clearing system.

### 2.2.1 Credit transfers

Bank credit transfers are less widely used than cheques but involve larger values: in 1994, 189 million credit transfers, totalling ITL 4,400 trillion (ECU 2.3 trillion), were executed. In recent years, bank credit transfers have become a commonly used instrument throughout the economy, even for retail transactions. Enterprises are the main users of credit transfers, and households are the main beneficiaries, receiving about 70% of these payments (e.g. direct crediting of wages, salaries and pensions).

The growth of credit transfers has prompted banks to develop automated management techniques with a view to reducing the volume of paper-based media generated by the conventional processing of these operations. They have entered into agreements with customers whereby bulk

payment and collection instructions (i.e. crediting of wages and salaries, collection of utility bills, etc.) are transmitted through electronic rather than paper media and have set up automated systems for the interbank exchange of these transactions.

The interbank circuit for credit transfers is currently undergoing profound transformation.<sup>8</sup> Since 1994 the Banca d'Italia has promoted a thorough reform of the interbank circuit that provides for three specialised procedures handling, respectively: retail credit transfers, large-value credit transfers and external lira credit transfers. All three procedures provide for the settlement of transactions in central bank money, the execution of payments within predetermined time limits and the provision to customers of information relating to the actual time taken to execute each single credit transfer. Furthermore, participation in these procedures is mandatory for banks handling credit transfers.

The retail credit transfers procedure - for transactions of less than ITL 500 million (ECU 261,200) - was launched in November 1994. Transactions are settled through the Retail clearing sub-system. At the launch of the procedure, the ABI issued new regulations for the processing of retail credit transfers. These provide for maximum payment execution times, ranging from "same-day execution" for "urgent" credit transfers initiated before 10 a.m. to up to four days for "ordinary" credit transfers.

The large-value credit transfers procedure (for transactions of over ITL 500 million) will be launched in the spring of 1996. The external lira credit transfers procedure will become operational by the first half of 1996;

<sup>8</sup> *Until the end of 1994 only large-value credit transfers (i.e. exceeding ITL 500 million) were exchanged through the clearing system. Low-value credit transfers were exchanged between banks mainly through a procedure based upon the RNI and were settled by debiting and crediting banks' correspondent accounts.*

it will handle both retail and large-value lira funds transfers originated by, or sent to, non-residents; it will also handle the cross-border transfers sent to or from Italy through the linkages among European ACHs (see below). Initially, the transactions handled by both procedures will be settled through the Wholesale clearing sub-system or, at the banks' discretion, through the gross settlement system currently operating (BISS). After the launch of the new real-time gross settlement system (BI-REL), both procedures will settle transactions through BI-REL. The time limits for the execution of credit transfers through these procedures have not yet been set; however, they will be shorter than those established for retail credit transfers.

The project for linking the Italian Automated Clearing Houses with a number of European countries, aimed at improving the quality of low-value credit transfers among European countries, is at an advanced stage. In Italy, the role of ACH will be performed by the SIA. As regards the function of settlement agent, the ABI has asked the Banca d'Italia to perform this task and the Bank has now agreed. However, the involvement of the Banca d'Italia relies on two principles: a) the central bank will recover the operational costs from banks; b) settlement mechanisms - which will use the external lira credit transfers procedure - must be designed

so as to prevent the central bank from taking upon itself credit and foreign exchange risks. This solution will make it possible to handle retail cross-border credit transfers in compliance with the time limits indicated in the proposed Directive on credit transfers recently put forward by the EU Commission.

### 2.2.2 Bank cheques and bankers' drafts

In 1994, 530 million bank cheques (including bankers' drafts<sup>9</sup>), totalling ITL 1,733 trillion (ECU 905.3 billion), were drawn on bank customers' current accounts. Since 1990 the use of cheques has been diminishing as a result of the increasing use of credit transfers by corporations and of payment cards by individuals; in 1994 it diminished by 5% as compared with 1993, both in number and in value.

At present, local cheques and large-value out-of-town cheques<sup>10</sup> (those for more than ITL 2 million (ECU 1,044.8)) are physically exchanged through the clearing houses (*Recapiti locale*) and settled in central bank money on the same day. The stipulation of a maximum period for returning cheques (two working days for local cheques and seven for out-of-town cheques) enables banks to release funds to customers in three to four days for local cheques and nine to ten days for out-of-town items.

Low-value cheques (up to ITL 2 million (ECU 1,044.8)) and bankers' drafts (up to ITL 20 million (ECU 10,448)) are handled through a truncation procedure, implemented in 1990, that replaces the physical delivery of instruments with electronic interbank messages. Data pertaining to low-value truncated cheques are conveyed through the RNI at night (day D) and are settled through the clearing system the following day (D+1). Unpaid cheques must be returned within three days (D+4).

In order to improve the safety of the instrument, Law No. 386 of 15th December

<sup>9</sup> The bankers' draft is drawn by a bank on itself and is somewhat similar to the travellers' cheque. It is issued solely by specially authorised banks for amounts deposited in cash at the time of issue or debited to the applicant's account. In 1994 bankers' drafts represented 26% of the total cheques, totalling ITL 521 trillion (ECU 272.2 billion).

<sup>10</sup> The procedure for the exchange of out-of-town cheques through the clearing houses was launched in 1988. It provides for the exchange of cheques in a clearing house of which both the collecting and the drawee banks are members, designated by bilateral convention. Banks not participating in the clearing or not members of the same clearing house can participate indirectly through a provision for assigning interbank correspondent mandates for collection and payments to other banks.

1990 introduced a new set of sanctions regarding cheques. In particular, it lays down that, in the event of a protest<sup>11</sup> or equivalent declaration regarding cheques drawn against insufficient funds, the drawee bank must revoke the drawer's authorisation to issue cheques for a defined period.

The time it takes banks to credit funds to their customers still remains significantly longer than would be possible following the reorganisation of the interbank circuit. In addition, cheques are still perceived as a risky means of payment and impose higher administrative costs than electronic payment instruments. Consequently, the ABI and the Banca d'Italia have drawn up plans aimed at completing the reform of cheque procedures (see Section 2.3).

### 2.2.3 Collection orders (direct debits, bills of exchange and bank receipts)

Italian banks are deeply involved in the execution of collections, mainly on behalf of businesses and public utilities. Unlike credit transfers, collections are originated by creditors and may be executed by debtors by different methods of payment: direct debits are executed through preauthorised debits of payers' current accounts; collections of bills of exchange and bank receipts are executed through methods other than preauthorised debits of current accounts (see below).

Direct debits totalled 79 million in 1994. They are mainly used by firms to collect recurrent low-value payments (i.e. utility bills). While the postal circuit is still prevalent for the collection of utility bills, the use of the direct debit procedure is growing rapidly: over the period 1990-94 the value of direct debits has increased at an average yearly rate of 24%.

Bills of exchange and bank receipts are widely used by firms to collect trade credits. Bank receipts perform an economic function

similar to bills of exchange but do not have the same legal protection (e.g. they cannot be protested); nevertheless, owing to a lower stamp duty, bank receipts have gradually supplanted bills of exchange. In order to speed the return of unpaid receipts and enhance certainty as to the status of receipts, in 1985 the banking system launched the electronic bank receipt (RIBA). The RIBA procedure is initiated by the creditor, who delivers the collection orders to his bank on magnetic tape or via telematic connections; the collection orders are transmitted, via the interbank network, to the debtor's bank, which sends an advice to the customer. RIBA are generally settled through debits on current account authorised by the debtor for each single operation. Unpaid receipts are returned to the creditor in electronic form within a fixed term. In 1994 approximately 154 million commercial bills and paper-based and paperless bank receipts were collected through the banking system; the share of RIBA increased from 38% in 1989 to almost 70% in 1994.

The interbank exchange of direct debits and electronic bank receipts is carried out through procedures based upon the RNI that were launched in 1993. The transactions are entered into the clearing system through the Retail sub-system.

### 2.2.4 Payment cards

#### *Debit cards*

At the end of 1994 there were 12.4 million debit cards in circulation that could be used to execute both payments and cash withdrawals through a nation-wide network of POS terminals and ATMs (Bancomat).

<sup>11</sup> *The protest is a legal declaration lodged by a notary or other public officer which certifies the non-payment of cheques. It permits the holder of the cheque to take action of recourse against the endorsers and their guarantors to recover the funds.*

The use of debit cards for withdrawals at ATMs is widespread and growing rapidly. In 1994 over 200 million withdrawals (25 per card) were executed, in comparison with 100 million in 1990. The share of ATM transactions grew from 50% of the overall cash withdrawals in the banking system in 1990 to 70% in 1994.

The use of debit cards at POS terminals is also growing rapidly: in 1994 over 26 million transactions were effected in comparison with 5 million in 1990, representing an average annual growth of 50% over the period. However, the low number of transactions per card (2.1) shows that the use of debit cards at POS is still rather limited.

The factors hindering the development of the market of debit cards have been recently pointed up by a study on the "Economics and profitability of payment services" carried out by the ABI. Further to this study, the ABI is currently defining policies to foster the use of payment cards in general, and of debit cards in particular (see Section 2.3).

#### *Credit cards*

Credit cards still do not play a major role in Italy; however, in recent years growing competition among suppliers of payment services and the steady change in consumers' habits have increased both the number of credit cards and their use. At the end of 1994, 6.1 million credit cards issued either by banks or by non-bank companies (travel and entertainment cards) were in circulation, in comparison with 4.5 million in 1990. In the same year, the number of credit card operations totalled 74.5 million, or 12.2 operations per card.

Travel and entertainment cards are issued by American Express and Diners Club. In the area of bank credit cards there are two main initiatives: one card, linked to the VISA circuit, issued by an individual bank has been

in circulation since 1968. A second card is issued on a co-operative basis by a company (*Servizi Interbancari*) set up in 1985, in which 675 Italian banks are shareholders; the latter card is linked both to VISA and to MasterCard. In recent years a number of individual banks have launched proprietary cards directly linked to international circuits. Over the last few years bank credit cards have increased their market share at a rapid pace; unlike travel and entertainment cards, they are offered also to low-income customers.

#### *Retailer and prepaid cards*

A number of fidelity cards have been promoted by retail chains, either directly or through financial firms that handle consumer credit operations, although this type of card is still not very widespread. In addition, prepaid cards have been issued by the public telephone and motorway companies.

Multi-purpose prepaid cards, based on microchips, can be recharged at ATMs and do not need an online POS terminal. These aspects render this instrument particularly suited for retail transactions at small shops. In 1994 some experimental projects were launched at a local level.

Italy is experiencing various initiatives for the development of multi-purpose prepaid cards (electronic purses). The 1993 Banking Law restricts the collection of deposits associated with the use of payment instruments to banks alone. Accordingly, only banks can issue multi-purpose prepaid cards since this instrument is equivalent to bank deposits. A pilot project for a local electronic purse (project Cassamat) was launched in October 1994 in the province of Alto Adige (Südtirol) by the Raiffeisen Federation of Co-operative credit institutions, a restricted group of fifty-three banks covering 50% of the local market. The technology chosen is a contactless rewritable chip card. A project to develop an electronic purse to be used throughout the country is currently being worked out by

*Società Servizi Bancari*, a company for computer services controlled by the largest Italian banks. The project is expected to be launched in 1996.

#### *ATM and POS networks*

In recent years both the ATM and POS networks have grown rapidly.

ATMs numbered 18,672 at the end of 1994; the number of ATMs per bank branch rose from 0.37 in 1988 to 0.8 in 1994. Almost 90% of ATMs are interconnected with the nation-wide network (Bancomat). All banks established in Italy that comply with the Bancomat system's rules are eligible for membership.

POS terminals totalled 104,000 at end-1994, compared with 22,000 at end-1990. However, their use is still limited (only 251 operations per terminal per year). Most POS terminals are linked to Bancomat.

#### **2.2.5 Postal instruments**

The Postal Administration provides three payment services in connection with postal current accounts and a cash transfer service (money orders).

Services connected with postal current accounts include inpayments to current accounts, postal giro transfers and current account cheques. These payment operations are increasingly processed via computer networks in real time.

Inpayments to postal current accounts are widely used by businesses and utilities companies to collect retail payments and regular bills; they numbered more than 680 million in 1994. A printed form, prepared for optical scanning, is sent to the debtor who may effect the payment at any post office using cash, cashier's cheques or bankers' drafts; bank cheques are not accepted yet.

On the whole, transmission times for funds and accounting data are short: funds deposited in another town become available after three days.

In 1994, 39 million postal cheques were issued. Postal cheques are mainly used by businesses and social security institutions to pay pensions and annuities; they are also used to transfer the balances held on postal current accounts to the banking system. Postal giro transfers account for about 2% of the overall volume of payments handled by the Postal Administration but over 23% in terms of value.

Money orders are generally used to remit funds to individuals who are not holders of a postal current account. They are issued against payment of the amount of cash and sent to the post office nearest the beneficiary's home. In 1994, 19.5 million money orders were issued.

In recent years several steps have been taken to increase integration between the postal and banking circuits. In 1990 the Postal Administration's membership in the clearing houses operated by the Banca d'Italia was finalised. Furthermore, an ad hoc co-ordinating committee of representatives of the Postal Administration, the ABI and the Banca d'Italia, set up in 1990, is studying ways to achieve full mutual acceptability of payment instruments and intercircuit standardisation of instruments and services. At the moment, the Postal Administration and the ABI are defining an agreement for the acceptance of bank cheques for payments executed at post offices. In June 1995 the two entities signed a convention for the interoperability of postal and bank payment cards.

### **2.3 Recent developments**

The Banca d'Italia, the ABI and the CIPA are engaged in further analysis to improve the efficiency of payment instruments and rationalise the system by correcting the

distortions. The objective is to facilitate the transition towards the instruments that are most efficient for each type and size of transaction.

In 1993 the taxation of payment instruments was rationalised, eliminating some of the distortionary effects of previous actions.

In April 1994, the interbank agreement on the transparency of the payment service conditions for customers, in terms of commissions and value dates, became operative.

Specific changes to individual instruments are being made. With reference to cheques, in 1995 the ABI and the Banca d'Italia published a White Paper defining the necessary changes to complete the reform of the procedures and to overcome existing problems (see Section 2.2.1). A first line of action is intended to boost customer confidence in cheques, with measures to prevent persons with a history of unpaid cheques from issuing them and to set up a data bank on unpaid, stolen and lost cheques that beneficiaries of payments will be able to query. A second line of action aims at rationalising the structure of the interbank circuit through more extensive use of information technology; in the long run all cheques will be handled by a single electronic interbank procedure ensuring the completion of the interbank exchange and settlement of cheques (including return of unpaid items) in three days. Changes in guarantees and procedures will favour a change in banking practice: banks will be able to release funds to customers more promptly, while the reduction of float will prompt banks to charge explicit fees for cheques.

With regard to credit transfers and collection orders, the new procedures will lead to greater

efficiency and speed, both for retail and for large-value payments. In this area the definition of common standards is particularly important. In recent years, initiatives promoted by Confindustria and the ABI have provided for a gradual adoption of EDIFACT standards (Electronic Data Interchange for Administration, Commerce and Transport)<sup>12</sup> for the payment instructions sent by businesses to banks and the resulting transactions among banks via the RNI. Furthermore, a procedure based on telematic connections has recently been made available in response to the needs of firms to rationalise and reduce the cost of their transactions with the banking system that are increased by the fact that firms hold accounts with different banks. The new procedure enables businesses to transmit their payment and collection orders to the banks through a telematic connection with a single institution that acts as a centralising agent.

As regards payment cards, a 1994 study by the ABI on the profitability of payment services concentrated mainly on debit cards; it highlighted the factors impeding faster development of cards (namely pricing policies, the inefficacy of marketing policy and technical deficiencies) and the potential gains for banks from their wider use. The study set out possible lines of market development and proposed pricing policies consistent with increasing use of payment cards in general, and of debit cards in particular. At the moment, debit card pricing policy is based on the application of variable commissions to the cardholder and of almost no commission to the merchant. The proposed changes include: a) a fixed annual charge; b) the abolition of variable transaction commissions to be paid by the cardholder; c) commissions paid by merchants related to the amount of transactions.

To promote the Bancomat brand and to spread its use, a promotional campaign will focus strictly on the payment function of the debit card. Accordingly, some initiatives have already been undertaken to set up a co-ordination centre for marketing at the ABI and a committee to study technological aspects at the CIPA.

<sup>12</sup> The EDIFACT project makes it possible to transfer, via telematic networks, standardised messages relating to the whole commercial cycle (buy and sell orders, billing, credit transfers, debit and credit notes).

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

In Italy there are two systems for interbank payments, one gross and one net; in both, settlement is effected on the accounts that banks hold with the Banca d'Italia. Traditionally payments have also been settled through correspondent accounts, the so-called "unofficial" circuit, governed by bilateral agreements; the balances of correspondent accounts are settled on the Banca d'Italia circuit. As a result of reforms since the mid-1980s, the possibility of using correspondent accounts to settle interbank payments has been drastically reduced, because interbank procedures automatically channel payments into the official net or gross settlement circuit. With the implementation of the new procedures for credit transfers, settlement on correspondent accounts will become virtually impossible.

In 1989 the Banca d'Italia promoted a general reform of the clearing system and revised the system of centralised accounts in order to boost the efficiency of interbank circuits and foster daily settlement in central bank money. The main changes were the following:

- the implementation of three new specialised clearing sub-systems: two for large-value funds transfers, the SIPS (the Interbank Payment System operated by the SIA) and the ME (the Electronic Memoranda), and one for the settlement of low-value payments (the Retail sub-system);
- the installation of a procedure for the real-time execution of interbank transactions by the direct movement of funds on banks' centralised accounts held at the Banca d'Italia (BISS).

The most important result of the reforms introduced in 1989 was to increase payment flows settled in central bank money via the

net settlement system.<sup>13</sup> From 1988 to 1994, the value of payments rose from ITL 6,200 trillion (ECU 3.2 trillion) to ITL 48,800 trillion, (ECU 25.5 trillion) or from six to thirty-one times GDP. On the other hand, the use of the gross settlement system has remained only marginal.

While the reform of the net settlement system has significantly reduced counterparty risk, in an environment characterised by a substantial rise in transactions, by the globalisation of financial markets and by the availability in real time of information on payments to be settled, clearing systems are becoming vulnerable. The best way to reduce systemic risk is a more intensive use of gross settlement in central bank money throughout the operational day.

The Banca d'Italia is engaged in improving domestic interbank payment systems. The reforms, set out in the White Paper "Interbank payments in Italy: lines of reform", published in April 1995, are moving along two paths: the revision of the net settlement system and the development of a gross settlement system.

The first path involves reinforcing the security and transparency of the existing net settlement system, to bring it into line with the requirements laid down in the Lamfalussy Report (BI-COMP project).

The second path means settling large-value interbank payments one by one through banks' centralised accounts (BI-REL project): payments are settled finally throughout the day rather than at the end of it, at the closure of the clearing system. This results in significant gains in both certainty of payments and reliability.

<sup>13</sup> The increase was fostered by the growth of screen-based markets, by the reform of the payment system and by the new compulsory reserve regime.

For both systems, access and participation criteria will be redefined, in line with the principles of harmonisation laid down at EU level. Participation in the payment system, which is confined to banks and some public bodies, will be based on access requirements referring to technical and organisational structure and financial strength.

On completion of the reform process, the Italian interbank payment system will be characterised by the coexistence of a net settlement system for retail operations and a gross settlement system for large-value payments. The distinction between retail and large-value will not be based on the value of the payments but on the operating procedures by which they are handled: payments using the same operating procedure will all be settled in the same circuits.

### 3.2 The real-time gross settlement (RTGS) system

The Banca d'Italia's Continuous Settlement System (BISS), launched in April 1989, allows banks to effect interbank real-time transfers via the RNI, between centralised accounts at the Banca d'Italia (see Section 1.3.2 for the structure of these accounts).

The opening of a centralised account requires the approval of the Banca d'Italia and is currently restricted to credit institutions and to specified public bodies. In December 1994, 848 banks held such accounts at the Banca d'Italia and 424 participated directly in the BISS (compared with 181 at end-1989). The Banca d'Italia drafts regulations and policies, monitors compliance and enforces the rules. The Consolidation Act of 1910 governs the advance accounts in general,

while the Statutes and some internal regulations of the Banca d'Italia govern their use.

In BISS, each transaction is entered by the paying bank; as each transfer is debited and credited to the accounts of the counterparties, settlement is immediate and final. An automated procedure notifies the counterparties of the operation and the resulting balances on their accounts in real time. At the end of the working day the Banca d'Italia forwards an updated statement to all participants. The BISS communications system consists of the electronic interbank network and the internal network of the Banca d'Italia. Message security within the interbank network is ensured through authentication codes and encryption. To encourage the use of computerised procedures for the movement of funds on centralised accounts, the charges for transactions carried out via the interbank network have been set six times lower than for paper-based operations. Liquidity and credit risks are not generated as each payment is carried out only if the paying bank has sufficient funds on its account with the Banca d'Italia.

Although the BISS system has enhanced efficiency in distributing funds among the participants in the system after the closing of the clearing system, its use has been limited, especially because the architecture of interbank procedures automatically channels a large part of interbank transactions to the netting system. Moreover, the cost of intraday liquidity in the BISS, which has neither a queuing mechanism for temporarily uncovered payments nor daylight overdrafts, is much higher than in a net settlement system. As a consequence, in the last two years the BISS has accounted for less than 1% of total funds exchanged in the clearing system and in banks' centralised accounts.<sup>14</sup>

In compliance with the recommendations of the Committee of Governors of the EU central banks, the Banca d'Italia, in

<sup>14</sup> *The BISS is used above all to meet liquidity needs in the early morning, to enable the redistribution of funds at the close of the clearing system (interbank transfers) and to facilitate compliance with compulsory reserve requirements during the maintenance period.*

co-operation with the banking community, is engaged in implementing a new gross settlement system (BI-REL) to replace the BISS.

### 3.2.1 Functioning rules

The BI-REL system, which is scheduled to come on stream in 1997, is designed to ensure efficient overall working without imposing extra costs for banks in terms of liquidity. The Banca d'Italia will encourage the shift to RTGS by supplying intraday liquidity and by setting up a queuing mechanism for payments temporarily lacking cover.

In deciding the amount of intraday liquidity in the BI-REL system, the Banca d'Italia will retain discretionary powers in order to safeguard the money market's allocation function and to encourage rationalisation of cash-flow management. To provide intraday liquidity, the Banca d'Italia is considering allowing more substantial mobilisation of compulsory reserves, supplying banks with daylight overdrafts fully collateralised by securities and introducing intraday repurchase agreements (repos), according to the policy menu set out in the TARGET (Trans-European Automated Real-time Gross settlement Express Transfer) System report. The intraday credit facility will ensure maximum flexibility, as banks will be able to make real-time transfers, via the RNI, of securities held in their own centralised accounts (CAT and Monte Titoli) to the fully pledged account at the central bank.

A system of penalties will discourage banks from not reimbursing intraday liquidity. The amount of the penalty will increase with the level of tension in the money market and in any case should not be less than the penalties on fixed-term advances. A bank that fails to reimburse intraday liquidity will not be permitted to enter new payments on the following day before full repayment of the credit.

The smooth functioning of the system will also depend on the early crediting of the Banca d'Italia operations on banks' accounts. Specifically, the possibility of bringing forward the settlement of central bank financing operations to the first hours of the morning should considerably enhance the smooth flow of intraday payments and avoid long queuing.

The queuing mechanism for temporarily uncovered payments will be designed to enhance the flexibility of the BI-REL, resolving temporary blocks in the flow of funds of each bank. Queued payments will be channelled in an order of priority automatically determined by the system: *high priority* for clearing balances and operations of the Banca d'Italia (mainly repos, standing facilities, and operations on behalf of the Treasury); *medium priority* for interbank deposit market contracts; *ordinary priority* for other interbank payments. Within the order of priorities, execution of payments will be "first-in-first-out" (FIFO).

In the exceptional case of gridlock in the queuing mechanism, especially towards the end of the operational day, the central bank could abandon the FIFO principle and trigger a mechanism for the optimisation of queues at system level.

### 3.2.2 Participation in the system

All banks holding centralised accounts at the Banca d'Italia will participate in the BI-REL system. This will give them access to intraday liquidity provided by the central bank and to the queuing mechanism. Only banks that are connected to the interbank network and have the RNI/BI-REL software for direct management of centralised accounts will be able to settle payments in real time.

Each participating bank will be able to extend the possibility of using its centralised accounts to other participants through an agency agreement (co-management), but it will retain full responsibility deriving from its ownership of the accounts.

### 3.2.3 Types of transactions handled

The BI-REL system will settle all large-value payments, particularly those that are now channelled into the net settlement system, namely contracts stipulated in the screen-based interbank deposit market and operations handled by the SIPS (see Section 3.3.2). This means that the BI-REL project will require revision of procedures for large-value payments, which are owned by the Banca d'Italia and operated by the SIA.

### 3.2.4 Operation of the transfer system

Banks' inquiry functions will be strengthened in the BI-REL system, providing banks with flexible instruments to meet the new needs of intraday scheduling of payments.

The procedure will permit the operators to have information on queued payments. The information supplied to each bank on its debit positions in the queue will be detailed (chronological order, amount, counterparty, etc.) in order to permit correct scheduling of transfers. With regard to incoming payments, the recipient banks will be allowed to see only the total amount and the number of payments.

The Banca d'Italia will monitor the system continuously to identify critical situations either in payments gridlock or in the functioning of the interbank network.

### 3.2.5 Transaction processing environment

In the BI-REL system, the flow of information will follow a "V" scheme; the message attached to each payment will be transmitted by the sending bank to the central bank and from the latter to the receiving bank but only after the availability of funds has been verified and the

sending bank's account has been debited. BI-REL will not provide for the automatic transmission of messages for queued payments.

### Settlement procedures

In the BI-REL system each debt transaction will be posted to the centralised account if funds (including intraday liquidity) are available; temporarily uncovered payments will be channelled into the queues. Queued payments will not be revocable except in the event of error; the cancellation of an interbank transaction must be approved by both counterparties.

The operational day will be structured so as to allow the system to complete each of the stages in the settlement procedure prior to closure. Four cut-off times will be set, within which operational constraints and incentives will be provided to induce operators to empty their queues and reimburse intraday liquidity.

The cut-offs will be the following: settlement of the balances of the clearing system for retail operations and securities settlement;<sup>15</sup> end of entry of further payments in the queues; cancellation of the queues and end of use of intraday liquidity; closure of the operational day. During the first three cut-offs incoming payments will be processed normally. Operations cancelled from the queues at the end of the day will not be automatically re-entered the next day.

### 3.2.7 Credit and liquidity risk

The BI-REL system reduces but does not eliminate the systemic risks connected with the clearing system. Moreover, the presence of a queuing mechanism might imply a lag between the entry and the settlement of payments.

In order to limit the queuing time for payments temporarily without cover, the central bank could provide incentives for

<sup>15</sup> The closure of the net settlement system could come in two phases, one for retail operations and the other for securities settlement.

entry and settlement of payments in the first part of the operational day. Consequently, the BI-REL procedure will be built by recording the exact time of each payment's entry and its eventual queuing time.

### 3.2.8 Pricing

The pricing policy will aim, in the medium term, to cover the full cost of the services offered. However, in order to maintain a level playing-field with respect to net settlement systems, the central bank may deduct a rebate reflecting the opportunity costs for the banks of using a safer payment mechanism. The central bank may decide to operate a sliding scale of fees according to payment policy objectives (e.g. higher prices for queued or late payments).

Moreover, a penalty could be introduced among banks - to be decided on the basis of interbank agreements - for cancelled interbank payments at the end of the day; in this case the central bank would perform the service of checking, calculating and imposing penalties on behalf of the banks concerned.

## 3.3 Structure, operation and administration of the clearing system

The automated clearing system consists of four sub-systems:

- the wholesale sub-system (SIPS) for large-value foreign exchange transactions;
- the ME sub-system for large-value money market transactions;
- the retail sub-systems for low-value paperless payments (*sottosistema Dettaglio*);
- the local clearing sub-system (*Recapiti locale*) for paper-based operations.

The ME and the local clearing sub-systems are directly operated by the Banca d'Italia. The SIPS and the Retail sub-system are managed by the SIA on behalf of the Banca d'Italia. The sub-systems have different but co-ordinated timetables and deadlines (see Chart 1): all clearing operations start at 8 a.m.; the first to close is the retail sub-system (at 11 a.m.), followed by the local clearing sub-system at 1.30 p.m. and the SIPS at 2 p.m. Treasurers can subsequently cover their positions by using the ME sub-system, which is the last to close (at 4 p.m.). At 4 p.m. the automated national clearing procedure (*Compensazione nazionale dei recapiti*) calculates a single multilateral net position at national level for each participant. The settlement of the multilateral net balances resulting from all the clearing sub-systems is effected through the banks' centralised accounts with the Banca d'Italia.

Access to the clearing system is restricted to deposit-taking institutions alone; in addition, the Banca d'Italia, on its own account and on the Treasury's behalf, and the Postal Administration participate in the system. Participation in the four sub-systems varies; in general, the larger banks participate in all the clearing sub-systems, while smaller banks participate only in some, according to their operational needs.

### 3.3.1 The Electronic Memoranda sub-system (ME)

*Functioning rules, participation in the system*

The ME sub-system is a specialised procedure of the automated clearing system. Launched in July 1989, it substitutes electronic messages for paper documents in large-value interbank payments.

The rules governing the ME sub-system are included in the national clearing regulations, which also fix the hours of operation and deadlines. The electronic clearing system operates from 8.30 a.m. to 4 p.m. five days a week.

At end-1994, 297 banks belonged to the system. The Banca d'Italia too has participated since 1st January 1993.

*Types of transactions handled, operation of the transfer system and transaction processing environment*

The ME sub-system is used mainly by banks to effect liquidity adjustments necessary to complete settlement of their final clearing balances. In October 1990 an automated procedure was introduced to link the ME and the interbank deposit market (MID). The cash balances resulting from securities settlement procedures have also been entered into the ME sub-system since 1st January 1993.

The result of these initiatives was a large increase in the funds managed by the sub-system, from ITL 10,450 trillion (ECU 5.5 trillion) in 1992 to 17,972 trillion (ECU 9.4 trillion) in 1994.

Banks may transmit data either via the interbank network or, in exceptional circumstances, via paper documents delivered to branches of the Banca d'Italia. Each transaction is entered by the debtor, and the system notifies both counterparties of the operation and the resulting balances. Participants can also interrogate the system about their balance at any time. Multilateral net balances are settled through the centralised accounts at the closing of clearing operations.

*Settlement procedures, pricing, credit and liquidity risk*

The expenses of the clearing houses are met by participants on the basis of the value of transactions and the number of counterparties. The Banca d'Italia is in the process of revising the pricing policy for the payment services it supplies (see Section 1.3.2).

Fixed charges are levied for each transaction; with a view to encouraging the use of computerised procedures, charges for paper-based operations are between three and six times as much as for those carried out via the RNI.

In order to monitor and control settlement risks and exposures on the MID, and consequently in the ME sub-system, the Banca d'Italia took a series of actions in co-operation with the Management Committee of the MID, launching centralised monitoring of participants' settlement obligations. Moreover, in recent months banks have been requested to fill out, on an experimental basis, a self-assessment form intended to determine the level of the warning limits for settlement risk. This measure, decided by the participants themselves, will be supplemented by the establishment of a control body with members appointed by market participants, which will monitor their use of the system and intervene in the case of non-compliance with the rules.

### **3.3.2 The Interbank Payment System (SIPS)**

*Functioning rules and participation in the system*

The Interbank Payment System (SIPS) operated by the SIA on behalf of the Banca d'Italia came into operation on 17th July 1989. The system is owned by the Banca d'Italia; it handles interbank transfers of external lire and the lira settlement of foreign exchange transactions. Novated net balances deriving from the transactions handled by the SIPS are channelled through the national clearing procedure.

The Banca d'Italia establishes and enforces the rules for the operation of the SIPS and supervises the system. The basic framework of operation is laid down in agreements between the Banca d'Italia and the SIA and between the SIA and the participants in the system. Membership rules are established directly by the Banca d'Italia, which may

suspend or expel a participant from the system. SIPS transactions can be sent to the SIA's EDP centre during the five days preceding the value date and up to 2 p.m. on the value date itself.

Any bank participating in the national clearing system and linked to the interbank network can apply for membership in the SIPS. At end-1994, 121 banks participated.

*Types of transactions handled, operation of the transfer system and transaction processing environment*

The SIPS uses the "store and release" technique which allows each participant to make a payment (previously entered or "stored") irrevocable ("release" it) only after the funds necessary for its settlement have been made available by the operator originating the transaction.

The transmission of data in the SIPS is effected exclusively via the interbank network. There are four types of message: revocable advance payment notices, final credit transfers, confirmation of payment notices and cancellation of payment notices. At 2 p.m. on each working day the SIA notifies each participant of its position vis-à-vis each counterparty and simultaneously communicates the net balances to the Banca d'Italia for inclusion in the national clearing system.

The SIPS processes only electronic transactions. Information is stored in a data bank. By means of an inquiry each participating bank can receive in real time current information on its advance payment notices and its balance. In 1996, the new procedures for domestic large-value and external lira credit transfers will enter the SIPS sub-system (see Section 2.2.2).

In 1994, the volume of transactions handled by the SIPS amounted to ITL 25,929 trillion (ECU 13.5 trillion), compared with ITL 11,955 trillion (ECU 6.2 trillion) in 1992.

*Settlement procedures, pricing, credit and liquidity risk*

The SIPS is a system in which novated bilateral net balances are settled through the national clearing system. Thus there is no actual transfer of funds until settlement time (i.e. the close of the clearing cycle at the end of each working day). The application of novation affects only bilateral net balances at the end of the day.

The costs of implementing the SIPS were covered by the Banca d'Italia and the SIA. The basic principle of SIPS pricing is that revenues must cover operating costs. The fee structure is also used to influence the participants' behaviour; for instance revocable notices, which provide advance information on banks' cash flow, have been kept free of charge.

The exposure of each bank is given by gross items during the operating cycle and by bilateral net balances at the end of it. The first line of defence against credit and liquidity risks is membership control. In the SIPS, as in the ME, membership criteria are fixed by the Banca d'Italia. Each participant can monitor its intraday exposures in real time. Other risk control measures are currently under study.

Although the SIPS is operated by the SIA, the Banca d'Italia regulates, supervises and oversees the system.

### **3.3.3 The Retail sub-system**

The Retail sub-system handles low-value paperless payments. It includes the procedure to handle Bancomat operations (started in 1989), truncated cheques (1990), RIBA and direct debits (1992), and retail credit transfers (1994). It is the first of the sub-systems to close (at 11 a.m.).

At end-1994, 109 banks participated in the Bancomat procedure, 122 in the cheque truncation procedure, 123 in the direct debits

and RIBA procedure and eighty-four in the retail credit transfer procedure.

The sub-system electronically processes the operations exclusively related to net bilateral balances stemming from the different procedures. These net bilateral balances are entered into the retail sub-system for the determination of aggregate bilateral balances.

In 1994, the value of funds transmitted across this sub-system totalled ITL 675 trillion (ECU 353.1 billion) compared with 263 trillion (ECU 137.4 billion) in 1992.

### **3.3.4 The Local Clearing sub-system**

The local clearing sub-system handles paper-based operations that necessitate the physical exchange of items (e.g. non-truncated cheques). In particular, it permits the exchange of local paper-based items (such as bank cheques, bankers' drafts, cashier's cheques, bills, postal instruments), out-of-town bank cheques, and banks' payments to the Banca d'Italia, which also operates on behalf of the Treasury. It closes at 1.30 p.m. At end-1994, 271 operators participated in the sub-system, including the Banca d'Italia, the Treasury and the Postal Administration.

In fact, all operators' paper-based transactions with the Banca d'Italia, the Treasury and the Postal Administration have to be exchanged and settled through this channel. Paper-based items can be exchanged through the clearing houses located in each Italian provincial capital.

In 1994, this sub-system handled funds for ITL 4,255 trillion (ECU 2.2 trillion), as opposed to ITL 6,346 trillion (ECU 3.3 trillion) in 1992.

The nature of the retail systems, namely the fact that they handle relatively low-value payments, renders them less sensitive to systemic risks. Accordingly, no specific risk control measure is currently in place. However, the retail sub-systems will be included in the reform envisaged by the BI-COMP project (see Section 3.3.5).

### **3.3.5 Main projects and policies being implemented**

As regards the gross settlement system, interventions in the Italian clearing system (BI-COMP) are intended to increase the capacity for managing crisis situations without relying on central bank support.

The reforms of the net settlement system (BI-COMP) will be introduced gradually, in part because of the reduced role the net settlement system will have after the start-up of the new gross settlement system (BI-REL). The actions envisaged could include: extending to the entire business day the monitoring of bilateral and multilateral exposures of each participant, especially for the sub-systems that handle large-value payments; introducing warning limits for the multilateral debit exposures of each participant; instituting a deposit of collateral in proportion to the level of the respective warning limits; and administrative sanctions for non-compliance with warning limits during the operational day.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Since the beginning of the 1990s the configuration of the Italian securities markets and trading systems has changed considerably, mainly as a result of Law 1/1991, which introduced specific regulations governing financial activities in general, created a new kind of operator (the Securities Investment Firm - SIM) and laid the legislative foundations for both the derivatives markets and the implementation of trade guarantee systems.

Trading on the stock exchange, both in equities and in government and corporate bonds, is restricted to stockbrokers and SIMs; the stock exchange is based on a nation-wide electronic system, which receives orders from SIMs and stockbrokers and matches bids and offers according to rules of priority. According to the principle of "concentration", SIMs and stockbrokers can trade in listed equities and corporate bonds only in the stock exchange, unless there is a specific authorisation from the customer to trade outside the exchange; the other notable exception to the rule is block trading.

The stock exchange is supervised by the Consob, set up in 1974 by Law No. 216. The tasks of the Consob include the issuing of regulations concerning the stock exchange, the supervision of SIMs and stockbrokers, the disclosure of information given out in the financial market, the authorisation of share listings, and the control of public offers.

As far as government securities are concerned, the bulk of trading is carried out on another regulated market, the screen-based market for government securities (MTS). Unlike the stock exchange, this is a wholesale market, not open to the public, based on bids and offers provided by

participants acting as market-makers. Its regulations are contained in decrees issued by the Ministry of Treasury, on proposal of the Banca d'Italia and the Consob, and in an agreement among participants. The market is supervised by a Management Committee whose members are appointed by the participants.

Derivatives markets, for the time being, consist of the futures market for government securities (MIF) and by the futures market for the stock exchange index (FIB). The MIF is legally structured like the screen-based market for government securities and is supervised by the same Management Committee. The FIB, based on an index related to a basket of thirty "blue chips", is regulated and supervised by the Consob.

However, this institutional framework is evolving, and shortly the overall structure could change; as a matter of fact, the transposition of the EU Investment Services Directive into Italian law, currently under examination by Parliament, will introduce such major changes as the admission of banks to trading on the stock exchange. It cannot be excluded, furthermore, that this will provide the opportunity to revise and modernise the legal structure of the financial markets.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

From a general standpoint, within the institutional framework of the financial markets, regulatory powers are attributed to the Banca d'Italia and to the Consob; these powers are divided between the two institutions according to a general principle that assigns to the Banca d'Italia responsibility for stability (both of single intermediaries and of settlement systems) and to the Consob

responsibility for transparency and correctness (both of single intermediaries and of securities markets). Should any specific matter be of common interest, the powers are exercised jointly.

The Banca d'Italia and the Consob have used their powers in recent years to promote such projects as the launch of the derivatives markets and the consequent setting-up of the clearing house, the institution of guarantee funds for the shares market, and the adoption of rolling settlement for the stock exchange, scheduled for completion in February 1996.

With specific regard to the settlement of securities transactions, the Banca d'Italia is assigned by law the task of running the clearing house.

#### *Provision of operational and settlement facilities*

In addition to the clearing and settlement system for securities transactions, the Banca d'Italia also runs the central securities depository for government securities.

The Banca d'Italia has administered the system for centralised management of government securities since 1980. In September 1990 the old locally based system was replaced by centralised securities accounts (CAT *Conti Accentrati in Titoli*). This procedure enables government securities to be transferred in real time through the direct debiting and crediting of participants' central accounts at the Banca d'Italia. The system is also automatically linked to the clearing procedure, in order to permit final balances in government securities to be settled by means of book entries. The institutions eligible to participate in the system are: Italian banks and the Italian branches of foreign credit institutions, financial institutions, stockbrokers and international clearing institutions (Cedel and Euroclear).

Neither the securities settlement system nor the CAT procedure provides any automatic

credit facility; the clearing system is only structured to permit participants to know their debit balances (in cash and securities) in advance and thus to seek, through bilateral lending outside the system, the securities and/or cash they need.

On the role of the Banca d'Italia as lender of last resort, see Section 1.3.3.

#### *Monetary policy operations and securities settlement systems*

The Banca d'Italia intervenes in financial markets for monetary policy purposes, through outright purchases or sales of government securities and repos. These transactions are settled through the securities settlement system or, for same-day settlement, by means of book entries on securities and cash accounts.

#### *Main projects and policies being implemented*

In line with the gross settlement scheme for interbank payments, the Bank is working on the implementation of a new real-time gross settlement system for transactions in government securities.

#### **4.1.3 The role of other private and public sector bodies**

The main regulatory responsibility for the stock exchange is assigned to the Consob. The operation of the market is the responsibility of the Stock Exchange Council, a national institution which in January 1993, pursuant to Law 1/1991, replaced the Executive Committees of Stockbrokers and Stock Exchange Deputations, formerly set up at each stock exchange; this change was intended to rationalise co-ordination and control of the market.

The fourteen members of the Council are appointed for a term of three years by

decree of the Minister of the Treasury. Two represent respectively the Banca d'Italia and the Consob; the rest are named by SIMs (seven), banks (two), issuing corporations (two) and the association of Chambers of Commerce (one). The main functions of the Council are the organisation, operation and development of the electronic trading system of the stock exchange; the determination and the publication of the stock exchange indexes; the issuing of technical regulations for the functioning of the market; and the management of insolvency procedures.

#### *The Central Securities Depository*

As mentioned above, the Banca d'Italia acts as the central depository for government securities. The central depository institution for listed shares and corporate bonds is Monte Titoli S.p.A.

Monte Titoli was created in 1978 at the initiative of the Banca d'Italia and several major banks. It is owned by the Banca d'Italia, banks, SIMs, and stockbrokers; under Law No. 289/1986 regulating the central administration of securities through Monte Titoli, it became a service company under the supervision of the Banca d'Italia and the Consob.

At the end of 1994, the face value of certificates deposited with Monte Titoli (immobilised but not dematerialised) amounted to 46.2% of all listed shares. Securities directly owned by participants are segregated from those of their customers.

Monte Titoli has so far developed linkages with two other European central securities depositories (*Sicovam* and *Auslands-Kassenverein*), which enables Italian intermediaries to trade and settle a limited number of listed foreign equities through book entries at Monte Titoli. Monte Titoli is developing contacts with its counterparties abroad with a view to facilitating the processing of international securities transactions.

#### *The Clearing and Guarantee House*

The Clearing and Guarantee House (the House), entrusted by law with ensuring the timely settlement of the contracts concluded on both the cash and derivatives markets, was set up in March 1992 as a public limited company with capital amounting to ITL 55 billion (ECU 28.7 million); it has twenty-one shareholders, all banks and SIMs, and the Banca d'Italia and the Consob have representatives, without voting rights, on its Board of Directors.

As far as derivatives markets are concerned, the House acts like similar organisations abroad: it is the central counterparty for all trades among participants and safeguards itself against the failure of a participant by margin deposits. With particular regard to securities markets, the House now plays the role of guarantor just for the stock market. The House manages two special Guarantee Funds set up to handle the risk of default and guarantee finality of settlement both on the forward and on the cash market; this role does not involve any direct assumption of risk by the House. The Funds guarantee all transactions in listed shares.

#### *Operators of trading and matching systems*

Stock exchange trading and matching is carried out through software and a network operated by the former EDP centre of the Milan Stock Exchange (*CED Borsa*); its shareholders are banks, SIMs and stockbrokers and it acts under a licensing agreement with the Stock Exchange Council.

The functions of trading and matching related to the screen-based market for government securities are operated by the SIA, the same company that runs the RNI (see Section 1.4) and the MID.

Both these centres automatically send all matched trades to the securities settlement procedure (LDT procedure), in the form of

bilateral balances of each participant vis-à-vis its counterparties.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

As a result of a series of projects carried out in recent years, all of Italy's regulated markets now have one major feature in common: they are all screen-based, computerised markets with neither physical presence nor open outcry.

Each market has its own participants, regulatory and supervisory authorities; a brief description of each market follows.

### 4.2.2 The stock market

In Italy there are, for the time being, ten local stock exchanges, but most trading is conducted by means of a single, nationwide screen-based system.

This system, managed by CED Borsa, became operational in November 1991 for the first five listed shares. Since July 1994, it has handled all listed securities (equities, and corporate and government bonds).

The screen-based system has many auxiliary functions in addition to continuous trading, including the matching of automated daily trades, the processing of analytical data for the supervisory authorities and the public dissemination of information concerning the market.

According to Law 1/1991, only SIMs and stockbrokers are authorised to trade shares directly on the stock exchange (i.e. on the electronic system).

At present, the bulk of the Italian shares market is still a forward market. The 150 or

so most active shares (of the 330 listed) are traded and settled according to a stock exchange month, running from the middle of one month to the middle of the next. Settlement of transactions occurs on settlement day which, as a rule, coincides with the last working day of the month.

However, this arrangement is being phased out. In August 1994, a resolution issued by the Consob in agreement with the Banca d'Italia provided that, starting in February 1996, all stock exchange trades on equities should be spot transactions, with rolling settlement on the fifth day following the trade.

### 4.2.3 The screen-based market for government securities (MTS)

The regulations governing the screen-based market for government securities, instituted in 1988, are contained in decrees of the Minister of the Treasury and in an agreement among participants. The market, which generally operates as a wholesale market on which intermediaries act on their own behalf, provides for three categories of participants:

- dealers, who can only accept the bids and offers of primary dealers and specialists;
- primary dealers, who are required to quote on the trading system, on a continuous basis, bid and offer prices for contracts worth a minimum of ITL 5 billion (ECU 2.6 million);
- specialists in government securities, for whom the minimum size of bids and offers is ITL 25 billion (ECU 13.1 million).

This structure results from a reform that opened the market to non-resident intermediaries and introduced both the category of the specialists and elements of competition among the participants that can display bids and offers (primary dealers and specialists).

The market is open to the Banca d'Italia, which acts as a dealer, to banks and special credit institutions, to SIMs, financial companies, insurance companies and investment fund management companies.

The working of the screen-based market is supervised by a management committee composed of all the participants. Representatives of the Banca d'Italia and of the Consob may take part in the committee's meetings. The Banca d'Italia publishes a daily list of prices and volumes of trading based on primary dealers' notifications of contracts concluded. Trading is carried out electronically between dealers and primary dealers or specialists, through a trading system operated by the SIA, which also runs the RNI. Once a transaction is finalised, confirmation automatically appears on the buyer's and seller's terminals, thus avoiding most of the problems connected with the matching of operations. The screen-based market operates from 9.30 a.m. to 1.30 p.m. and from 2.30 p.m. to 4.30 p.m. on stock exchange business days.

Settlement for government securities is made on the third stock exchange working day following the conclusion of the contract. Treasury bill transactions are normally settled on the second working day after conclusion of the contract. Settlement takes place through the securities settlement system.

### **4.3 Structure, operation and administration of securities settlement systems**

#### **4.3.1 Major regulations**

The clearing and settlement of securities transactions are carried out by means of a nationwide net settlement system owned and managed by the Banca d'Italia through seven clearing houses which are part of the organisational structure of the Banca d'Italia. The name of the securities settlement system is *Liquidazione dei Titoli* (LDT).

The main regulations governing the LDT are contained in a decree of the Minister of the Treasury, issued in December 1991 at the proposal of the Banca d'Italia in agreement with the Consob; operational features are set out in an agreement to which participants subscribe.

#### **4.3.2 Participation in the system**

Participation in the LDT is restricted to banks, SIMs and stockbrokers. Applications are handled by the Banca d'Italia; it is compulsory for participants in the clearing system to maintain securities accounts both with the Banca d'Italia (for government securities) and with Monte Titoli (for other securities).

#### **4.3.3 Types of transactions handled**

Membership of the system allows operators to carry out all types of operation, from notification to settlement; settlement in cash, however, takes place through the general clearing of bank items, so that non-bank participants must have a credit institution act for them. All types of transaction can be settled through the LDT procedure: outright purchases and sales, repurchase agreements, free-of-payment deliveries, and securities lending.

At present, the clearing system provides for three types of settlement: daily settlement is used mainly for government securities and corporate bonds, monthly settlement for shares, and extraordinary settlement for contracts relating to rights issues and unlisted securities. These settlement procedures, which follow the same logical sequence and differ only in their duration, apply in the same fashion to on-market and over-the-counter transactions and to listed and unlisted securities.

#### **4.3.4 Operation of the transfer system**

The duties of the clearing system begin with the notification of bilateral net positions in cash and securities of participants. Bilateral balances, however, are determined outside the clearing system; they are prepared by the EDP centres that handle the different trading systems (i.e. CED Borsa for stock exchange transactions and the SIA for the MTS).

#### **4.3.5 Transaction processing environment**

The balances are automatically sent to the LDT procedure in accordance with its cut-off hours, without any further intervention by individual participants.

On receipt of these notifications the clearing system computes the participants' multilateral positions in securities and cash by netting. The determination of multilateral balances does not involve the novation of underlying obligations.

#### **4.3.6 Settlement procedures**

The balances in securities resulting from multilateral clearing are automatically sent to the two central securities depositories - Monte Titoli and the Banca d'Italia's CAT procedure - and settled by way of book entries in the accounts of the LDT participants.

Cash balances are automatically forwarded to the clearing of bank items and settled along with the banks' other credit and debit positions. As only banks are admitted to the clearing of bank items, non-bank participants must engage a bank to pay and receive these balances on their behalf.

#### **4.3.7 DVP arrangements**

The settlement procedure eliminates the principal source of risk by strict, automatic application of the principle of delivery versus

payment. Clearing houses cannot settle credit balances in cash and securities until they have finalised the collection of all debit balances. On settlement day the debit balances in securities are conveyed electronically to the central depository institutions and debited to the participants' accounts. As mentioned above, the cash leg of securities transactions is settled through the interbank clearing system. The final stage of the process is represented by the delivery of securities to the members with credit positions, by directly crediting their accounts with the central depository institutions.

#### **4.3.8 Credit and liquidity risk control measures**

In addition to the strict application of the DVP principle in the settlement of final balances and the imminent adoption of rolling settlement (see Section 4.3.10), the system relies on several risk control measures.

First, there are membership requirements; the categories permitted to participate (banks, SIMs and stockbrokers) are all subject to individual supervision, aimed at verifying either their financial soundness (banks and SIMs) or their risk control measures (stockbrokers).

Second, participants are notified of their final balances in the afternoon of the day before the settlement day, to give them time to borrow the cash and securities they need to cover their debit positions.

Finally, with specific regard to the settlement of listed equities and warrants, there is a special guarantee fund, managed by law by the Clearing and Guarantee House within a regulatory framework laid down by the Banca d'Italia and the Consob. In the event of a participant's default, the House intervenes by taking its position, i.e. settling the defaulter's debit balances and by receiving its credit balances. To do so, the House resorts to a Guarantee Fund provided by the intermediaries participating in the LDT, except for banks, which cannot directly trade equities

and warrants on the stock exchange. The contributions of the individual participants are proportional to their volume of business.

The House is only the operator of the system, and bears no responsibility itself in the event of a default; should the final losses resulting from a participant's default exceed his contribution, the remaining losses are shared among all participants, in proportion to their volume of business.

#### **4.3.9 Pricing**

Participation in the clearing house system is subject to two kinds of fee. One is fixed, equal for all participants, and paid annually. The other, a fee for each bilateral balance transmitted to the clearing system, depends on the extent of trading activity. The system also provides for a variety of penalties to discourage delays and errors.

#### **4.3.10 Main projects and policies being implemented**

The main project currently being implemented is the adoption of the rolling settlement system comparable to those in place in most developed financial markets. As of February 1996 all stock exchange transactions in equities will be settled five business days after the trade. This project, part of the overall line of action of the Banca d'Italia aimed at lowering settlement risk in financial markets, represents the final phasing-in of rolling settlement in the place of the traditional stock exchange month.

The Banca d'Italia and the Consob decided that this transition should be progressive in order to give intermediaries time to become familiar with the new settlement structure. Moreover, they decided that, in order to preserve the liquidity of the market, the involvement of the most important listed shares should be accompanied by the starting of a securities lending market and by the launch of derivatives markets for shares. The first is already in place and growing, and the launch of an options market on listed shares is scheduled for February 1996 in conjunction with the adoption of rolling settlement.

Italy

IT

## 5. Statistical data

**Table 1**

Basic statistical data <sup>(1)</sup>

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	57,661	57,796	57,896	58,090	58,247
Gross domestic product (ITL billions)	1,312,066	1,429,453	1,504,003	1,550,150	1,641,105
Exchange rate vis-à-vis ECU <sup>(2)</sup>	1,521.87	1,533.26	1,594.29	1,840.33	1,913.946

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**

Settlement media used by non-banks

(end of year)

	ITL billions				
	1990	1991	1992	1993	1994
Notes and coins	69,449	76,354	85,617	89,769	96,221
Transferable deposits	395,840	441,719	442,418	473,943	488,055
of which held by:					
households	<i>n.a.</i>	331,569	331,330	349,532	357,766
corporate sector	<i>n.a.</i>	76,666	74,627	83,117	92,597
others <sup>(1)</sup>	<i>n.a.</i>	33,484	36,461	41,294	37,692
Others <sup>(2)</sup>	17,068	19,429	16,011	14,760	15,702
Narrow money supply (M1)	482,357	537,502	544,046	578,472	599,978

(1) Insurance companies and public authorities.

(2) Banker's drafts, cashiers' cheques and current accounts at the Treasury.

**Table 3****Settlement media used by deposit-taking institutions***(end of year)*

	ITL billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	125,491	128,915	129,927	105,796	92,468
<i>of which can be used for settlement</i> <sup>(2)</sup>	3,764	6,445	6,496	7,406	7,397
Free reserves held at central bank	197	196	127	121	151
Transferable deposits at other institutions	61,167	55,016	46,407	52,455	56,352

(1) Since 1990 average reserves for the period from 15th December to 14th January.

(2) A procedure to mobilise the compulsory reserves was launched on 10th October 1990. Initially only 3% of the compulsory reserves could be mobilised; on 15th October 1991 the share was raised to 5%; on 15th February 1993 it was raised to 7%, and on 15th July 1994 it was raised to 8%.

**Table 4****Banknotes and coins***(total value, end of year)*

	ITL billions				
	1990	1991	1992	1993	1994
Total banknotes issued	73,376	80,491	89,222	93,508	100,025
<i>of which:</i>					
ITL 100,000	51,336	56,570	63,205	66,862	72,346
ITL 50,000	16,553	18,154	20,018	20,662	21,531
ITL 10,000	3,784	3,882	3,929	3,903	3,996
ITL 5,000	742	776	827	848	905
ITL 2,000	104	170	298	346	333
ITL 1,000	857	939	945	887	914
Coins in circulation	1,433	1,533	1,637	1,722	1,763
Notes and coins held by credit institutions	5,360	5,670	5,242	5,461	5,567
Notes and coins in circulation outside credit institutions	69,449	76,354	85,617	89,769	96,221

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number accounts (thousands)	Value of accounts (ITL billions)
Central bank	1	98	-	-
Commercial banks	256	16,732	20,507	396,784
Savings banks	-	-	-	-
Co-operative and rural banks	746	6,388	4,693	83,638
Post office	1	14,135	481	7,633
<b>TOTAL</b>	<b>1,004</b>	<b>37,353</b>	<b>25,681</b>	<b>488,055</b>
Branches of foreign banks:	45	70	8	675
<i>of which EC-based</i>	24	46	4	325

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	1	1	1	1	1
Number of machines	9,770	11,571	13,917	15,227	18,672
Volume of transactions (thousands) <sup>(1)</sup>	100,663	131,283	162,583	187,407	211,247
Value of transactions (ITL billions) <sup>(1)</sup>	28,770	38,992	49,168	58,050	66,537
<b>EFTPOS terminals</b>					
Number of networks	-	-	-	-	-
Number of points of sale	22,185 <sup>(1)</sup>	45,711	62,251	77,206	104,051
Volume of transactions (thousands) <sup>(1)</sup>	5,400	8,500	12,681	17,774	26,095
Value of transactions (ITL billions) <sup>(1)</sup>	898	1,727	2,526	3,398	4,943

(1) Data relating to a sample group of seventy-five banks accounting for approximately 80% of current account deposits in the entire banking system.

**Table 7****Number of payment cards in circulation <sup>(1)</sup>**  
*(end of year)*

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	7,761	8,948	10,606	11,295	12,396
Cards with a debit/credit function	11,212	12,991	14,858	16,279	18,210
<i>of which:</i>					
<i>cards with a debit function</i>	6,659	8,059	9,494	10,555	12,124
<i>cards with a credit function</i>	4,553	4,932	5,364	5,724	6,086
Cards with a cheque guarantee function <sup>(2)</sup>	1,942	2,323	2,187	1,674	1,766
Retailer cards	n.a.	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

(2) Includes eurocheque cards and, up to 1992, cheque guarantee cards for use only in Italy. Since 1991 the latter have gradually been eliminated.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
LOCAL CLEARING	442,689	440,125	292,129	253,189	240,676
Cheques <sup>(1)</sup>	439,362	436,187	288,458	250,617	238,504
<i>out-of-town cheques</i>	238,135	222,395	96,062	85,703	85,782
Bills of exchange <sup>(2)</sup>	1,000	1,680	1,430	1,019	-
Credit transfers <sup>(3)</sup>	-	-	441	325	283
Other items <sup>(1) (4)</sup>	2,327	2,258	1,800	1,228	1,889
MEMORANDA	1,255	1,465	1,804	1,896	2,083
Interbank deposits	411	722	1,020	1,005	731
Foreign operations	721	600	542	533	562
Credit transfers	34	64	147	187	221
Other items <sup>(5)</sup>	89	79	95	171	569
SIPS	1,833	2,311	2,780	3,111	3,526
RETAIL	46,641	125,086	361,783	451,171	489,582
Cheque truncation	13,006	79,162	317,970	321,354	287,179
Bancomat	33,635	45,924	43,813 <sup>(6)</sup>	56,114	61,616
Collection orders	-	-	-	73,703	140,333
Credit transfers	-	-	-	-	454
CENTRALISED ACCOUNTS <sup>(7)</sup>	1,005	949	1,136	1,056	1,016
Payments between banks and the Banca d'Italia or the Treasury <sup>(1)</sup>	1,000	943	1,116	1,013	973
BISS	5	6	20	43	43

(1) Figures relating to 1990 are estimated.

(2) Bills of exchange are included in "Other items" from 1994 onwards.

(3) Credit transfers are included in "Other items" up to 1991.

(4) Includes settlement of securities transactions (up to 1992); payments between the banking system and the Treasury, the Banca d'Italia or the Postal Administration; credit transfers (up to 1991), and Bills of Exchange (from 1994).

(5) The settlement of securities transactions in particular (from 1993).

(6) Estimated figures.

(7) Debits/credits for the settlement of clearing balances are not included.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	ITL billions				
	1990	1991	1992	1993	1994
<b>LOCAL CLEARING</b>	5,430,309	5,696,810	6,345,384	4,622,317	4,255,270
Cheques <sup>(1)</sup>	1,506,627	1,631,530	1,605,684	1,583,041	1,587,415
<i>out-of-town cheques</i>	646,889	643,187	606,197	622,365	629,890
Bills of exchange <sup>(2)</sup>	19,835	48,715	45,193	40,394	-
Credit transfers <sup>(3)</sup>	-	-	1,024,169	732,001	634,657
Other items <sup>(4)</sup>	3,903,847	4,016,565	3,670,338	2,266,881	2,033,198
<b>MEMORANDA</b>	5,148,000	6,332,000	10,450,000	17,067,600	17,972,187
Interbank deposits	3,480,000	5,223,000	8,772,000	11,698,000	11,782,702
Foreign operations	1,014,000	553,000	782,000	987,000	894,808
Credit transfers	128,000	225,000	539,000	716,000	857,732
Other items <sup>(5)</sup>	526,000	331,000	357,000	3,666,600	4,436,945
<b>SIPS</b>	5,647,324	8,273,530	11,994,531	18,293,744	25,928,601
<b>RETAIL</b>	15,956	75,368	262,740	492,310	675,298
Cheque truncation	6,845	63,643	251,554	288,342	286,985
Bancomat	9,111	11,725	11,186	16,152	17,821
Collection orders	-	-	-	187,816	367,504
Credit transfers	-	-	-	-	2,988
<b>CENTRALISED ACCOUNTS <sup>(6)</sup></b>	1,634,400	1,650,500	2,873,100	2,619,500	2,428,800
Payments between banks and the Banca d'Italia or the Treasury	1,608,900	1,613,700	2,775,000	2,538,300	2,318,900
BISS	25,500	36,800	98,100	81,200	109,900

(1) Figures relating to 1990 are estimated.

(2) Bills of exchange are included in "Other items" from 1994 onwards.

(3) Credit transfers are included in "Other items" up to 1991.

(4) Includes settlement of securities transactions (up to 1992); payments between the banking system and the Treasury, the Banca d'Italia or the Postal Administration; credit transfers (up to 1991), and Bills of Exchange (from 1994).

(5) The settlement of securities transactions in particular (from 1993).

(6) Debits/credits for the settlement of clearing balances are not included.

**Table 10**

**Participants in securities settlement systems**  
(end of 1994)

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
LDT	311	n.a.	62
Banks	62	n.a.	62
Stockbrokers	141	n.a.	-
Securities investment firms	108	n.a.	-
CAT	797	n.a.	495
Banks	495	495	495
Stockbrokers	47	47	-
Securities investment firms	135	n.a.	-
Others	120	-	-

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
LDT <sup>(1)</sup>	9,214,689	8,062,324	7,714,770	10,777,761	14,127,128
Government securities	1,905,495	2,186,689	2,854,859	4,047,605	5,343,790
Equity bonds	634,235	584,130	633,301	930,618	834,641
Shares	6,674,959	5,291,505	4,226,610	5,799,538	7,948,697
CAT (government securities)	32,674	118,900	156,900	561,176	845,792

(1) Bilateral balances.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	1990	1991	1992	1993	1994
	ITL billions				
LDT <sup>(1)</sup>	1,485,532	3,083,221	4,187,516	9,562,669	12,539,583
Government securities	1,252,304	2,922,895	4,053,516	9,264,315	12,100,697
Equity bonds	31,196	27,748	25,125	55,547	37,619
Shares	202,032	132,578	180,875	242,807	401,267
CAT <sup>(2)</sup> (government securities)	113,600	324,599	586,274	1,884,042	1,743,402

(1) Bilateral balances.

(2) Procedure launched in September 1990. Figures refer to the nominal value of securities.

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	1990	1991	1992	1993	1994
	ITL billions				
CAT <sup>(1)</sup> (government securities)	-	1,118,300	1,277,189	1,445,448	1,686,211

(1) Procedure launched in September 1990.

**Table I 4**

Indicators of use of various cashless payment instruments:  
volume of transactions <sup>(1)</sup>

	millions				
	1990	1991	1992	1993	1994
Cheques issued	729.7	689.3	674.5	621.6	574.8
<i>of which truncated</i>	-	79.1	317.9	321.3	285.2
Payments by debit and credit cards	47.6	63.5	74.8	81.7	100.6
Paper-based credit transfers	617.2	631.3	660.9	697.7	706.0
<i>customer initiated</i> <sup>(2)</sup>	613.9	628.1	658.0	695.5	703.1
<i>interbank/large-value</i>	3.3	3.2	2.9	2.2	2.9
Paperless credit transfers	159.0	168.7	172.5	178.5	208.4
<i>customer initiated</i> <sup>(2)</sup>	155.9	164.9	167.9	173.6	203.0
<i>interbank/large-value</i>	3.1	3.8	4.6	4.9	5.4
Direct debits	49.9	62.6	69.0	73.2	78.7
Others	168.1	173.4	167.5	159.0	153.1
<i>paper-based transactions</i> <sup>(3)</sup>	91.4	86.8	71.8	59.1	46.5
<i>paperless transactions</i> <sup>(4)</sup>	76.7	86.6	95.7	99.9	106.6
<b>TOTAL</b>	<b>1,771.5</b>	<b>1,788.8</b>	<b>1,819.2</b>	<b>1,811.7</b>	<b>1,821.6</b>

(1) The figures for payment operations effected by banking instruments have been provided by seventy-five banks accounting for approximately 80% of the current account deposits in all banking systems. The data on the other payment operations (Banca d'Italia cashiers' cheques, postal instruments, credit cards, interbank large-value transfers) relate to the entire system.

(2) Excluding payments between credit institutions and their customers, and payments to and from accounts held under the same name at the same deposit-taking institution.

(3) Collections of commercial bills and paper-based bank receipts executed through the banking system.

(4) Collections of electronic bank receipts executed through the banking system.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions <sup>(1)</sup>

	ITL billions				
	1990	1991	1992	1993	1994
Cheques issued	2,130,696	2,156,272	2,223,172	2,170,124	2,108,124
<i>of which truncated</i>	-	63,643	251,554	288,342	291,749
Payments by debit and credit cards	8,635	11,754	14,291	15,671	19,218
Paper-based credit transfers	6,161,729	6,330,668	7,191,203	5,596,276	4,709,208
<i>customer initiated <sup>(2)</sup></i>	648,982	701,174	745,865	791,095	357,110
<i>interbank/large-value</i>	5,512,747	5,629,514	6,445,338	4,805,181	4,352,098
Paperless credit transfers	14,245,811	18,227,933	26,236,791	38,812,084	47,766,143
<i>customer initiated <sup>(2)</sup></i>	3,552,987	3,810,603	4,233,160	4,085,540	4,613,156
<i>interbank/large-value</i>	10,692,824	14,417,330	22,003,630	34,726,544	43,152,987
Direct debits	46,787	61,619	73,741	89,095	106,721
Others	432,247	462,658	468,069	452,127	463,821
<i>paper-based transactions <sup>(3)</sup></i>	247,686	246,974	218,307	186,729	164,891
<i>paperless transactions <sup>(4)</sup></i>	184,661	215,684	249,762	265,398	298,930
<b>TOTAL</b>	<b>23,026,005</b>	<b>27,250,924</b>	<b>36,207,267</b>	<b>47,135,377</b>	<b>55,173,235</b>

(1) The figures for payment operations effected by banking instruments have been provided by seventy-five banks accounting for approximately 80% of the current account deposits in all banking systems. The data on the other payment operations (Banca d'Italia cashiers' cheques, postal instruments, credit cards, interbank large-value transfers) relate to the entire system.

(2) Excluding payments between credit institutions and their customers, and payments to and from accounts held under the same name at the same deposit-taking institution.

(3) Collections of commercial bills and paper-based bank receipts executed through the banking system.

(4) Collections of electronic bank receipts executed through the banking system.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	216	224	218	215	218
of which:					
<i>members</i>	192	196	188	187	186
<i>sub-members</i>	24	28	30	28	32
<i>participants</i>	0	0	0	0	0
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	18,188,905	19,203,007	21,144,390	22,572,543	24,681,961
of which:					
<i>category I</i>	5,852,557	6,110,992	6,695,298	6,845,876	7,596,603
<i>category II</i>	5,132,683	5,359,223	5,783,865	5,904,935	6,063,052
<i>sent/received to/from domestic users</i>	2,802,044	2,944,909	3,465,396	3,751,213	4,235,252
Total messages received	16,973,327	18,148,442	20,008,765	22,189,826	25,066,961
of which:					
<i>category I</i>	-	-	6,101,945	6,930,817	8,061,681
<i>category II</i>	-	-	4,243,352	4,758,663	5,448,679
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Luxembourg

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### **List of abbreviations**

<b>BLUE</b>	Belgian Luxembourg Economic Union
<b>BCEE</b>	<i>Banque et Caisse d'Épargne de l'État Luxembourg</i>
<b>Cedel</b>	<i>Centrale de Livraison de Valeurs Mobilières</i>
<b>CETREL</b>	<i>Centre de Transferts Electroniques</i>
<b>IML</b>	Institut Monétaire Luxembourgeois
<b>NBB</b>	National Bank of Belgium
<b>SYPAL GIE</b>	<i>Groupement d'Intérêt Economique pour la Gestion et la Promotion des Systèmes de Paiement au Luxembourg</i>
<b>UCITS</b>	Undertakings for Collective Investment in Transferable Securities

## Introduction

In the area of payment systems, as in many other fields, the size of the country makes Luxembourg exceptional - it is both smaller and more particular. The domestic market of Luxembourg - a country which had a population of 400,000 in 1994 - does not generate payment flows of a volume similar to those of large industrialised countries. Thus the distinction between large-value payments and retail payments almost loses its relevance.

However, despite being a small economy, Luxembourg is a dynamic international financial centre. In December 1994, there were 222 banks established in Luxembourg. Of these, approximately twenty banks were engaged in domestic banking business (which accounted for about 11.5% of total banking business). Six of these twenty banks belong to the ten largest banks in the market and, with one or two exceptions, also operate in the euro-markets. The other banks are active only in the international markets.

There are also institutional features which distinguish the Luxembourg payment system. Luxembourg is the only country of the European Union in which there are two currencies in circulation. Because of the monetary association between Luxembourg and Belgium, which is a part of the Belgian-Luxembourg Economic Union (BLEU), the Luxembourg franc and the Belgian franc are legal tender in the Grand Duchy and the two currencies have a one-to-one parity.<sup>1</sup> Insofar as Belgium provides Luxembourg with some of the notes and coin it needs, it is, de facto, largely up to Belgium to determine the monetary policy for both currencies.

Besides these general features which have remained unchanged over the past five years, a process of reorganisation of Luxembourg payment systems started in 1994 and is still under way.

A new body (SYPAL GIE) was created in January 1994 on the model of an economic interest grouping. The objectives of this entity are to manage and promote interbank payment systems in Luxembourg.

The first system this grouping has to manage is the new electronic clearing system that went live in October 1994. While this new system is eventually expected to become the only interbank clearing system in Luxembourg, manual clearing will continue to operate in parallel for a transitional period.

A third aspect of this reorganisation process is that the Luxembourg Monetary Institute (*Institut Monétaire Luxembourgeois*, IML) has become the settlement agent for both clearings.

However, the most important aspect of this reorganisation is that all the systems managed by SYPAL GIE and for which the IML is the settlement agent include important risk reduction measures. Binding multilateral debit limits together with full collateralisation shield the settlement agent from credit risk and enable intraday irrevocability in the case of the electronic clearing, in which a clearing process takes place several times a day.

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<sup>1</sup> *The Luxembourg franc does not, however, enjoy the same privilege in Belgium.*

## I. Institutional aspects

### 1.1 General legal aspects

There is no specific legislation dealing with all aspects of payment systems. Most aspects are covered by private contracts between financial institutions, customers and retailers. The *Code Civil* which contains some very general provisions on payments, lists the various valid forms of payment (Article 1,234 ff.), including payment by compensation and payment by novation. Other laws deal with cheques,<sup>2</sup> bills of exchange,<sup>3</sup> the legal tender of the Luxembourg franc,<sup>4</sup> the monetary authority<sup>5</sup> and the supervision of the financial sector.<sup>6</sup> Unlike some other countries, there is no anti-trust legislation in Luxembourg.

New legislation adopted since 1992 introduces improvements in the area of collateral. Thus a Grand-Ducal Decree (*règlement grand-ducal*) of 8th June 1994 makes explicit reference to the possibility of collateral in the form of dematerialised securities. It also gives a general lien to depositories who manage securities clearing and settlement systems over all the securities held in their system.

The applicability of Luxembourg law in the case of securities used as collateral in a Luxembourg clearing system but located with a sub-depository abroad as well as the non-applicability of the zero hour clause are items which are dealt with in a bill currently pending preparation in Parliament.

### 1.2 Financial intermediaries that provide payment services

Two institutions are in charge of the circulation of notes and coin: the Luxembourg branch of the National Bank of Belgium (NBB) for Belgian francs and the IML, together with its agent, the *Caisse Générale de l'Etat*, an offshoot of the Treasury, for Luxembourg notes and coin.

As regards cashless payments, the major players are, of course, the banks, together with the Post Office. The latter has the right to open accounts for the public, but cannot, unlike post offices in some other countries, provide all the banking services that credit institutions normally provide.

There is only one category of bank in Luxembourg; all (except the Post Office) are under the prudential control of the IML. Of 222 banks established in Luxembourg in December 1994, 149 are public limited liability companies under Luxembourg law, sixty-nine are branches of foreign banks, two belong to the public sector and two belong to the co-operative sector. One of the latter is the head of a network of thirty-eight local rural banks. With the exception of this last-mentioned bank and the two public sector banks, all the banks established in Luxembourg form part of international groups. Of these 150 have their headquarters in the European Union.

Since the banking law of 5th April 1993 defines banking activity as collecting funds from the public and giving credit for the bank's own account, the execution of cashless payments is not limited solely to the banks. The number of non-bank institutions operating in this field is, however, very small. Examples of the instruments involved include luncheon vouchers or customer cards issued by oil companies.

<sup>2</sup> Loi sur les chèques, consolidated text of 26th February 1987.

<sup>3</sup> Loi sur les lettres de change et les billets à ordre, consolidated text of 15th December 1962.

<sup>4</sup> Law of 15th March 1979.

<sup>5</sup> Law of 20th May 1983 establishing the Institut Monétaire Luxembourgeois, consolidated text of 21st September 1990, modified by the laws of 16th August 1991 and 5th April 1994.

<sup>6</sup> Law of 5th April 1993.

### 1.3 The role of the central bank

As mentioned above, Luxembourg is in a monetary association with Belgium and the National Bank of Belgium thus has the main competence in the field of monetary policy and foreign exchange policy for both countries. The IML nevertheless has general responsibilities in the area of payments.

#### 1.3.1 General responsibility

Since its creation in 1983, the IML has performed two different functions in the field of payment systems. First, it is the issuing authority for Luxembourg notes and coin.<sup>7</sup> Second, it is also the prudential supervisor of the credit institutions and other financial intermediaries (UCITS, brokers, etc.).<sup>8</sup>

Given the size of the country, the IML has no local branches. It does not act as a banker for the government, except as a depository for part of the government's excess liquidity and gold reserves. A major part of this business is carried out by the *Banque et Caisse d'Epargne de l'Etat* (BCEE).

In 1994 the IML took over the role of settlement agent in the new electronic clearing system. The IML holds accounts for the participating institutions for this purpose. It also provides intraday and overnight liquidity.

#### *Statutory responsibility*

The IML Act does not provide the IML with specific statutory responsibility in the field of payment systems. However, its tasks include the promotion of monetary stability and the supervision of the smooth functioning of the financial markets. The supervisory role and the function of settlement agent are part of this task. The new IML Act which is under preparation in Parliament explicitly mentions, in accordance with the Maastricht Treaty, that the promotion of the smooth functioning

of payment systems is one of the missions of the IML. Another consequence of this Act will be that the IML will itself circulate the Luxembourg notes and coin instead of doing so through the *Caisse Générale de l'Etat*.

#### *Establishment of common rules*

The IML has set up an economic interest grouping together with the participating banks. CETREL (see Section 1.3.4) is the technical agent for this grouping.

The IML has also minimised as far as possible the credit risk it has to bear as settlement agent. It thus requires the full collateralisation of both intraday and overnight debit positions in the clearing accounts. In return, the IML keeps the costs of collateral as low as possible for the participants.

#### *Supervision and audit*

As mentioned above, the IML is in charge of the prudential supervision of the credit institutions and other financial intermediaries.

#### 1.3.2 Provision of processing and settlement facilities

The IML is not the technical operator of the electronic clearing. CETREL - a private company owned by the major banks - is in charge of the technical operation of the central clearing application. It supports also the local interfaces which are implemented on each node of the network.

<sup>7</sup> *Belgian notes and coin issued by the National Bank of Belgium (NBB) and the Belgian Treasury are circulated in Luxembourg through the NBB branch in Luxembourg.*

<sup>8</sup> *In the cases of branches of credit institutions established in other countries of the European Union, primary responsibility lies with the supervisory body of the home country.*

Nevertheless, the IML has other functions besides its role as settlement agent.

First, the IML, on behalf of SYPAL GIE, is in charge of updating the static information stored in the system. Thus, the IML has to update the various parameters of the system: for instance, the information concerning the participants, sub-participants, currencies, type of operations, etc. Among these parameters are also the global debit limits and the possible additional collateral.

The IML is also responsible for starting the clearing period and it monitors the evolution of the net net positions in the different netting processes, both in the electronic and in the manual clearing. By doing so, it ensures that the combination of two net net positions of a single participant does not result in its global debit limit being breached.

Furthermore, the IML certifies the public keys used for encryption purposes by all the members of the electronic network.

#### *Provision of settlement accounts*

The results of the final netting - which in the case of a multilateral netting is one single net net position per participant and per clearing - are booked by the IML on dedicated clearing accounts. Other items posted to these accounts are: received and paid interest, fees, credit transfers arranged between two or more participants, and transfers to or from the accounts held by the participants at the National Bank of Belgium.

#### *Provision of credit facilities*

Since electronic clearing enables the irrevocable exchange of payments during the day, the settlement agent grants de facto intraday credit to the participants which have net net debit positions. Furthermore, the settlement agent grants overnight credit to the participants which have a debit balance

on their account at the end of the day. Conversely, participants with credit balances leave an overnight deposit with the IML. Both intraday credit and overnight credit have to be fully collateralised.

At present, the pledged securities are held in the securities settlement system of the National Bank of Belgium, with which most of the Luxembourg banks have accounts. Due to this fact, only Belgian public debt securities are accepted as collateral. The IML would nevertheless like to widen this choice and is considering a link with Cedel (see Section 4 and Chapter 16) to allow the banks to have a wider range of securities they can pledge. The collateral has to be pre-deposited one day before the overdraft is made in accounts in the name of the IML.

#### *Pricing policies*

The investment and operating costs incurred by the IML in its capacity as settlement agent are borne by the participants. This full cost recovery is obtained through a fixed annual fee combined with a fee per transaction exchanged in both clearings.

### **1.3.3 Monetary policy and payment systems**

The Luxembourg payment systems are, as mentioned above, embedded in the Belgian franc zone and the Luxembourg franc is, together with the Belgian franc, firmly pegged to the Deutsche Mark. As a result of the monetary association between the two countries, interest rates applied by the IML on overnight balances are identical to those applied by the National Bank of Belgium. This precludes any possibility of arbitrage between the two monetary authorities.

All the banks involved in the Luxembourg payment system have accounts with the NBB and some are also active in the securities clearing of the NBB.

These two channels are normally used in connection with monetary policy operations. Luxembourg banks do not, however, participate in the NBB's manual clearing system, which is to be replaced by the Belgian RTGS system. Most of the banks have correspondent banking relationships with the major Belgian commercial banks and use these accounts to handle their operations in the Belgian money market.

#### **1.3.4 The role of other private and public sector bodies**

Several private companies are engaged in the Luxembourg payment system:

CETREL (*Centre de Transferts Electroniques*) is a company which was set up by nine banks and the Post Office and which provides

services in the field of electronic payment systems. It manages the ATMs and POS terminals of the Bancomat, VISA and Eurocard networks and operates the central application of the electronic clearing.

Two private companies, Eurocard Luxembourg and VISA Luxembourg, organise the collection, encoding and dispatch of payment instructions from the Eurocard network and the VISA network. Both companies function with the technical support of CETREL.

## **2. Payment media used by non-banks**

The various payment instruments in use in the Luxembourg domestic market are cash, credit and debit transfers, cheques, credit and other payment cards, and bills of exchange.

### **2.1 Cash payments**

The IML issues notes of LUF 5,000, 1,000 and 100 and coins of LUF 50, 20, 5 and 1. There are also Luxembourg coins of LUF 0.25 issued by the State. Belgian currency, which circulates in both countries, consists of notes of BEF 10,000, 2,000, 1,000, 500 and 100 and coins of BEF 500, 250, 50, 20, 5, 1, and 0.5.

The monetary association between Luxembourg and Belgium provides for a ceiling on the Luxembourg national money supply, because, as mentioned above, the Belgian franc is also legal tender in

Luxembourg. The starting-point for calculating the above-mentioned ceiling is the volume of notes and coins (M0) of the whole BLEU. It is not possible to measure Luxembourg's share of BLEU M0. This can only be estimated on the basis of the proportion of the Luxembourg population in the total BLEU population. When calculated in this way, Luxembourg M0 contains both Luxembourg and Belgian notes and coin. For 1994 the issuing limit for Luxembourg francs was LUF 5.9 billion; LUF 5.7 billion were in fact issued in December 1994. At the same time, Luxembourg M0 was estimated at LUF 15.7 billion.

The only restriction to legal tender applies to the compulsory acceptance limit for coins. Whereas notes must be accepted up to any amount, the compulsory acceptance limit for any single coin is one hundred times its unit value.

Since no precise figures are available for the share of payments made in cash, only qualitative or indirect indications can be given. A survey carried out in 1992 showed that for payments below LUF 1,000, 91% of people use cash to make their purchases in shops; for payments between LUF 1,000 and 3,000 the proportion is 71%, and for payments between LUF 3,000 and 5,000 49% still use cash. It is interesting to note that even for large-value payments (payments above LUF 100,000) 9% of those interviewed still use cash as the payment instrument.

## 2.2 Non-cash payments

The money available for cashless payments is deposit money (*monnaie scripturale*), which represents 82.3% of the monetary stock (M1). 16.1% of deposits are kept in Post Office accounts, the remainder in credit institutions. As in other countries, there are various types of account: fixed-term deposits, savings accounts, and current accounts. The latter, which allow withdrawals at any time, are normally the only type which can be used for cashless payments. As regards interest on accounts, there are diverse rates. Whereas, in the case of current accounts, banks normally offer 0.5% per annum for amounts exceeding LUF 40,000 (approximately ECU 1,020), there is no common rule for interest rates applied to fixed-term deposits. In the case of savings accounts, banks normally offer a base rate (average 5% in 1994), a loyalty premium (average 1%) and an increase premium (average 1.5%) calculated on the net increase in the savings. In most cases no fees are charged for managing current or savings accounts, except for some special services (transfers abroad, cheques abroad, settlement, etc.). The various instruments for making cashless payment are described below.

### 2.2.1 Credit transfers

The credit transfers performed represent more than half of all payment orders. Different types of credit transfer are offered to the customer, such as ordinary transfers or standing orders. Credit transfers are mainly used when the customer makes a payment following receipt of a bill. In this case, between 59% and 75% of those interviewed in 1992 used credit transfers, depending on the amount.

Since electronic clearing began in October 1994, a growing proportion of credit transfers have been cleared electronically. Since several participants in the manual clearing have not yet joined the electronic clearing, a number of credit transfers continue to be processed manually, although this will eventually disappear.

Standing orders are treated as a particular type of credit transfer as far as the electronic system is concerned.

### 2.2.2 Cheques

Some banks still offer their own cheques, particularly to their corporate customers, but most credit institutions offer eurocheques. These allow customers to issue guaranteed cheques, provided their cheque card number is written on the back of the cheque and the amount does not exceed LUF 7,000. If not, although the cheque may be valid, it is not guaranteed. The eurocheque system includes an automatic overdraft facility for the customer of LUF 50,000.

The use of cheques is currently declining. In 1992 cheques were used for retail purchases in 8 to 22% of cases. Following receipt of a bill, cheques were used in 3 to 7% of cases.

At present cheques are only cleared in the manual clearing, but cheque truncation is due to be introduced in April 1996.

### 2.2.3 Direct debits

To simplify the execution of payments, banks promote collected transfer orders such as standing orders (*ordres permanents*) or direct debits (*domiciliations de créances*). In the latter case the payment is based on a prior written agreement between the debtor and the bank. Before each debit is made from the account, the debtor receives an invoice and thus has the opportunity to challenge the payment. CETREL is currently operating a central application for direct debits. It collects banks' customers' invoices, generates the transfer orders and computes the net net positions necessary for the settlement.

### 2.2.4 Payment cards

The total number of cards circulating in 1994 was 431,400. Two payment card systems compete in the Luxembourg market: a local debit card called Bancomat, which is mostly linked with a eurocheque card (cheque guarantee card) and the traditional credit cards, e.g. VISA, Eurocard and American Express. Bancomat and VISA have the largest market shares.

#### Debit cards

##### ■ Bancomat

Bancomat is the market leader with 204,000 cards, of which 175,000 are Bancomat and joint eurocheque-Bancomat cards, and 29,000 are POSTOMAT cards (see below). Both cards - eurocheque-Bancomat and Bancomat-POSTOMAT - are standard debit cards which allow customers to withdraw cash at Bancomat and POSTOMAT ATMs or to make payments at electronic points of sale in Luxembourg. Insofar as it is a eurocheque card, the holder can withdraw cash in almost every other European country at ATMs bearing the eurocheque international logo.

Bancomat is run by a group of local credit institutions which have adopted common guidelines and standards for their electronic payment system. The technical operation of the system is undertaken by CETREL, (described in Section 1.3.4). In 1995 the Bancomat network consisted of approximately 220 online EFTPOS terminals based on leased lines, and 4,000 automatic online points of sale linked to the central computer via the public telephone network. This system allows payments to be made by telephone using a modem ("dial up" system). Both types of terminal check the following items: validity, expiry date, weekly withdrawal or purchase limit (LUF 25,000 for ATMs and LUF 50,000 for POS terminals) and finally the PIN code. In 1994 there were 8,500,000 transactions (3,600,000 at ATMs and 4,900,000 at POS terminals). The average value of each transaction was LUF 2,800.

The costs of the system are shared by the banks, retailers and banks' customers through the annual card fee. The banks' costs are shared between the customer's bank, which bears one-third and the retailer's bank, which bears two-thirds. CETREL charges the banks as follows: LUF 28 for transactions at outdoor payment terminals (PTOs), LUF 17 for transactions at online EFTPOS terminals, and LUF 27 for normal POS transactions. The retailer rents the equipment and pays a fixed amount plus a percentage on each transaction.

#### Credit, travel and entertainment cards

##### ■ VISA

Standard VISA credit cards (with the option of extended credit) are issued in Luxembourg. All the banks involved in the retail banking business and the Post Office offer VISA cards to their customers. 162,000 cards were in use by customers of Luxembourg banks and the Post Office at the end of 1994.

In December 1994 the VISA network comprised 130 ATMs and 4,000 POS terminals provided by CETREL with two different features: an online procedure and a semi-online procedure (which requires a special authorisation from the customer's bank if the transaction exceeds a certain floor limit). There are a further 1,500 purely mechanical points of sale.

The VISA electronic terminals (ATMs and POS terminals) check the expiry date, validity, and floor limit. Cash withdrawals at VISA ATMs also require a PIN code, whereas card payments are signature-based. Transactions using domestic and international cards are cleared by CETREL, the service provider of the licence company, VISALUX, created in 1991. Verification can be obtained world-wide in no more than forty-five seconds.

The final settlement of a VISA transaction is made by one or more transfers from a customer's current account. In 1994, 4 million VISA transactions with a value of approximately LUF 12.5 billion were made in Luxembourg. During the same period, VISA customers in Luxembourg carried out 1,900,000 transactions abroad with a value of LUF 8 billion. The electronic VISA system also accepts payments by American Express and Diners Club cards.

The costs of the system are shared between, on the one hand, the customer, who pays an annual card fee, which is a percentage of his/her cash withdrawals and interest on any extended credit and, on the other, the retailer, who pays a retailer discount fee, which covers the service of guaranteed payment of all card transactions. Retailers are paid on a daily basis, whereas customers are debited once a month.

■ Eurocard-MasterCard

Eurocard-MasterCard is the third largest network in Luxembourg with 65,400 cards in 1994. Eurocard-MasterCard cards are

accepted at the 4,000 POS terminals of CETREL. There are a further 1,500 manually operated machines.

As in the VISA system, the electronic POS terminals check the card's validity, expiry date, and floor limit. Technical support is provided by CETREL on behalf of the licence company EUROPAY Luxembourg. Retailers are paid on a daily basis, whereas customers are debited once a month. In 1994, 900,000 Eurocard transactions with a value of approximately LUF 3.1 billion were made in Luxembourg. During the same period, Eurocard customers in Luxembourg carried out 650,000 transactions abroad with a value of LUF 3.3 billion.

*ATM and POS networks*

Bancomat, VISA and Eurocard are accepted together with other international credit cards by the Luxembourg ATM network that is managed by CETREL. With regard to POS terminals, Bancomat, on the one hand, and VISA and Eurocard, on the other, use separate networks.

**2.2.5 Postal instruments**

The POSTOMAT card enables the holder of a post office account to withdraw cash at any Bancomat or POSTOMAT ATMs in Luxembourg. Cash can also be withdrawn abroad with the POSTOMAT card and a cheque (at present in twenty-nine countries). The POSTOMAT has no POS terminals of its own but POSTOMAT cards are accepted in Bancomat terminals.

**2.3 Recent developments**

Multiline is the name of a new common telecommunications system for corporate customers which was set up in February 1992 by the three largest banks in the domestic market. It offers customers a large

range of banking services such as the monitoring of accounts, the initiating of transfer orders, the communication of financial information, etc. Payment orders and direct

debits, which are generated through this fully computerised system, can be channelled into the electronic clearing (see Section 3.3).

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

In 1994 the IML, together with three of the main banks involved in the Luxembourg payment systems, set up an economic interest grouping called SYPAL GIE. The objective of this grouping is to manage and develop the interbank clearing systems in Luxembourg. These are at present the electronic clearing and the manual clearing, both of which operate on a netting basis. The latter is, however, only provisional and will disappear as soon as the Post Office and all the banks which participate in the manual clearing have joined the electronic system.

Each participant in either the manual or the electronic clearing system must be a member of SYPAL GIE. This body promulgates the common rules that are applicable in the system. It also signed a contract with CETREL, its technical agent in the system.

The decision-making body in SYPAL GIE is the board (*Conseil de Gérance*) which has seven members. The IML is represented on the board as a matter of course. The other participants are represented on the basis of the volume of payments which they exchange in the two payment systems managed by SYPAL GIE.

#### 3.2 Real-time gross settlement (RTGS) systems

In the first half of 1995 the IML announced its intention to set up an RTGS system for Luxembourg in order to offer independent

access to the TARGET system to all the banks established in Luxembourg.

Discussions with the banking community concerning the design of the Luxembourg RTGS system began in the second half of 1995.

#### 3.3 Electronic clearing system

In October 1994 a new electronic clearing system based on a telecommunications network became operational. This network, to which the participating banks, the technical operator (CETREL) and the settlement agent (IML) are connected, is used for the transfer, netting and settlement of payment instructions between banks.

In a first step, only the three banks that were involved in the design and set-up stage participated in the system. During 1995-96 ten other participants will join the system.

The payments currently exchanged in the electronic clearing are domestic payments denominated in Luxembourg francs or Belgian francs. The design of the electronic clearing makes it a full multi-currency clearing, but because specific settlement procedures for foreign currencies have not yet been agreed, this functionality is not used at present.

### 3.3.1 Functioning rules

The functioning rules of the electronic clearing were promulgated on 27th September 1994. They cover all the relevant aspects of the clearing system: access conditions, technical requirements, pricing principle, processing, system of limits, procedures of additional cover, availability of the system, etc.

### 3.3.2 Participation in the system

Access to the system is limited to credit institutions and the Post Office. They must be members of SYPAL GIE, accept the existing rules and hold accounts with the IML. Participation in the system is also subject to an entrance fee which represents the new member's share in the investments made.

The board of SYPAL GIE (*Conseil de Gérance*) is limited to seven members. The settlement agent is automatically a member. To be a member of the board, a participant has to generate individually at least 1/6 of the payment flows. Those participants which generate individually less than this proportion but collectively at least 1/6 of the payment flows can delegate one common representative to the board.

### 3.3.3 Types of transactions handled

The types of transaction handled in the electronic clearing are credit transfers (*virements*), and standing orders (*ordres permanents*). Cheques will be added in the near future. From a technical point of view, the clearing system itself can handle all types of credit or debit transfers. Although it is possible to limit the value of payments handled by the system, there are at present no restrictions concerning the value of a transaction in the electronic system.

### 3.3.4 Operation of the transfer system

The payments cleared in this system are grouped in batches at the sending bank and netted following preliminary checks at the technical centre. One batch can include up to 1,000 single payments.

The network is star-shaped, which means that each payment batch sent through the system is first received and checked and then netted by the technical operator. Immediately after being netted, the payments are forwarded to the counterparty who can book them without delay.

The netting process takes place several times a day. At present there are six netting processes. The clearing period starts the day before, after the closing of the preceding period. The first netting process takes place at 4 a.m., with the others following at 7 a.m., 9 a.m., 11 a.m., 2 p.m. and 3 p.m. In each netting process the multilateral net position of each participant is checked against its global debit limit. If the limit is breached, an algorithm selects the last payments that caused the limit to be breached and places them in a waiting queue. Same-day value payments are accepted until 2 p.m. Participants have the opportunity to have payments placed in the waiting queues cleared by adding collateral. The final netting takes place at 3 p.m. At this time only those payments that are in a waiting queue can be netted.

The principle of this selection mechanism in the waiting queue is the "first fit" principle applied to the received set of payments. All the payments received since the last netting process are filtered by this algorithm into a chronological order. Those which cause limits to be breached are postponed.

### 3.3.5 Transaction processing environment

The electronic clearing uses a private network. It is a file-oriented system that functions on the basis of the "store and forward" principle. The banks operate their access point on a UNIX platform. Backup procedures have been designed in order to enable data to be exchanged by means of cassettes in the event of a breakdown of the telecommunication lines. All the banks have high-availability systems to cover the risk of a variety of hardware failures. There is a test environment on the standby platform to test new software releases and validate the information flows of new participants.

### 3.3.6 Settlement procedures

Following the last netting the participants agree upon transactions among themselves in order to reduce their position vis-à-vis the settlement agent. These transactions are posted directly by way of S.W.I.F.T. messages to the accounts held by the IML, as a settlement agent, in the name of the participants. The closing balances on these accounts are cleared during the morning of the following day.

### 3.3.7 Credit and liquidity risk

The IML defines a global debit limit for each participant in both clearing systems. This limit depends on the payment flows which the participant exchanges in both systems. These systems are designed in such a way that the breaching of a limit is not possible without authorisation by the IML. In order to ensure the consistency of the information concerning the available liquidity in both clearing systems, an automatic telecommunications system has been implemented. Since these limits are binding, the credit risk of the settlement agent is considerably reduced. If one participant cannot clear its closing day debit position the following day, its global debit limit is reduced

accordingly. Only after repeated failures or in the event of a suspension of payments by the participant, can the collateral be realised.

The amount of collateral which an individual participant has to deposit depends on its global debit limit. Debt limits are based on the participants' net net positions during the preceding year. The method of calculation has been agreed by the board of SYPAL GIE and the IML is in charge of calculating and monitoring the global debit limits of all the participants. In normal circumstances, the global debit limits are revised on a quarterly basis.

### 3.3.8 Pricing

Besides the entrance fee which represents recovery of the initial investment costs, participants have to pay the operating costs of the technical operator and of the settlement agent.

## 3.4 The manual clearing

The manual clearing system will continue to operate during the implementation phase of the electronic clearing system. A new manual clearing system started in September 1995, but use of this new system is only intended to be transitional. It will operate only as long as there are members of the present clearing who have not joined the electronic clearing system. Fourteen institutions (banks and the Post Office) participate in the clearing house. The two-tier system allows other banks and members of the stock exchange to take part in the clearing via a direct participant.

This new manual clearing differs from the former *Chambre de Compensation* in two respects: first the IML is the settlement agent, and second the risk reduction measures that have been adopted for the electronic clearing are also extended to the manual clearing. This means that the global debit limits will even be binding for the manual clearing. For

those participants who are in both clearings, the net net positions of both clearings are totalled.

During 1994 the value of all payment orders presented in the clearing house amounted to approximately LUF 516.4 billion. This total fell by 69.1% in the netting process, with only 30.9% of the total being settled at the BCEE (*Banque et Caisse d'Epargne de l'Etat*). In 1994 the highest value settled during one session was LUF 4 billion and the largest debit balance for a single bank was LUF 1.3 billion. The number of orders recorded as being exchanged was approximately LUF 5.9 million, although the real figure is higher because a single tape, which may include many payment orders, is only recorded as a single exchange.

The payments exchanged in the manual clearing are mainly domestic payments denominated in Luxembourg francs or Belgian francs. Settlement is effected in Luxembourg francs. Transactions in other currencies are also exchanged in the manual clearing, but they are settled bilaterally via correspondent banking accounts.

#### **3.4.1 Functioning rules**

The functioning rules of the manual clearing were promulgated on 21st March 1995. They cover all the relevant aspects of the clearing system: access conditions, technical requirements, pricing principle, processing, system of limits, additional cover procedures, etc.

#### **3.4.2 Participation in the system**

Access to the system is limited to credit institutions and the Post Office. Participants must be members of SYPAL GIE, accept the existing rules and hold accounts with the IML. Furthermore, participants have to undertake to participate in the electronic clearing.

#### **3.4.3 Types of transactions handled**

The following types of payment are handled in the manual clearing: credit transfers, cheques, standing orders and coupon payments.

The payments exchanged in the manual clearing are mainly domestic payments denominated in Luxembourg francs or Belgian francs. Settlement is effected in Luxembourg francs. Transactions in other currencies are also exchanged in the manual clearing, but they are settled bilaterally via correspondent banking accounts.

#### **3.4.4 Transaction processing environment**

The clearing is based on the physical exchange of payment orders. It is nevertheless computer-assisted insofar as each participant has to present the statement of its bilateral turnover in the form of an electronic file. This makes it possible for net net positions to be calculated rapidly and for the available debit limit to be checked. If this is not breached, the clearing is final. Settlement takes place at 3 p.m. together with the settlement of the electronic clearing.

#### **3.4.5 Settlement procedures**

Following the last netting in the electronic clearing, at 3 p.m., the participants agree upon transactions among themselves in order to reduce their position vis-à-vis the settlement agent. These transactions are posted directly by way of S.W.I.F.T. messages to the accounts held by the settlement agent in the name of the participants. The closing balances on these accounts are cleared during the morning of the following day.

### 3.4.6 Credit and liquidity risk

As both clearings are settled in the accounts of the IML, a single set of risk reduction measures are applied to all participants (see Section 3.3.7).

### 3.4.7 Pricing

In the manual clearing, the costs incurred by SYPAL GIE (such as the rental costs for the premises) and those incurred by the settlement agent are recovered in full. This full cost recovery is obtained through a fixed annual fee combined with a fee per transaction exchanged in both clearings.

## 4. Securities settlement systems

As regards securities settlement systems, the Luxembourg banks commonly use two systems: Cedel,<sup>9</sup> which is established as a bank in Luxembourg, and the securities clearing system of the National Bank of Belgium. Cedel is used for most national and international securities and is, for instance, the depository for Luxembourg public linear bonds (OLUX). The clearing system of the National Bank of Belgium allows the Luxembourg banks to trade in Belgian public debt securities.

Both depositories have their own securities accounts, settlement accounts, credit facilities and securities lending. For more details, see the sections concerning these two clearing systems.

At present, the IML holds securities accounts in the securities clearing system of the National Bank of Belgium for the collateral pledged in the two clearing systems for which it is settlement agent. A link with Cedel is under consideration.

The Luxembourg securities market is, like the country itself, very modest in size when compared to other securities markets in the European Union. The market for public securities is particularly small.

Issues in Luxembourg francs have found favour in recent years: there were 195 publicly listed bond issues for a total amount of LUF 327 billion. The total outstanding amount of all Luxembourg franc-denominated issues was LUF 767 billion.

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<sup>9</sup> See Chapter 16.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	384.4	382.8	392.5	398.1	403.8
Gross domestic product (LUF billions)	345.7	372.4	398.2	438.1	468.6
Exchange rate vis-à-vis ECU <sup>(2)</sup>	42.423	42.2224	41.6062	40.4672	39.662

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**
*(end of year)*

	LUF billions				
	1990	1991	1992	1993	1994
Notes and coins	15.8	16.1	15.5	16.3	15.7
Transferable deposits	57.0	64.3	67.5	70.8	88.8
Narrow money supply (M1)	72.8	80.4	83.0	87.1	104.5
Other	0	0	0	0	0

**Table 3**
**Settlement media used by deposit-taking institutions**
*(end of year)*

	LUF billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	0	0	0	0	0
Free reserves held at central bank					
Transferable deposits at other credit institutions	503	594	660	n.a.	n.a.
Broad money aggregate	411.4	458.5	488.6	n.a.	n.a.

**Table 4****Banknotes and coins***(total value, end of year)*

	LUF billions				
	1990	1991	1992	1993	1994
Total banknotes issued	2,876.9	2,709.3	2,548.0	5,355.6	4,797.6
of which:					
LUF 5,000	0	0	0	2,717.7	2,950.6
LUF 1,000	2,639.4	2,469.6	2,316.8	2,398.3	1,613.7
LUF 100	237.5	239.7	231.2	239.6	233.3
Coins issued	637.0	700.5	686.0	683.9	694.5
Notes and coins held by credit institutions	3,167.8	3,382.5	3,976.5	4,171.4	4,265.1
Notes and coins in circulation outside credit institutions <sup>(1)</sup>	15,800.0	16,100.0	15,500.0	16,300.0	15,700.0

(1) These data include the Belgian notes and coins which are legal tender in Luxembourg.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (LUF billions)
Central bank	1	0	0	0
Commercial banks	222	364	1,488.0 <sup>(1)</sup>	2,889.6
Savings banks	0	0	0	0
Co-operative and rural banks	2	38	n.a.	n.a.
Post Office	1	0	99.2	26.8
<b>TOTAL</b>	<b>226</b>	<b>402</b>	<b>1,587.2</b>	<b>2,916.4</b>
Branches of foreign banks	69	n.a.	n.a.	n.a.
of which EC-based	58	n.a.	n.a.	n.a.

(1) This figure indicates the number of different customers holding deposits with banks in Luxembourg.

**Table 6**
**Cash dispensers, ATMs and EFTPOS terminals**  
*(end of year)*

	1990	1991	1992	1993 <sup>(1)</sup>	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	2	2	2	2	2
Number of machines	77	87	120	117	151
Volume of transactions (millions)	2.7	2.9	3.4	3.8	4.1
Value of transactions (LUF billions)	13.4	13.9	15.5	17.6	20.3
<b>EFTPOS terminals</b>					
Number of networks	3	3	3	3	3
Number of points of sale <sup>(1)</sup>				3,340	3,663
Volume of transactions (millions)	6.2	7.4	8.2	8.8	11.8
Value of transactions (LUF billions)	19.7	24.1	27.9	23.5	32.2

(1) Electronic terminals only.

**Table 7**
**Number of payment cards in circulation <sup>(1)</sup>**  
*(end of year)*

	1990	1991	1992	1993	1994
	thousands				
Cards with a cash function	293.5	324.9	384.4	331.7	359.8
Cards with a debit/credit function	293.5	324.9	384.4	393.2	421.6
<i>of which:</i>					
<i>cards with a debit function</i>	151.9	164.8	204.3	183.7	209.5
<i>cards with a credit function</i>	141.7	160.0	180.2	209.5	212.1
Cards with a cheque guarantee function	151.9	164.8	204.3	239.7	248.6
Retailer cards	n.a.	n.a.	n.a.	n.a.	n.a.

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Clearing house	5.9	6.1	6.2	6.0	6.3
Automated clearing house	n.a.	n.a.	n.a.	n.a.	n.a.
Large-value systems	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	LUF billions				
	1990	1991	1992	1993	1994
Clearing house	517.0	593.0	681.0	808.3	801.4
Automated clearing house	n.a.	n.a.	n.a.	n.a.	n.a.
Large-value systems	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 10**

## Participants in securities settlement systems

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
CEDEL	n.a.	n.a.	n.a.

**Table 11**Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
CEDEL	7,274,160	8,360,280	8,135,280	9,227,160	9,271,080

**Table 12**Transfer instructions handled by securities settlement systems:  
value of transactions

	LUF billions				
	1990	1991	1992	1993	1994
CEDEL	75,292.6	104,329.4	157,260.5	207,994.5	223,766.9
Short and medium-term notes	18,718.4	23,605.6	30,081.9	38,450.5	40,998.2

**Table 13**

## Nominal values registered by securities settlement systems

*(end of year)*

	LUF billions				
	1990	1991	1992	1993	1994
CEDEL					
Market value of securities deposited as of 31st December	14,066.1	16,979.6	20,608.8	25,919.6	27,723.9

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994 <sup>(1)</sup>
Cheques issued	n.a.	4.0	n.a.	n.a.	2.5
Payments by debit and credit cards	n.a.	10.2	n.a.	n.a.	15.5
Credit transfers	n.a.	15.7	n.a.	n.a.	30.0
Direct debits	n.a.	8.2	n.a.	n.a.	2.0
Others	n.a.	-	n.a.	n.a.	-
<b>TOTAL</b>	n.a.	38.1	n.a.	n.a.	53.0

(1) These figures were based on an estimate from an ad hoc enquiry performed in December 1995. Unlike the enquiry of 1991, this enquiry includes the intra-bank credit transfers. Inter-bank credit transfers amounted to 17.3 million transactions and to a global value of LUF 4,378.7 million.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	LUF millions				
	1990	1991	1992	1993	1994 <sup>(1)</sup>
Cheques issued	n.a.	245.8	n.a.	n.a.	145.4
Payments by debit and credit cards	n.a.	38.1	n.a.	n.a.	49.0
Credit transfers	n.a.	2,856.1	n.a.	n.a.	9,643.9
Direct debits	n.a.	42.0	n.a.	n.a.	38.2
Others	n.a.	-	n.a.	n.a.	-
<b>TOTAL</b>	n.a.	3,182.0	n.a.	n.a.	9,876.5

(1) These figures were based on an estimate from an ad hoc enquiry performed in December 1995. Unlike the enquiry of 1991, this enquiry includes the intra-bank credit transfers. Inter-bank credit transfers amounted to 17.3 million transactions and to a global value of LUF 4,378.7 million.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	103	116	127	128	140
of which:					
members	19	23	20	23	26
sub-members	84	93	107	105	114
participants	0	0	0	0	0
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
members	1,812	1,963	2,074	2,103	2,412
sub-members	1,469	1,607	1,738	1,802	2,023
participants	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	6,847,561	7,918,440	8,778,092	10,269,903	11,334,220
of which:					
category I	561,213	1,754,424	186,946	2,064,159	2,212,835
category II	430,845	657,813	3,177,649	3,617,697	3,658,917
sent/received to/from domestic users	839,165	1,100,597	1,404,567	1,748,639	1,952,674
Total messages received	5,140,932	6,248,039	7,301,934	8,651,024	9,611,417
of which:					
category I	n.a.	n.a.	n.a.	1,026,732	1,051,652
category II	n.a.	n.a.	n.a.	1,060,877	1,040,092
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>AIDA</b>	Automatic Interprofessional Dealing system Amsterdam
<b>ASSET</b>	Amsterdam Stock Exchange Trading system
<b>BEANET</b>	Dutch common institute for EFTPOS payments
<b>CD</b>	Certificate of Deposit
<b>CP</b>	Commercial Paper
<b>EOCC</b>	European Options Clearing Corporation
<b>EOE</b>	European Options Exchange
<b>FTA</b>	Dutch futures exchange - <i>Financiële Termijnmarkt Amsterdam</i>
<b>MTN</b>	Medium-Term Note
<b>Necigef</b>	Dutch institute for giral transfer of securities - <i>Nederlands Centraal Instituut voor Giraal Effectenverkeer</i>
<b>NIEC</b>	Dutch interprofessional securities centre - <i>Nederlands Interprofessioneel Effectencentrum</i>
<b>TOP</b>	Name of the future RTGS system of De Nederlandsche Bank
<b>TSA</b>	Trading System Amsterdam

## Introduction

In common with payment systems around the world, the Dutch payment system has been influenced in recent years by technological innovation and evolving payment habits. The key characteristics, however, have remained largely the same. The Netherlands is still very much a credit transfer or giro country. Of the cashless payments, about 95% are made by means of some form of giro transfer and some 5% are made by (guaranteed) cheque. The providers of the payment services co-operate quite closely. Payment services are provided by De Nederlandsche Bank and the deposit-taking institutions, including the Postbank (the former Postal Cheque and Giro Services, which offers, as far as payment and savings facilities are concerned, the same services as the other banks). The circuit of De Nederlandsche Bank is a specific circuit mainly for interbank transfers. Both of the other private sector circuits (that of the Postbank and that of the other banks) offer a wide variety of services to their customers. Interbank co-operation is reflected in a

common clearing house, in which practically all the banks (with the exception of the Postbank) participate. The National Payment Circuit project, which aims at a further integration of the three circuits mentioned above, is nearing completion. The processing of payments is highly automated. This does not apply only to the payments processed within the different circuits, but also to the inter-circuit payments.

As far as electronic retail payments are concerned, little interest was shown for a long period of time, compared with other developed countries. In recent years, however, the picture has been changing. Banks have been installing more and more ATMs and a common EFTPOS system is in operation. Credit card payments do not play a significant role in the Dutch payment system. The vast majority of Dutch households and businesses hold one or more payment accounts. At the end of 1994 there were 17.7 million accounts, which is slightly more than one per head of the population.

## I. Institutional aspects

### 1.1 General legal aspects

There is no specific legislation governing payments in the Netherlands; the normal civil and commercial laws apply. Both coin (up to a certain amount) and banknotes are legal tender. A provision was included in the new Civil Code of 1992 to the effect that a transfer payment is equivalent in law to a payment made in coin or banknotes.

A specific characteristic of Dutch law regards the existence of the so-called “zero hour rule”, which implies that, if a bankruptcy is declared, all transactions of the failing party can be nullified retroactively to midnight on the day on which the court issues the winding-up order. The effect of the zero hour rule, however, is mitigated by the fact that Dutch law makes comprehensive provision for the compensation of existing claims on the failing party. With regard to the implications of the zero hour rule on the interbank payment system, it is widely assumed that, for practical reasons, the zero hour rule does not have any specific consequences for the operational process of interbank payments on the day of the court order; in the liquidation stage, however, there is an impact on the determination of the claims and liabilities of the bankrupt party’s estate. Although this restricts the potential effect of the zero hour rule, the relevant authorities are now considering, in line with the approach in other countries, the possibility of no longer applying the rule to transactions in payment systems.

The Bank Act of 1948 contains a section which, in general terms, provides that De Nederlandsche Bank must facilitate domestic money transfers.

On the basis of that Act, the Bank is closely involved in the development of the payments system.

The Second Banking Co-ordination Directive of the European Community is clearly applicable, which entitles any institution registered as a bank in a Member State to offer payment services in the other Member States without having to be licensed in those other Member States. At present, there are no foreign banks participating in the Dutch payment system on this basis.

### 1.2 Financial intermediaries that provide payment services

The banking sector in the Netherlands consists of commercial banks, banks organised on a co-operative basis, savings banks, the Postbank, mortgage banks and security credit institutions. The latter two types of institution will not be dealt with here, since they do not offer payment services; they have access to the payment system only through an account at a deposit-taking institution. As is also the case in many other countries, the various deposit-taking institutions basically offer the same range of services.

Until the 1960s, the banks did not play a significant role in the retail payment business. They dealt primarily with corporate payments, while the former Postal Cheque and Giro Services handled virtually all cashless transactions made by private individuals. This segregation of the market changed when the banks, prompted by their need for additional deposits which would enable them to expand their lending operations and improve their liquidity, began widely promoting the use of payment accounts by the public. Automation had advanced sufficiently to allow the large numbers of payment orders resulting from such accounts to be processed. The banks enhanced the efficiency of the interbank payment process by founding a common clearing house, which implied the creation of a second payment circuit in addition to that of the Postal Giro. For many years, the two

circuits operated virtually independently. In recent years this situation has gradually started to change, notably because of the National Payment Circuit project.

#### *Commercial banks*

There are ninety-seven commercial (universal) banks in the Netherlands. This figure includes establishments of foreign banks dealing mainly with payments on behalf of corporate customers. The banks may offer a wide range of services to their customers, including payment facilities, loans and mortgages, foreign exchange, stockbroking services and often also travel services. They operate in both the retail and the wholesale market. The largest banks are represented throughout the country and have a network of foreign offices.

#### *Banks organised on a co-operative basis*

The 595 banks in this category operate de facto as a single institution, with Rabobank Nederland as their central organisation. The Rabobanks are strongly represented in rural areas. Originally, the Rabobanks were agricultural credit institutions, but they have since developed a full range of banking activities and are also represented in the cities. Although the individual banks are independent in many ways, the products offered are completely standardised. Rabobanks are primarily retail banks, but they have now entered the wholesale market, and Rabobank Nederland also has foreign branches.

#### *Savings banks*

The twenty-eight savings banks, which were traditionally non-profit-making institutions, are in the process of being transformed into commercial banks. Although they still have a relatively strong position in the market for savings and deposits, they have gradually

introduced a full range of banking services. Smaller savings banks do not take part in the payment system on their own, but participate through the processing facilities of two large former savings banks and make settlements via their accounts at the central bank. Many savings banks have only a regional base, but by operating a common data communication network they are able to offer services all over the country through each other's offices.

#### *Postbank*

The Postbank is the successor of the former Postal Cheque and Giro Services. The latter became a state-owned bank in 1985 and merged with a commercial bank in 1989. Despite this merger, the Postbank has continued its own circuit for payments. The Postbank has formally been a universal bank since 1990, and is no longer state-owned. As far as payments are concerned, it offers the same services as the commercial banks.

#### *Interpay*

Although not formally a financial intermediary, the Interpay organisation plays an important role in the Dutch payment system. The Interpay organisation came about as the result of a merger of the Bankgirocentrale (the common clearing house for all banks except the central bank and the Postbank), BEANET (a common institute for EFTPOS payments, in which all private sector banks including the Postbank participate) and Eurocard Nederland (a common credit card organisation in which basically all private sector banks also participate).

The Dutch payment services market is characterised by a high degree of concentration. The bulk of private customer accounts are held with either the Postbank or the co-operative banks. Most corporate customers hold an account with the largest commercial bank, which also has a very strong position in cross-border payment

transactions. Although the number of foreign banks is relatively high (approximately half of the registered banks are foreign-owned and are almost equally divided between EC and non-EC banks), their market share is not very large. In the field of payment services, and particularly in the retail market, their position is very modest.

In addition to the deposit-taking institutions offering a wide range of payment services, there are a few credit card companies. Credit card services are offered by some non-financial institutions. Some retail chains offer credit-related customer services, but payment of these transactions takes place through the payment systems of the deposit-taking institutions.

### 1.3 The role of the central bank

#### 1.3.1 General responsibilities

De Nederlandsche Bank is the central bank of the Netherlands. It is a limited liability company in which the central government holds all the shares. The Bank Act of 1948 secures a high level of independence vis-à-vis the Government.

The Bank Act of 1948 assigns responsibility for currency circulation in the Netherlands to De Nederlandsche Bank. De Nederlandsche Bank has the sole right to issue banknotes. Notes and coin are distributed by the central bank, via its head office and its twelve branches throughout the country, to banks and post offices. The often substantial amounts taken up by these institutions are debited to their current accounts with the central bank. The public subsequently obtains the notes and coin mainly from cash dispensers as well as from the branch offices of the banks and post offices all over the country. Cash in excess of the public's need is returned to the central bank, which is responsible for checking and replacing worn notes and detecting counterfeit.

The Bank Act also contains a section which, in general terms, provides that De Nederlandsche Bank must facilitate domestic money transfers. In this respect De Nederlandsche Bank acts as a settlement institution for the banks. The settlement system is explained in more detail in Section 3.3. On the basis of the Bank Act, the Bank is also closely involved in the development of the payments system. The Bank also performs oversight on the payment system, but it seeks to improve its legislative basis.

On the basis of the Bank Act and the Act on the Supervision of the Credit System (1992), the Bank is responsible for the supervision of the banking sector. In this context it can authorise an institution to operate as a bank. As the distinguishing feature of a bank is the fact that it collects funds from the public which are withdrawable on demand, it is necessary to be a registered bank in order to provide payment services which imply directly withdrawable funds. This does not apply only to payments made from deposit accounts, but also to chip cards.

Primary policy elements are the concern regarding the risks in the payment system and the objective of finality. The main approach of De Nederlandsche Bank regarding risk reduction in the payment system is to ensure that in principle large-value interbank payments take place in its own current account system.

In the autumn of 1987, the central bank, pursuant to the Bank Act, issued a memorandum describing four aspects which, in its view, form the basic principles to be applied with respect to the development of the payment system in the Netherlands. They are:

- i) uniformity of infrastructure: this reduces waste and makes the giro system more comprehensible to all its users;
- ii) cost coverage: payment services as a product should be self-financing for every

bank. Moreover, the pricing of services should encourage the use of the more efficient ones;

- iii) product conditions: everyone should be able to gain access to the payment system, and the services should be transparent for the customer;
- iv) fraud and security: special attention should be paid to fraud and to the security of the payment system.

As explained above, De Nederlandsche Bank supervises the banks. This does not imply that De Nederlandsche Bank explicitly supervises or audits the interbank funds transfer systems. However, with reference to the Bank Act, the responsibility of the central bank for the general oversight of the payment system is accepted. Within the framework of oversight, general policy issues are under discussion with Interpay.

With regard to the settlement of securities, De Nederlandsche Bank closely monitors developments in this field in view of the possibility of systemic risks in relation to the payment system. The Bank also offers securities settlement services itself.

As regards the risks stemming from automated processes, the Bank has issued a memorandum with guidelines for the organisation of the automation of the banks.

De Nederlandsche Bank holds the account of the Government in its capacity as cashier, and transfers relating to the Government are debited and credited to this account. In practice, particularly high-value payments such as government debt issues, repayments, etc., are processed by De Nederlandsche Bank itself; the processing of "retail" payments to and from the Government, including tax collections, takes place at the Postbank and Interpay, with the resulting debiting and crediting procedures taking place on the account of the Government at the central

bank. For payments involving relatively small amounts, the ministerial departments hold an account with banks. No balances are held overnight on these accounts.

### **1.3.2 Provision of settlement facilities**

#### *Provision of settlement accounts*

It is the aim of De Nederlandsche Bank that payments in the different systems should be settled in a coherent manner in the central bank system. Given its concern for payment risks, in the first instance the Bank strives for finality within its own payment system. The functioning of the system is described below.

As regards payments effected within the current account system of the central bank, the general policy is that each financial institution must ensure that its credit balance or credit facility is sufficiently large to allow its transfer orders to be executed. If necessary, banks may borrow from and lend to one another in order to acquire funds to initiate irrevocable transfers during the day.

#### *Provision of credit facilities*

In principle, all banks supervised by De Nederlandsche Bank and listed as such in its register of credit institutions are eligible for credit facilities granted by the Bank. All credit must be fully secured by collateral. By imposing reserve requirements, the central bank creates a deficit position for the banks in its system, which makes them dependent on central bank credit facilities.

Financial institutions maintain hardly any balances on their current accounts, which do not bear interest.

In order to enable foreign banks to participate in the Dutch payment system in a cost-effective way, it is possible to hold part of the

collateral needed in foreign securities (government bonds issued by the countries that participated in the narrow band of the EMS).

### **1.3.3 Monetary policy and payment systems**

In addition to its involvement in general policy with respect to payment systems and its supervisory function, the Bank is also concerned with the monetary policy issues relating to payment systems.

Basically, the aim of monetary policy is to control the money market interest rate in such a way as to maintain a stable position for the Dutch guilder vis-à-vis the Deutsche Mark.

The central bank provides credit only if this is fully secured by collateral. The amount of credit each bank can take up at the official rate for advances is limited; fine-tuning takes place through short-term special advances at an interest rate that may differ. As far as the practical relation between monetary policy and the payment systems is concerned, the credit system offers great flexibility. The basic idea of the system is that, on the one hand, the banks can take up intraday credit according to the total value of the money market cash reserve requirements and the collateral deposited, while, on the other, the overnight credit amount is limited on the basis of an average amount for a three-month period.

Since this allows the banks to decide themselves about their daily use of credit, it provides the opportunity for absorbing daily fluctuations stemming from a concurrence of circumstances in the payment systems.

## **1.4 The role of other private and public sector bodies**

### *Policy Committee on Payment Systems*

The Policy Committee on Payment Systems of the Dutch Banking Association is the main national consultative body concerned with payment systems in the private sector. The Committee, in which the Postbank also participates, deals with general issues relating to the infrastructure and to both retail and wholesale products on a policy level. The members of the Committee also form the Board of Directors of Interpay, which is advantageous from the point of view of implementing policy.

All Dutch deposit-taking banks participate in a common institute, accommodated at Interpay, which plays a central role in the EFTPOS network in the Netherlands, with regard to both the processing of EFTPOS payment instructions and the installation of EFTPOS terminals.

### *Steering Committee on the National Payment Circuit*

In 1975, the Minister of Finance, pursuant to Article 9 of the Bank Act 1948, invited the President of the central bank to chair a Steering Committee to study the integration of the three domestic transfer circuits. The Steering Committee on the National Payment Circuit is responsible for the realisation of the project. The Committee consists of representatives of the banks and is chaired by De Nederlandsche Bank. The Ministry of Finance participates as an observer. The project aims at removing the operational barriers between the three domestic transfer systems (De Nederlandsche Bank, Interpay circuit and Postbank) so as to achieve an improved service at a lower cost. The reason for developing the National Payment Circuit

is that the Postbank, as the legal successor of the Postal Cheque and Giro Services, in principle only allows transfers between Postbank accounts. It is for that reason that banks use Postbank accounts for transfers between the banks' circuit and the Postbank circuit, which makes these payments relatively slow compared to the execution and clearing of payments within each circuit, which are normally settled on a next-day basis.

The National Payment Circuit project is divided into seven phases, each phase relating to a specific payment instrument. The project is reaching completion. The procedures for payments under the National Payment Circuit scheme are described in Section 3.2.

*Ad Hoc Steering Committee for Promoting Efficiency in Payment Systems*

In 1991 the banks, consumer organisations and retail organisations reached agreement on measures for enhancing the cost-effective use of payment services, including charges. The discussion took place within the Ad Hoc Steering Committee for Promoting Efficiency in Payment Systems, a committee without regulative authority, set up by the parties mentioned above at the request of the Minister of Finance and the Minister of Economic Affairs. Both these Ministries and De Nederlandsche Bank take part as observers.

An evaluation of the agreed measures takes place regularly.

## 2. Payment media used by non-banks

### 2.1 Cash payments

Banknotes and coin are the media used for cash payments. Both are legal tender, although the acceptance of coins by the public is compulsory only up to certain maximum amounts. All coins are produced by the Mint, an institution supervised by the Ministry of Finance, under the terms of the Coinage Act 1948. The Bank Act 1948 stipulates that De Nederlandsche Bank has the sole right to issue banknotes.

At the end of 1994, the currency in circulation consisted of six denominations of banknotes (NLG 1,000, 250, 100, 50, 25, 10) and eight denominations of coins (NLG 50, 10, 5, 2.50, 1 and 0.25, 0.10 and 0.05).

The currency in circulation at end-1994 amounted to NLG 38.1 billion (ECU 17.7 billion), of which NLG 35.7 billion (ECU 16.5 billion) was accounted for by banknotes. These figures exclude the notes and coin

held by banks, which totalled NLG 2.8 billion (ECU 1.3 billion).

As far as the number of transactions is concerned, the average household in the Netherlands makes most of its payments in cash. However, the larger the amount involved, the greater the tendency to use credit transfers or guaranteed cheques. The use of cash to pay wages, salaries, pensions and social security benefits has become rare; virtually all payments of this kind are now effected by means of credit transfers. Apart from everyday expenses, cash is still used in specific markets such as the used-car market, as well as when tax evasion plays a role.

No exact figures are available for the number of cash payments. As a rough estimate, 90% of the volume of commercial transactions are effected in cash. Their total value in 1994 has been estimated at approximately NLG 600 billion (ECU 280 billion).

## 2.2 Non-cash payments

In principle, the use of payment instruments is related to a sight account.

The banks and the Postbank offer the same payment instruments. These are:

- giro transfers (ordinary credit transfers, pre-prepared credit transfers and direct debits);
- (guaranteed) cheques;
- cards.

Two instruments are mainly used: credit transfers and direct debits. Cash payments are used mainly in the personal sector for small day-to-day household purchases; as the value of the payment increases, and for all transactions in trade and industry, preference is given to cashless instruments.

94% of payment orders in 1994 were giro transfers (99.9% of the total value) and 6% were cheques (0.1% of the total value).

### Accounts

The accounts which are used for non-cash payments are sight accounts, which can be characterised as deposit accounts, in relation to which explicit payment services are offered.

It was customary, particularly for the private customer, for little or no interest to be paid on sight accounts, while the services on offer were free of charge. In the past few years, banks have been paying a higher interest rate, but have also introduced payment service charges. Recently, however, competitive pressure has led banks to abolish these charges.

The closest substitute for sight deposit money is money on savings accounts, which can be withdrawn on demand.

### *Sight deposit money*

Three-quarters of the money available to the economy for payment transactions (MI) at the end of 1994 was held in the form of sight deposits with banks and the Postbank, while the remaining one-quarter was held in the form of banknotes and coin. There were 17.7 million sight accounts for a population of 15.4 million. Some 2.4 billion cashless payments using deposit money, for a total value of NLG 3,182 billion (ECU 1,474 billion), were made by bank and Postbank customers in 1994.

The commercial, co-operative and savings banks together have approximately 5,000 branch offices, all offering sight account facilities and the related payment services via Interpay (see Section 3.5). The Postbank, which has its own circuit for payments, offers its payment services through 2,250 post offices; its corporate customers make use of the branch offices of its parent company, which is a commercial bank.

Of the 2.4 billion cashless payments in 1994, the banks handled approximately 65% of the transfers, while the Postbank effected approximately 35%.

### 2.2.1 Credit transfers

When making an ordinary credit transfer, the account holder instructs his/her bank to debit his/her account with the amount indicated on the transfer order, and to credit that amount to another account, likewise named, at a bank. Practically all non-recurrent payments in trade and industry, as well as some household payments, are effected by means of ordinary credit transfers. This payment instrument is also used on a very large scale by the central government and local authorities.

When used by households, the original ordinary credit transfer instruction is generally in paper form; corporate customers and

government institutions mostly use a non-paper-based, machine-readable form.

Pre-prepared transfers can be divided into two categories: the standing order and inpayment transfer. In the case of the standing order, the account holder gives his/her bank a standing order to transfer, on fixed dates, fixed amounts to a named account. This (non-paper-based) form of payment is frequently used for rent, subscriptions, insurance premiums, etc. On the fixed date the bank effects the transfer, and no further action on the part of the account holder or the payee is required. The second form of pre-prepared transfer, the inpayment transfer or *acceptgiro*, is initiated by the payee. Together with the bill, he/she sends the payer a fully prepared transfer form, in most cases stating the payer's account number, known from previous payments. All the payer has to do is to sign the form and send it to his/her bank. This payment medium is used for both regular and non-recurrent payments of either fixed or varying amounts, e.g. insurance premiums and subscriptions, as well as for bills for deliveries to regular customers. Unlike the standing order, this pre-prepared transfer is a paper-based instrument. In some cases the payee needs to recover the original paper form in order to be able to adjust his/her payments administration.

For inpayment transfers, the banks and the Postbank have developed a joint procedure.

### 2.2.2 Direct debits

Direct debits constitute a separate category, although there is some resemblance with *acceptgiro* transfers. The transfer is again initiated by the payee, who has already been authorised by the payer to charge his/her account for goods delivered or services rendered, and no further action on the debtor's part is required. This procedure is frequently used, for example, by public utilities.

The form in which transfer instructions are given is gradually changing. This is mainly due to the fact that corporate customers are increasingly using machine-readable transfer instructions.

Another major factor is that, in recent years, the Dutch banks have become increasingly aware of the costs of the payment system, and therefore promote the cost-effective use of payment services. As mentioned in Section 1.4, the banks have designed programmes in co-operation with consumer organisations and retail organisations to promote the cost-effective use of payment services.

### 2.2.3 Cheques

As a satisfactory transfer system was available to the public from an early date, cheques have never played a major role as a domestic payment instrument in the Netherlands. In the second half of the 1960s, however, the guaranteed cheque was introduced. The first (1967) was the guaranteed bank cheque issued by the banks for domestic use, and the second (1969) was the guaranteed giro cheque of the Postal Cheque and Giro Services; the eurocheque was introduced in 1973. The eurocheque and the guaranteed giro cheque are guaranteed by the issuing institutions for amounts up to NLG 300 (ECU 139) and are available to account holders on request.

These cheques can only be used in conjunction with a cheque guarantee card carrying the cardholder's account number and signature. The cheques can be used in the Netherlands for practically all purchases. In addition, the guaranteed giro cheque and the eurocheque can be used in a number of other countries to withdraw cash (both) or make purchases (eurocheques only).

### 2.2.4 Payment cards

The use of EFTPOS terminals has greatly increased in the past few years. The banks and the Postbank co-operate with regard to the installation of POS terminals and the processing of POS transactions; this service is provided by Interpay.

The use of ATMs is still growing. The banks began installing ATMs with only a cash dispensing facility in 1985 and have gradually expanded their networks. For both EFTPOS and at ATMs, the customer uses the same card as for guaranteed cheques.

The use of credit cards is not significant, although it has increased in recent years. The credit card used most often for payments within the Netherlands is the Eurocard (Access, MasterCard), in which both the banks and the Postbank participate.

Retail chains actively promote their own retailer cards. The volume and value of transactions are not known. When compared with the use of the payment instruments offered by the banks (and cash), however, their role does not appear to be significant.

#### *ATM and POS networks*

The ATMs installed by a bank participating in Interpay can be used by all the customers of the other participating banks. It is expected that a form of co-operation will also be established between this network and the Postbank.

EFTPOS terminals are accessible to private customers of both the banks and the Postbank.

There are no other inter- or intrabank networks that are accessible to customers.

### 2.2.5 Others

A number of banks offer corporate cash management systems, including the possibility of issuing transfer instructions.

Several banks offer home banking systems that are suited to smaller businesses and private customers.

## 2.3 Recent developments

Single-purpose prepaid cards have been introduced by the Post Office on a large scale for use in payphones.

The banks jointly organised a chip card trial project in a small town. On the basis of the project, which ended in 1992, the banks expressed an interest in a pre-paid card system, which was introduced in October 1995 on a pilot basis. Its operation on a national scale is planned for 1997. Some non-bank institutions are experimenting with (small-scale) multi-purpose chip card projects. Given the fact that only licensed banks are allowed to offer services which imply collection of withdrawable funds, these systems would be subject to supervision by the central bank.

Several banks are involved in EDI pilot projects, both at a national and at an international level. The banks have formed a special organisation for developing payment messages based on EDI standards. A common infrastructure for handling EDI payments has also been defined.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

Cashless payments are processed in three (interconnected) transfer circuits:

- the banks' circuit, in which the commercial and the co-operative banks participate;
- the circuit of the Postbank;
- the circuit of De Nederlandsche Bank.

A formal interconnection between the circuits exists by means of accounts in the central bank system; as mentioned, interconnection on an operational level is aimed at through the National Payment Circuit project.

#### 3.2 National Payment Circuit

The National Payment Circuit project, the aim of which is technical integration of the three payment circuits, is divided into seven phases. Each phase relates to a specific payment instrument. The project has been completed with the exception of only one phase, implying that machine-readable credit transfers, inpayment transfers, cheques and direct debits are now processed according to the project standards. The main implications are that for these types of payment it is sufficient to hold an account in only one of the circuits and that there is no difference in settlement time, regardless of whether the accounts involved are held in the same circuit. Interbank settlement for these payments takes place through the accounts held at De Nederlandsche Bank, whereas this was formerly effected via accounts at the Postbank.

#### 3.3 RTGS: De Nederlandsche Bank's current account system

The central bank's current account system, which is commonly used for large-value guilder payments, operates both on a gross basis as an RTGS system and on a net basis.

##### 3.3.1 General overview

The purpose of De Nederlandsche Bank's current account system is to offer central bank current account facilities to banks and to the Government, thus permitting the settlement of payment transactions.

There are no restrictions on the value of transactions. The system handles only credit transfers; it processes irrevocable payment orders on a gross basis and revocable orders, although to a declining extent.

The transactions volume in 1994 was 0.4 million, with a total value of NLG 9,183 billion (ECU 4,254 billion). The average value per transaction was NLG 22.8 million (ECU 10.6 million).

The current account system operates under the Bank Act 1948, which requires De Nederlandsche Bank to facilitate the payments mechanism in the Netherlands. The Bank also determines who can use the transfer system. All authorised credit institutions are eligible to participate, including Dutch-based subsidiaries of foreign banks and branches of foreign banks to which the Second Banking Co-ordination Directive of the European Community is applicable. The rules are identical for all participants.

The system operates from 8 a.m. to 3.30 p.m. for transactions requiring same-day settlement. Transactions to be effected on a date up to one month later, may be entered until 5 p.m.

The basic rule is that a sending participant must have adequate cover for debits on its current account (i.e. a credit balance or an unused - collateralised - overdraft facility) before a transfer is effected. Unsecured credit is precluded. The Bank draws up and enforces the rules and regulations of the transfer system and is responsible for any changes in the structure of the system.

### **3.3.2 Participation in the system**

De Nederlandsche Bank owns, operates and controls its current account system. It also participates in the system, along with most credit institutions registered at the Bank, the Treasury, foreign central banks and international institutions. In addition, some accounts are held by certain non-bank financial intermediaries such as Interpay; however, these intermediaries do not have access to the credit facilities in principle, and their use of the transfer system is limited.

### **3.3.3 Types of transactions handled**

The current account system is designed to execute transfer orders in guilders. The system provides for both revocable and irrevocable transfer orders. At the moment more than 90% of all transactions, in terms of both volume and value, are entered in an irrevocable manner. At the end of each business day, all revocable orders become irrevocable, provided there is sufficient cover on the payer's current account. If not, the Bank cancels revocable payment orders to the extent necessary.

The current account transfer system is mainly used for credit transfers resulting from interbank money market transactions, for funds transfers by the Government, and for settling customer transactions processed by the Interpay organisation and at the Postbank.

De Nederlandsche Bank is not involved in any retail activities.

### **3.3.4 Operation of the transfer system**

As mentioned above, transactions can be either revocable or irrevocable. Irrevocable transfers are gross transfers, and the payee receives the funds immediately. In the case of revocable transfers, the transfer is processed, but the payee has to wait until the cut-off time at the end of the day (3.30 p.m.) before it can be sure of actually having received the funds. During the day, however, participants are informed about the incoming revocable orders; moreover, they can make inquiries on an online basis.

All settlement transfers submitted by Interpay that result from the clearing are entered as irrevocable orders. Several other types of transactions also are paid irrevocably, such as payments for cash deliveries and repayments on public loans. In principle, the Bank itself and the Government always pay irrevocably. In addition, amounts of up to NLG 250 million (ECU 116 million) must always be paid irrevocably. The level may later be raised in accordance with the central bank's objective of finality of all payments in the central bank system.

### **3.3.5 Transaction processing environment**

In 1994 electronic transfers accounted for approximately three-quarters of the transactions volume in the current account system. The system now processes approximately 1,500 transactions per day, although peak capacity is around 18,000 transactions per day. With the support of backup facilities, the Bank aims to achieve 100% reliability.

Transfer orders can be submitted on paper, magnetic tape or electronically. The online participants in the system enter transactions at remote terminals via dedicated leased-line connections to the central computer. Offline participants send their orders on magnetic tape or paper; the latter are partly on

encoded telex messages and are entered into the system by De Nederlandsche Bank itself.

### **3.3.6 Settlement procedures**

Every credit institution registered as such may have an account at De Nederlandsche Bank. Provided there is sufficient cover for debiting the current account, settlement is effected by adjusting the participants' accounts in the books of De Nederlandsche Bank.

Since all transfer orders are effected only if sufficient cover is available, irrevocable transfers are never unwound. Revocable transfer orders are removed from the system at the end of the day if sufficient cover is not available. Prior to removing these orders, De Nederlandsche Bank contacts the payer, requesting that the required funds be raised on the money market. If the participant cannot obtain sufficient funds, the Bank selectively deletes revocable payment orders until the cover is sufficient. So far this procedure has not led to any problems in the system.

### **3.3.7 Credit and liquidity risks and their management**

No specific rules for finality have been laid down; normal civil law applies. Payments are considered final the moment they are settled at the central bank, which is upon entry and validation for irrevocable orders and at the cut-off time at the end of the working day for revocable orders. While there is no liquidity risk within the central bank's current account system since irrevocable orders are only carried out if sufficient funds are available, the possibility of revocable orders being cancelled at the end of the day may cause problems of a systemic nature within the banking system. In order to solve these problems, plans are being made to gradually abolish revocable payment orders.

All financial institutions holding an account at the Bank may send credit transfers. Neither the financial institutions nor the central bank bear any risk in the system since transfers are effected only if sufficient debit cover is available on the participant's current account. Of course, financial institutions are exposed to credit risk if (in the case of revocable orders only) they decide to provide funds to their customers before final settlement has taken place. In this respect the central bank advises participants in the payment system not to put these funds at their customers' disposal before final settlement has taken place.

### **3.3.8 Pricing policies**

In principle the Bank aims to recover its costs. However, given the relatively small transactions volume, the total revenue collected does not fully cover the costs. Participants' fees do not cover all operating expenses, which include personnel, facilities and data-processing costs; the Bank bears the remaining operating expenses. It must be borne in mind, however, that the Bank itself is also a user of the system. In addition to transaction fees, the participants incur operating and equipment costs and have to pay for their electronic connections.

The Bank charges each account holder a fixed annual fee (NLG 1,500 (ECU 695)) per account. In addition, transaction fees are charged, which differ in price according to the medium used. The Bank also charges for other miscellaneous services provided to the participants.

### **3.3.9 Main projects and policies being implemented**

In 1996 the existing central bank system will be replaced by a new system known as "TOP". The basic difference between TOP and the existing system will be that all payments in TOP will be irrevocable,

therefore making the central bank system a full gross settlement system. TOP will use a queuing mechanism, operating on a FIFO basis with four priority classes.

Since Interpay is simultaneously building a new system for processing retail transactions, the aim is to achieve an effective form of co-operation. The system will use the Interpay network as well as joint workstations to communicate with the banks. The system will allow for an integrated use of collateral so that the splitting-up procedure currently used for urgent payments in the Interpay system (see Section 3.6) will no longer be necessary. The aim is to create a situation in which all large-value payments will be settled irrevocably on a gross basis. The main focus of the central bank with regard to the project is the aim to reduce risk in the Dutch payment system. In order to prevent disturbances following the change to a full RTGS system, the Bank is encouraging agreements between the banks with regard to their settlement payment behaviour. In this context it has been agreed that specific types of large-value transaction such as money market refunds must be made early in the day.

### **3.4 LVTS: The 8007-system**

The S.W.I.F.T. 8007-system is named after the code used for the balance-of-payments reporting of these items.

#### **3.4.1 General overview**

The function of the 8007-system is to process guilder payments to or from a non-resident customer (bank or non-bank), in the event of the payer and payee not holding an account with the same bank. The system, which operates on a net settlement basis, also conducts the clearing and reporting of such non-resident related transactions to the central bank.

The system was originally operated by Interpay. It was agreed to have the system operated by De Nederlandsche Bank owing to the large-value character of the payments involved.

De Nederlandsche Bank has been processing the 8007 payments since February 1993.

In principle, all orders entered before the cut-off time (11.30 a.m.) are processed the same day.

When the system became operational in 1982, 350,000 transactions were processed, and by 1994 this number had grown to approximately 2 million. In 1994 the total transactions value was NLG 10,140 billion (ECU 4,698 billion) and the average transactions value was NLG 5.0 million (ECU 2.3 million).

#### **3.4.2 Participation in the system**

In principle, all authorised banks in the Netherlands participate in this system. De Nederlandsche Bank is also a participant in the system.

#### **3.4.3 Types of transactions handled**

The system is a credit transfer system. It processes guilder payments to or from an account held at a Dutch bank by a non-resident, for example a foreign bank.

#### **3.4.4 Operation of the system**

The system is a multilateral net settlement system. De Nederlandsche Bank calculates the net net positions and extracts the balance-of-payments information.

### **3.4.5 Transaction processing environment**

The processing of 8007-system payments is operated by the central bank; it uses the same central processing unit at De Nederlandsche Bank as that used for the current account system. Although transfer orders may be submitted on magnetic tape, they are entered primarily by data communication; they are processed in batches. To facilitate the efficient handling of international payments, the S.W.I.F.T. message format is used. The delivery of input and output messages takes place via Interpay, except for the Postbank. The cut-off times for the submission of orders on magnetic tape and by data communication are 10.30 a.m. and 11.30 a.m., respectively.

### **3.4.6 Settlement procedures**

The results of the day's clearing are calculated by De Nederlandsche Bank and integrated with the results of the clearing of the normal domestic customers' transactions as processed by Interpay. The total is settled at 1.30 p.m. As is also the case for the current account system of De Nederlandsche Bank, settlement is subject to sufficient cover for net debit positions. The actual settlement is effected by adjusting the participants' accounts in the books of De Nederlandsche Bank. If available cover is insufficient to book the result of the clearing, the bank involved has to find additional funds, for instance in the money market. If it is unsuccessful, in theory the clearing should be unwound. This has never happened so far.

### **3.4.7 Credit and liquidity risks and their management**

The moment at which transferred funds are available depends upon whether the beneficiary has an account at the central bank. If the beneficiary is itself a bank, the funds transferred are available after the settlement has taken place within the central bank's

current account system. If the beneficiary holds a customer account at the receiving bank, the moment at which the funds are made available is determined by the bank.

The 8007-system does not allow for the return of payments. There is, however, a procedure whereby the recipient of a wrongly processed order can be requested and obliged, up to a certain point in time, to submit an offsetting order.

There are no specific rules for finality; normal civil law applies. Payments are considered final the moment they are settled at the central bank.

In principle, credit plays no role in the 8007-system. Credit can, however, be supplied by a bank if the funds are made available to a customer before they have actually been paid for in the settlement.

However, the central bank and the banks have agreed that this should not occur.

### **3.4.8 Pricing policies**

The basic pricing policy is that the system should be self-financing. In practice, this means that a certain amount is paid per transaction and per batch, by both sender and receiver.

### **3.4.9 Main projects and policies being implemented**

With the introduction of the new central bank system, 8007-system payments will be processed in the TOP system, and the 8007-system will then cease to be a separate payment system. All 8007-system payments will be processed in the new system on a gross basis. This will have a major impact on the way in which the banks will deal with these kinds of payment, since at present they are accustomed to a process of settlement once a day.

### 3.5 The Postbank circuit

Retail payments are processed in two circuits, the Postbank circuit and the circuit of the other banks, which co-operate in the Interpay clearing house. Both circuits are described below in general terms. Section 3.6 contains a description of the Interpay system.

Although the Postbank merged with a commercial bank in 1989, the payment system of the Postbank remains separate from the Interpay circuit, in which the merger party still participates. However, a process of integration is taking place within the context of the National Payment Circuit project (see Section 3.2).

Processing at the Postbank is characterised by a high degree of centralisation, with all payment items being processed in three central offices, and by a high level of automation. The booking process in these centres is divided into two stages: the first stage, in which the accounts are debited, and the second, in which they are credited.

Most of the booking procedure in the three centres is automated. One of the characteristics of the booking process is the procedure to check the relation between the name of the payee and the credit account number.

### 3.6 The Interpay system

#### 3.6.1 General overview

The banks' circuit is basically a decentralised system. In 1967 the banks formed a common clearing house to facilitate the collection and processing of retail transfer orders among themselves, and between their own and the other transfer circuits. The clearing house was formerly called the *Bankgirocentrale* (BGC); as mentioned in Section 1.2, the BGC recently merged and the new institute is called Interpay. The clearing house system is fully automated. Customers' transfer orders

received by the banks' branch offices, insofar as they are paper-based, are converted by these offices into machine-readable data carriers. The data carriers are sent to Interpay, where the information is processed to produce a machine-readable data carrier for each individual bank, containing all the credits to accounts held by that particular bank's customers. Besides interbank transfers, Interpay processes the bulk of intrabank transfers. The banks that participate in the Interpay circuit have a common account number system, which allows for an automated number check.

The clearing house system in fact comprises two systems: the Interpay system for bulk payments and the *Spoedcircuit* for urgent transactions.

It should be noted that Interpay is merely an intermediary between the participating banks. It receives transfer orders and converts them into (debit and) credit items, for individual banks and account numbers, by means of an automated system. Interpay has no relationship with bank customers; it does not know the balances on accounts, makes no entries in accounts and, consequently, does not itself produce statements of account. It is the individual banks themselves which, using automated processes, make the actual debit and credit entries in the accounts, and produce the statements of account which they then send to their customers.

Although each bank has its own internal processing system for in-house payments, Interpay is not only used for exchanging payments with other banks, the Postbank circuit and De Nederlandsche Bank, but also for processing intrabank payments for banks which choose this option. Obviously, these purely technical operations by Interpay must be followed by financial settlement. For this purpose, the participating banks have authorised Interpay to effect the daily settlement payments at De Nederlandsche Bank on a net basis on their behalf; the account of each bank is debited or credited

with the difference between its total debit and credit items. The *Spoedcircuit* payments are settled in a special way. This system, in which the transactions amounts are relatively high compared with normal retail payments, is a guaranteed payment system. The system works on the basis of a collateralised credit facility which is split off from the facility which the participating banks have at the central bank. The final settlement at the central bank takes place once a day.

The number of transactions processed in 1994 by the Interpay clearing house was 1,225 million; with a total turnover of NLG 2,195 billion (ECU 1,017 billion).

### 3.6.2 Participation in the system

All deposit-taking banks, with the exception of the Postbank and some small, mostly foreign, banks, participate in the system. Although the central bank is not a participant, it makes use of the system for the processing of retail payments with regard to the Government.

### 3.6.3 Types of transactions handled

The system handles all types of transactions.

### 3.6.4 Operation of the system

The system is a net settlement system. However, one of the sub-systems, the *Spoedcircuit* sub-system for urgent payments, operates on a special basis. Payment orders are guaranteed on the basis of a collateralised credit facility which is split off from the facility which the participating banks have at the central bank. The banks may make transfers between their *Spoedcircuit* account and the main account at the central bank during the day. Final settlement takes place once a day at the central bank on a net basis.

### 3.6.5 Transaction processing environment

Although processing takes place in two operating centres, the clearing house system operates in an integrated manner. Transfer orders may be submitted in different ways. Although most of the orders are presented in machine-readable form or by data communication, payment orders can be presented on paper as well, with Interpay taking care of their conversion into machine-readable form. Cheques and *acceptgiro* are also presented on paper, but can be read optically.

The process is organised on the basis of two runs a day, one in the evening and one in the morning, with settlement at the central bank taking place around 1.30 p.m.

Routing with regard to the debit and credit banks involved takes place on the basis of a central file, containing all the account numbers, and customers' names and addresses. The banks co-operating in the clearing house have an integrated account number system, which allows for automated error controls. Numbers are distributed by Interpay, in principle on the basis of defined ranges per participating bank. Although it is not a formal participant in the clearing house system, the central bank also makes use of the Interpay account number system.

### 3.6.6 Settlement procedures

Interpay is authorised by the participating banks to effect the daily settlement payments at De Nederlandsche Bank on a net net basis on their behalf. Settlement takes place around 1.30 p.m.; settlement of the *Spoedcircuit* sub-system takes place at around 2 p.m. As is the case for the current account system of De Nederlandsche Bank, settlement is subject to sufficient cover for net net debit positions. During the morning banks are informed by Interpay about the net results to be expected in order to raise additional liquidity in the money market before settlement time. If

sufficient cover cannot be found, the clearing should be unwound. This has never happened so far.

Payments from the banks' circuit to the Postbank and vice versa are processed according to the rules of the National Payment Circuit project. Settlement of these payments takes place in the central bank system. For payments not yet processed according to the National Payment Circuit project rules, the traditional practice is still used. Items from the banks' circuit for the Postbank circuit are also passed through Interpay. Settlement of these items is effected through an account held by Interpay with the Postbank. This account is regularly replenished through a payment from De Nederlandsche Bank system.

### **3.6.7 Credit and liquidity risks and their management**

Credit and liquidity risks are not managed within the clearing house system, but in the central bank system environment with its relation to the money market. As mentioned in Section 3.6.6, Interpay informs the participating banks about the net clearing results to be expected. Since banks which are credit banks in the Interpay system are generally debit banks in the 8007-system, the results of the clearing house process are integrated with the 8007-system as processed by De Nederlandsche Bank for the settlement process, in order to level liquidity imbalances. As mentioned above, credit and liquidity risk

are basically absent from the *Spoedcircuit* sub-system because of the fully collateralised basis.

### **3.6.8 Pricing policies**

The basic pricing policy is that the system should be self-financing. In practice, this means that a certain amount is paid per transaction and per batch, by both sender and receiver.

### **3.6.9 Main projects and policies being implemented**

Interpay is currently working on a completely new system that will be introduced in phases. Introduction of the first phase is expected to take place in 1996. The basic difference between this and the existing system is that processing takes place on a continuous basis, whereas at present processing takes place in two daily runs. As a consequence, the new system can provide real-time information. The Interpay system will basically remain a net system. However, in order to avoid any misunderstandings regarding the settlement status of the payment information provided, the system may settle more than once a day. In this respect, the system will operate in close co-ordination with the new central bank system. Co-operation of a more technical nature will take shape in the use of a common workstation and in the joint use of a new interbank data communication network to be implemented and managed by Interpay.

## 4. Securities settlement systems

The Amsterdam Stock Exchange, which was established in 1611, and its *Effectenclearing BV* (Securities Clearing) for the clearing and settlement of stock exchange transactions, play a central role in retail trading. Through the *Nederlands Centraal Instituut voor Giraal Effectenverkeer BV* (Necigef), the central institute acting as depository for virtually all securities, the deliveries of retail and wholesale transactions are settled by book entry.

Transactions in commercial paper (CP), certificates of deposit (CD) and medium term notes (MTN) are settled in the books of De Nederlandsche Bank.

The European Options Exchange handles the options and futures market.

In addition, there is a market for private loans in the Netherlands.

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Legislation in the field of securities is aimed at protecting investors and ensuring the adequate operation of the securities markets. Within this framework, three Acts are particularly important. In addition, the securities branch has traditionally been characterised by a high degree of self-regulation.

The Securities Giro Transfer Act of 1977 provides for the establishment of an institute effecting the safekeeping, administration and general control of the book entry securities transfer system. The Act further regulates the rights of the owners of securities in the system. Collective deposits are created (one per type of security) in which the owners are entitled to their proportionate share. This institute is called Necigef. Necigef determines

which securities may enter its book entry transfer system. Almost all securities listed on the Amsterdam Stock Exchange have been declared book-entry securities and are kept in safe custody by Necigef.

The Act on the Supervision of Investment Institutions came into effect in 1990. This Act lays down the rules to be observed with regard to the sale of shares in investment institutions. The supervision of investment institutions is assigned to De Nederlandsche Bank.

In 1991, the Act on the Supervision of Securities Trade came into force. With a view to ensuring the adequate functioning of the securities markets and the position of the investors in these markets, an arrangement was made for the supervision of securities transactions. The Act provides regulations for selling securities, acting as an intermediary or portfolio manager and organising a stock exchange. The supervision provided for in the Act is assigned to the Securities Board of the Netherlands.

A new version of the Act on the Supervision of Securities Trade will come into effect shortly in order to adjust Dutch legislation to the Investment Services Directive and the Capital Adequacy Directive of the EU.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

Due to the ever increasing volume and value of securities transactions, these transactions constitute an important category of funds transfers. The involvement of the Bank in the securities systems ensues from its responsibility for the smooth and efficient operation of payments in the Netherlands.

De Nederlandsche Bank is currently reviewing its role in the oversight of securities settlement systems with the Securities Board of the Netherlands and the Ministry of Finance.

#### *Provision of settlement facilities*

In respect of securities which are transferred free of payment through Necigef, a large number of payments for wholesale transactions are effected through the accounts held by banks with De Nederlandsche Bank. Further improvements will be implemented in the form of a real-time online DVP facility with settlement in central bank money. This change is described below.

At the request of the banks, De Nederlandsche Bank acts as depository and executor for the clearing of transactions in money and capital market paper (CDs, CPs and MTNs) for professional market parties. The clearing and settlement of transactions, which are effected by the so-called Clearing Institution, take place entirely via the books of De Nederlandsche Bank. This system offers the banks the opportunity to regulate the balance on their current account with De Nederlandsche Bank on the same day by means of money market transactions by selling or buying securities. Participants in the Clearing Institution are required to hold both a securities and a money account with the Bank.

Furthermore, De Nederlandsche Bank is in charge of the exchange of specifically assigned central government bonds for strips. Professional market parties may hold positions in strips with De Nederlandsche Bank and instruct De Nederlandsche Bank to settle transactions through the current accounts held with the Bank.

De Nederlandsche Bank offers a credit facility to the banks holding an account in its payment system. The credit facility available depends upon the degree to which collateral has been deposited. De Nederlandsche Bank accepts a wide range of collateral. It holds a

pledge account with Necigef. Banks may transfer securities held in book-entry form with Necigef to the pledge account of De Nederlandsche Bank. The relationship between the pledgor and the pledgee with regard to these securities is recorded by Necigef's administration. It is also possible to use positions held in De Nederlandsche Bank's Clearing Institution as collateral for the credit facility.

#### *Monetary policy operations and securities settlement systems*

De Nederlandsche Bank makes use of different types of standing facilities as instruments for the implementation of monetary policy. Credit facilities granted by the Bank are always based on collateral, as it is prescribed by the Bank's charter. The Bank accepts a wide range of debt instruments (including shares) as collateral. The demand for central bank money largely depends on the requirement to hold cash reserves with the central bank. The issue of Nederlandsche Bank Certificates (NBCs), the administration of which takes place at the Bank's Clearing Institution, also affects the liquidity in the money market. At present the Bank is not active in the secondary market in the framework of monetary policy.

#### *Main projects and policies being implemented*

Settlement of DVP in the Netherlands improved markedly as a result of the introduction of an online message system at Necigef at the end of 1995.

The most important functions of this system are the online delivery of orders, a matching facility for delivery versus payment orders and a message facility. By means of a link between this system and the bank of Necigef, transactions can be settled within a short period of time. The next step will be the settlement of payments in guilders through the account system of the central bank.

The above-mentioned functions are part of the plan to centralise the safe custody, clearing and settlement activities within one institution, the so-called Amsterdam Securities Depository (ASD). A merger between *Effectenclearing* and Necigef is planned for the first stage.

#### 4.1.3 The role of other private and public sector bodies

As the Dutch laws in question are of a more general nature, the rules to be observed by the securities sector in the Netherlands for trades and settlement are laid down in consultation with this sector. In general, regulations have been established on the initiative of the Amsterdam Stock Exchange or Necigef.

##### *The Amsterdam Stock Exchange*

The Amsterdam Stock Exchange is organised by the Amsterdam Stock Exchange Association, which is an organisation under private law.

The purchase and sale of listed securities on behalf of the general public are only permitted if performed through the intermediary of a member of the Amsterdam Stock Exchange Association, unless dispensation has been granted by the Minister of Finance.

##### *Effectenclearing BV (Securities Clearing)*

The Amsterdam Stock Exchange has set up a separate institution for the clearing and settlement of stock exchange transactions. This institution, *Effectenclearing BV* (Securities Clearing), is a 100% subsidiary of the Amsterdam Stock Exchange Association. In a stock exchange transaction, Securities Clearing becomes the counterparty to both the buyer and the seller. The amount each stock exchange member is to deliver or receive on settlement day per security is determined by

netting on a daily basis. In addition, the financial position vis-à-vis Securities Clearing is calculated. The settlement of securities takes place through Necigef and payment is effected through Kas-Associatie, a bank in which the Amsterdam Stock Exchange has a 60% holding.

##### *European Options Exchange (EOE) and EOCC Clearing Corporation BV*

The EOCC Clearing Corporation BV (EOCC) is responsible for the clearing and settlement of all options traded on the EOE-Optiebeurs and all futures contracts traded on the *Financiële Termijnmarkt Amsterdam* (FTA). All the shares of the EOCC, EOE-Optiebeurs (*Optiebeurs NV*) and FTA are held by EOE Holding BV, which is a wholly owned subsidiary of the Vereniging European Option Exchange (EOE), itself formed in 1978 to establish organised markets in options and futures and to organise clearing activities.

##### *Nederlands Centraal Instituut voor Giraal Effectenverkeer (Necigef)*

Pursuant to the Securities Transfer Giro Act, Necigef (Dutch institute for giral transfer of securities) is responsible for keeping securities in safe custody and for settling transactions between its participants. At present, Necigef operates as the central depository for all book-entry securities. This centralisation makes it possible to settle securities transactions without the need for physical transfer of paper (immobilisation). With regard to safe custody, immobilisation makes it possible for Necigef to use jumbo certificates to a large extent. Due to the non-compulsory nature of the collective system, investors are entitled to separate their rights and obtain individual title. Thus it is impossible to have dematerialised securities at Necigef. Administration of securities not falling within the scope of the Securities Giro Transfer Act, inter alia, dematerialised bonds may be effected through the Dutch interprofessional

securities centre (*Nederlands Interprofessioneel Effectencentrum*, NIEC). The administration of the NIEC is effected by Necigef.

In its capacity as the clearing and settlement institute for stock exchange transactions (retail trading), Securities Clearing is an important member of Necigef.

Settlement of wholesale transactions may be effected by the participants in Necigef by means of book-entry transfers, either in the form of delivery free of payment or delivery versus payment.

#### *Securities Board of the Netherlands*

The function of the Securities Board of the Netherlands is to give directions regarding stock exchange regulations, the application of these regulations and the monitoring of compliance. The stock exchange is obliged to observe these directions. The Securities Board is independent of both the Government and the business sector. It relies greatly on the controlling bodies of the stock exchanges themselves. This so-called self-regulation of the stock exchanges is to meet certain criteria imposed by the Securities Board. These criteria provide protection for investors and guarantee the smooth operation of the relevant stock exchanges.

## **4.2 Summary information on securities markets**

### **4.2.1 Main features of different securities markets**

The market is an open market, divided into a retail segment and a wholesale segment. Transactions in listed securities on the Dutch retail market must be settled through the Amsterdam Stock Exchange. With regard to the wholesale segment, prices may be determined outside the stock exchange.

The international character of trade in Dutch securities is also reflected in the Amsterdam Treasury bond Market (ATM), the wholesale market in central government bonds via the interdealer-broker or direct deals.

Foreign stockbroking firms may participate in the ATM by means of extraordinary membership of the stock exchange.

There is a separate trading system (Trading System Amsterdam, TSA) for shares and non-government bonds. The stock exchange has linked retail to wholesale transactions within this system.

For the wholesale market, the stock exchange has two systems:

- the Automatic Interprofessional Dealing system Amsterdam (AIDA), which is in fact an automated interdealer-broker;
- the Amsterdam Stock Exchange Trading system (ASSET), a screen-based system for members of the stock exchange to inform members and non-members of quotes.

De Nederlandsche Bank operates a Clearing Institution for professional parties in the money market. Money market paper in the form of certificates of deposit (CDs) and commercial paper (CP) may be submitted for safe custody in this system in the form of global notes (acknowledgement of debt). The denominations which may be used are NLG 1 million (ECU 0.46 million). This also includes Nederlandsche Bank certificates and Dutch Treasury certificates. This Clearing Institution effects the clearing of Medium-Term Notes (MTN) in the same manner.

No restrictions are imposed on the capital market by De Nederlandsche Bank.

#### 4.2.2 *Basic quantitative aspects (basic statistics)*

The stock exchange value of ordinary Dutch (certificates of) shares at the end of 1994 was NLG 492 billion (ECU 228 billion). The nominal value of outstanding central government bonds was NLG 271 billion (ECU 126 billion). The nominal value of CDs, CP and MTNs with the Clearing Institution amounted to NLG 59 billion (ECU 27 billion). In 1994, the (gross) turnover on the Amsterdam Stock Exchange was NLG 848 billion (ECU 393 billion) for bonds (of which NLG 794 billion (ECU 368 billion) was accounted for by central government bonds) and NLG 312 billion (ECU 144 billion) for shares. Transactions on the interprofessional market with foreign stockbroking firms totalled NLG 138 billion (ECU 64 billion), and with institutional investors NLG 118 billion (ECU 54 billion). The turnover of the Clearing Institution in 1994 amounted to NLG 79 billion (ECU 37 billion).

#### 4.2.3 *Financial intermediaries operating in the different securities markets*

Various categories of intermediaries operate in the securities market. An important group consists of commercial banks. In addition, stockbrokers have traditionally played an important role in securities transactions. A distinction is made between Security Credit Institutions (SCI) and Non-Security Credit Institutions (NSCI). The latter group needs the co-operation of a bank for the settlement of its money and securities position.

On the stock exchange, the so-called *hoekmen* (specialists) are responsible for determining the price of the securities assigned to them. In addition, the stock exchange has an interdealer-broker for trade in central government bonds.

Specialised intermediaries operate in the private loans market (registered loans) and in the money market.

In its capacity as a universal bank, the Kas-Associatie, of which 60% is held by the Amsterdam Stock Exchange, has a special position in the securities sector. It operates as a banker for many of the stock exchange members. Cash settlement of stock exchange transactions by Securities Clearing and the delivery versus payment transactions made through Necigef, including the settlement of interest, repayments and dividends on book-entry securities, are effected through the accounts of the Kas-Associatie.

#### 4.2.4 *Recent developments*

The Investment Services Directive and the Capital Adequacy Directive of the EC led to a discussion on reorganising the structure of the stock exchange and the clearing and settlement infrastructure in the Netherlands.

### 4.3 **Securities settlement through Necigef**

#### 4.3.1 *Major regulations*

Necigef is the central securities depository and settlement institute for securities in the Netherlands. Nearly all Dutch securities are held in safe custody by Necigef. The transfer of securities between participants in Necigef consequently takes place via Necigef itself. A large number of transactions effected through Necigef result from the settlement of stock exchange transactions by Securities Clearing.

#### 4.3.2 *Participation in the system*

Participants comprise enterprises and institutions with the status of credit institutions which, to a large extent, effect activities in the Netherlands with regard to the administration of securities on behalf of third parties. Foreign central securities institutes may also participate in Necigef. De Nederlandsche Bank, the European Options

Clearing Corporation and Securities Clearing also participate in this institute.

#### **4.3.3 Types of transactions handled**

In addition to transfers free of payment resulting from the clearing by Securities Clearing, Necigef also handles securities transfers between participants. Participants may place an order for delivery free of payment or against payment to other participants in Necigef, against debiting of their securities account held with Necigef. The Necigef system provides for the two-way matching of delivery and payment instructions.

Necigef also manages pledge accounts. The pledge relationship is recorded in Necigef's books. This is mainly used in its relationship with De Nederlandsche Bank and the EOCC. This means that in the event of failure, the power of disposal in respect of the collateral is vested in De Nederlandsche Bank or in the EOCC and interest or dividends are paid directly by Necigef to the institution pledging the securities (the pledgor). However, in the case of repayment, the principal is paid to the pledgee.

#### **4.3.4 Operation of the transfer system**

The Necigef system is a gross system with online real-time settlement of orders. Orders which cannot be effected directly, because the balance on an account is insufficient, remain active until five days after the original settlement day. The participants must submit online orders. Orders may also be scheduled. An online message is sent if the status of an order changes. For orders free of payment, a unilateral order is sufficient. For delivery versus payment, a matching order from the counterparty is required. In order to ensure rapid processing for the participants, the account number of the final beneficiary is used as a matching criterion.

#### **4.3.5 Transaction processing environment**

In 1994 Necigef performed 84,000 delivery versus payment (DVP) transactions. In addition, as a result of the netting (of trades on the Amsterdam Stock Exchange) at the Securities Clearing (SC), 319,000 deliveries free of payment were made from participants in Necigef to the SC. The securities received in this way resulted in 308,000 deliveries from the SC to participants. The remaining deliveries free of payment (as wholesale transfers) amounted to 433,000 in 1994. It is expected that a far-reaching shift will take place from the latter type towards DVP on account of the introduction of new online delivery and working methods.

#### **4.3.6 Settlement procedures**

The processing of scheduled orders takes place at the start of the processing day (evening S-1). Deliveries to Securities Clearing also take place at night. In view of the same-day use of the money involved, DVP orders matched after 11 a.m. are not processed that day.

#### **4.3.7 DVP arrangements**

In the case of delivery versus payment, the securities are blocked on settlement day, after which time the banker of Necigef, the Kas-Associatie, is requested to transfer the money. The final transfer takes place after the payment has been recorded in the books of this bank.

#### **4.3.8 Pricing policies**

Necigef operates on a full cost basis. Every year, a budget is prepared setting the provisional amount to be paid by each participant. The fixed costs are passed on in the form of membership fees and account costs. The variable costs are passed on

according to the user's share in the total. The final amount to be paid is determined after the end of the financial year.

#### **4.3.9 Main projects and policies being implemented**

At Necigef, a real-time online system for settlement of securities transactions was implemented at the end of 1995. Following its introduction, the next step will be for the settlement of the money side of securities transactions denominated in guilders to be effected through the account system of De Nederlandsche Bank (March 1996).

### **4.4 Securities settlement through Securities Clearing**

#### **4.4.1 Major regulations**

All stock exchange transactions are settled through Securities Clearing. Securities Clearing is the counterparty of both the buyer and the seller.

#### **4.4.2 Participation in the system**

The participants in the system are members of the stock exchange buying or selling securities for their own account on the stock exchange.

The Amsterdam Stock Exchange Association includes a number of categories of business members:

- banks;
- stockbrokers/security credit institutions entered in one of the registers held by De Nederlandsche Bank to which reference is made in the Act on the Supervision of the Credit System (1992) or in the registers of a comparable foreign authority;

- stockbrokers not entered in one of the registers held by the Bank to which reference is made in the Act on the Supervision of the Credit System (1992) or in the registers of a comparable foreign authority;

- *hoekmen* (specialists);

- interdealer-brokers;

- intraday traders/floorbrokers.

The supervision (of the solvency, liquidity, expertise and reliability) of business members not falling within the scope of the supervision exercised by De Nederlandsche Bank is the responsibility of the Control Office of the Amsterdam Stock Exchange. The control office also monitors whether members are observing the rules. Many of these rules have been established as a result of self-regulation.

In addition, the Association also includes extraordinary business members. These are enterprises not established in the Netherlands involved in activities with regard to Dutch public debt.

#### **4.4.3 Types of transactions handled**

All stock exchange transactions are included in the continuous net settlement system operated by Securities Clearing.

#### **4.4.4 Operation of the transfer system**

Securities Clearing uses a netting system which includes all stock exchange transactions, per member of the exchange and per security. Securities Clearing is the counterparty in each transaction, and in this capacity holds a position of net deliveries or receipts. Delivery to Securities Clearing takes place through Necigef. Payments are effected via Kas-Associatie.

**4.4.5 Transaction processing environment**

(See Section 4.3.5.)

**4.4.6 Settlement procedures**

Every day, Securities Clearing nets out the positions held by stock exchange members per security per settlement day. Delivery of the net position to Securities Clearing takes place via Necigef. If authorised by the relevant party, Securities Clearing may collect the securities at Necigef. If the securities are not delivered, Securities Clearing may, in principle, borrow the required securities from the securities accounts held on behalf of a number of banks. On the basis of the securities received in this manner, Securities Clearing determines the delivery obligation it can meet. On this basis, it then determines how much each participant is to pay or receive. For the amounts to be paid, Securities Clearing requests Kas-Associatie, with whom all participants must hold an account, for payment approval. Once this approval has been obtained, it orders Necigef to deliver the securities. Netting takes place during the night preceding settlement day, thus giving the participants the opportunity to ensure that the balance on their account early in the morning will be sufficient by transferring the required amount from their account with the central bank to that with Kas-Associatie. At around 10 a.m., deliveries are made by Securities Clearing to the receiving parties.

The system used by Securities Clearing is a netting system. If a party required to pay is unable to meet its obligation, netting is not unwound. The stock exchange has a guarantee fund for use in such situations.

**4.4.7 DVP arrangements**

After the approval to transfer money has been obtained from the parties required to make net payments, Securities Clearing transfers the securities to the buyers. If a

party has no money, payment is guaranteed by the guarantee fund. In such a case the relevant securities will be deposited on the account of the stock exchange.

**4.4.8 Credit and liquidity risk control measures**

In the case of stock exchange transactions, Securities Clearing becomes the counterparty. It can only deliver if deliveries are made to it or if it borrows securities to meet its delivery obligation. In the event of non-delivery to the Securities Clearing, the Securities Clearing has the possibility to make a buy-in. If the buyer is unable to pay, recourse may be made to the guarantee fund.

**4.5 Settlement of CDs, CP and MTNs through the Bank's Clearing Institution****4.5.1 Major regulations**

The Clearing Institution of De Nederlandsche Bank was set up to enable professional market parties to trade money market paper in a simple and transparent manner. The Clearing Institution acts as depository of debt certificates (global notes) which are negotiable in denominations of NLG 1 million (ECU 0.46 billion) in book-entry form.

**4.5.2 Participation in the system**

In addition to the original intermediaries in the money market, credit institutions with an advance facility at the Bank may also participate in the Clearing Institution. Participants' depositories are also admitted, as well as Euroclear and Cedel.

#### 4.5.3 Types of transactions handled

The Clearing Institution handles delivery versus payment, delivery free of payment transactions and pledges to De Nederlandsche Bank.

#### 4.5.4 Operation of the transfer system

The system used is a netting system; netting takes place twice a day. The processing of money market paper and capital market paper takes place separately.

Orders free of payment are given unilaterally. The orders must be authorised (by S.W.I.F.T., key or original signature). Orders for delivery versus payment require a matching order.

#### 4.5.5 Transaction processing environment

The Clearing Institution was set up for transactions between professional market parties. The transactions volume is not very high, the average size of transactions being NLG 49 million (ECU 23 million) for CDs/CP, and NLG 15 million (ECU 7 million) for MTNs. The transactions size for CDs/CP is positively influenced by transactions in Dutch Treasury certificates and Nederlandsche Bank certificates.

#### 4.5.6 Settlement procedures

Transactions in money market paper reported before 12 noon are processed at around 1 p.m. Money transfers are effected in the account system of De Nederlandsche Bank.

The netting of capital market paper is effected at the beginning of the day according to time schedules based on common practice for capital market paper.

#### 4.5.7 DVP arrangements

The first check to be made is whether the deliveries resulting from the netting can be effected. In addition, the participants required to make net payments are charged irrevocably in the payment system of De Nederlandsche Bank. If the balance on a participant's account is insufficient, it is offered the opportunity to supplement its balance at short term. At worst, the transaction is unwound.

#### 4.5.8 Credit and liquidity risk control measures

No measures have been taken to reduce the credit risk (replacement cost risk) and liquidity risk run in respect of the counterparty. The principal risk in the credit risk is eliminated by DVP. Same-day settlement is possible with regard to money market paper.

#### 4.5.9 Pricing policies

The transactions costs and the costs for safe custody are based on the nominal amount in the portfolio. The fee is set by De Nederlandsche Bank.

### 4.6 Settlement of options and futures through the EOCC Clearing Corporation BV (EOCC)

#### 4.6.1 Major regulations

Each transaction on the exchange results in two separate (option or futures) contracts in which the EOCC is a counterparty. The substitution of the EOCC as counterparty to obligations takes effect at commencement time (10 a.m.) on the business day after trade day (T+1), that is after the Clearing Members have settled their daily net obligations vis-à-vis the EOCC (settlement time: 9 a.m.).

#### 4.6.2 Participation in the system

Membership of the EOCC is restricted to Clearing Members. At the end 1994, fifteen Clearing Members of the total 209 EOE members were qualified to clear contracts. The other members, including public order members and floor brokers, have to use the services of these Clearing Members to clear their options and futures transactions. These members have to sign Clearing Contracts with their Clearing Members.

#### 4.6.3 Types of transactions handled

The types of options handled are: stock options, index options (Dutch index and Eurotop 100), bond options, flexible bond options, currency options and precious metal options.

The types of futures handled are: index futures (Dutch index and Eurotop 100), bond futures and USD/NLG futures.

Since June 1995, it has also been possible to clear options and futures transactions concluded in the OTC market through the EOCC (by Clearing Members).

This possibility is also open to trades between non-members, as long as contract specifications are those of standard EOE contracts.

#### 4.6.4 Operation of the transfer system

The EOCC's cash accounts, in which it holds deposited amounts for margin purposes on behalf of the Clearing Members, are held at the Kas-Associatie, where all Clearing Members must also have a cash account. All Clearing Members have authorised the EOCC to debit their accounts at the Kas-Associatie in order to settle their daily net obligations vis-à-vis the EOCC.

#### 4.6.5 Transaction processing environment

FTA and EOE are open outcry markets. The turnover of contracts in 1994 was 12,440,898 for options and 1,121,252 for futures.

#### 4.6.6 Settlement procedures

Margin requirements are collected daily at settlement time (T+1, 9 a.m.) or at any other time determined by the EOCC. The EOCC has been authorised to make intraday margin calls.

Gains on futures contracts are realised and settled daily in the variation margin (mark-to-market). Gains on options contracts are realised at the moment contracts are closed or exercised. Gains are settled in the EOCC's daily settlement process.

After the exercising/tendering Clearing Member has notified the EOCC, the EOCC selects at random an account of a Clearing Member which has a long position in the same series or product, and exercises/tenders its short position against this Clearing Member by giving it a delivery or receipt instruction. The delivering Clearing Member has to deliver the underlying value to the EOCC, which in turn has to deliver the underlying value to the receiving Clearing Member.

In the event of the physical delivery of instruments quoted on the Amsterdam Stock Exchange, the EOCC, after having chosen the Clearing Members responsible for delivery, passes on the details of the Clearing Members involved to the Securities Clearing. Delivery of these instruments takes place on the third working day (T+3) after an option or future has been exercised according to normal Stock Exchange procedures. Inter alia, this means that from the moment the EOCC has notified the Securities Clearing, the Securities Clearing becomes the central counterparty to the parties involved and guarantees payment and delivery.

**4.6.7 Credit and liquidity risk control measures**

The EOCC maintains clearing funds for the options and futures contracts. The EOCC maintains these clearing funds to cover any possible losses in excess of the margin deposits received from clearing members. The EOCC has a lien on these deposits in

the event of the default of a clearing member. Clearing members contribute on the basis of the average number of outstanding contracts during a revolving period of three months with a specific minimum contribution. In case losses should exceed clearing fund resources, clearing members have to make good the shortage by making additional contributions.

## 5. Statistical data

**Table 1**

Basic statistical data <sup>(1)</sup>

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	14,947	15,068	15,182	15,290	15,381
Gross domestic product (NLG billions)	516.6	542.6	566.1	579.0	608.4
Exchange rate vis-à-vis ECU <sup>(2)</sup>	2.3119	2.3109	2.2755	2.1757	2.1585

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**

Settlement media used by non-banks

(end of year)

	NLG billions				
	1990	1991	1992	1993	1994
Notes and coins	36.5	37.0	37.0	37.6	38.1
Transferable deposits	87.5	92.3	98.1	112.1	114.1
of which held by:					
households	40.7	40.4	41.6	45.6	47.0
corporate sector	40.1	42.3	45.1	53.9	54.5
other	6.7	9.6	11.3	12.6	12.6
Narrow money supply (M1)	123.9	129.3	135.1	149.6	152.2

**Table 3**

Settlement media used by deposit-taking institutions

(end of year)

	NLG millions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	6,605	0	12,484	15,783	11,361
of which can be used for settlement <sup>(1)</sup>	6,605	0	12,484	15,783	11,361
Free reserves held at central bank	17	116	32	42	25
Transferable deposits at other institutions	3,979	2,768	1,906	3,118	1,893

(1) As collateral.

**Table 4****Banknotes and coins***(total value, end of year)*

	NLG billions				
	1990	1991	1992	1993	1994
Total banknotes issued	36.9	37.3	37.3	37.8	38.3
of which:					
NLG 1,000	15.4	15.5	15.1	15.5	15.8
NLG 250	4.1	4.2	4.3	4.7	5.0
NLG 100	13.4	13.6	13.8	13.4	13.2
NLG 50	1.4	1.5	1.6	1.7	1.8
NLG 25	1.8	1.7	1.7	1.7	1.8
NLG 10	0.7	0.7	0.7	0.8	0.8
NLG 5	0.1	0.1	0.1	0.1	0.1
Coins issued	2.5	2.6	2.6	2.6	2.6
of which:					
NLG 5.00	0.885	0.929	0.916	0.912	0.915
NLG 2.50	0.485	0.483	0.482	0.474	0.476
NLG 1.00	0.643	0.656	0.654	0.654	0.661
NLG 0.25	0.279	0.286	0.293	0.283	0.290
NLG 0.10	0.192	0.197	0.200	0.200	0.203
NLG 0.5	0.066	0.069	0.071	0.071	0.072
Notes and coins held by credit institutions	2.9	2.9	2.9	2.8	2.8
Notes and coins in circulation outside credit institutions	36.5	37.0	37.0	37.6	38.1

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (NLG billions)
Central bank	1	12	-	-
Commercial banks	97	2,903	5,600	61.3
Savings banks	28	45	100	0.2
Co-operative and rural banks	1	1,923	5,500	32.0
Postbank	1	2,250	6,500	20.6
<b>TOTAL</b>	<b>128</b>	<b>7,133</b>	<b>17,700</b>	<b>114.1</b>
Branches of foreign banks	24			
of which EC-based	13			

**Table 6**
**Cash dispensers, ATMs and EFTPOS terminals**  
*(end of year)*

	1990	1991	1992	1993	1994
Cash dispensers and ATMs					
Number of networks	2	2	2	2	2
Number of machines	2,700	3,354	3,964	4,461	4,998
Volume of transactions (millions)	116	207	262	314	367
Value of transactions (NLG billions)	20	36	45	56	65
EFTPOS terminals					
Number of networks	2	2	2	1	1
Number of points of sale	2,223	4,038	11,440	24,549	47,588
Volume of transactions (millions)	27	32	47	67	126
Value of transactions (NLG billions)	1.3	1.8	3.8	7.3	14.4

**Table 7**
**Number of payment cards in circulation <sup>(1)</sup>**  
*(end of year)*

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function	8,371	9,273	12,538	13,107	13,988
Cards with a debit/credit function	856	1,950	1,500	1,257	1,257
<i>of which:</i>					
<i>cards with a debit function</i>	<i>n.a.</i>	<i>n.a.</i>	<i>1,500</i>	<i>1,257</i>	<i>1,257</i>
<i>cards with a credit function</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Cards with a cheque guarantee function	1,998	2,213	1,765	1,796	1,297
Retailer cards	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Interpay <sup>(1)</sup>	944.1	992.6	1,045.8	1,130.5	1,225.4
Cheques	114.6	110.5	91.7	71.9	55.8
Other	829.5	882.1	954.1	1,058.6	1,169.6
8007 S.W.I.F.T.	1.4	2.0	1.8	1.9	2.0
Cheques	0.0	0.0	0.0	0.0	0.0
Other	1.4	2.0	1.8	1.9	2.0
Central bank FA system	0.8	0.5	0.5	0.4	0.4
Cheques	0.0	0.0	0.0	0.0	0.0
Other	0.8	0.5	0.5	0.4	0.4

(1) Former Bankgirocentrale.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	NLG billions				
	1990	1991	1992	1993	1994
Interpay <sup>(1)</sup>	1,711.9	1,851.8	1,942.0	2,207.4	2,195.0
Cheques	16.5	16.2	15.0	11.7	9.2
Other	1,695.4	1,835.6	1,927.0	2,195.7	2,185.8
8007 S.W.I.F.T.	5,252.9	7,862.0	8,055.0	9,011.0	10,139.7
Cheques	0.0	0.0	0.0	0.0	0.0
Other	5,252.9	7,862.0	8,055.0	9,011.0	10,139.7
Central bank FA system	10,137.0	6,694.2	7,658.5	9,300.1	9,182.5
Cheques	0.0	0.0	0.0	0.0	0.0
Other	10,137.0	6,694.2	7,658.5	9,300.1	9,182.5

(1) Former Bankgirocentrale.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>Necigef</b>			
Banks <sup>(1)</sup>	31	-	-
Stockbrokers	15	-	-
Securities houses <sup>(2)</sup>	2	-	-
Cedel / Euroclear	-	-	-
CSDs	5	-	-
Money market brokers	-	-	-
Depositories of participants	-	-	-
<b>Clearing institute central bank</b>			
Banks	65	-	65
Stockbrokers	-	-	-
Securities houses	-	-	-
Cedel / Euroclear	2	-	2
CSDs	-	-	-
Money market brokers	6	-	6
Depositories of participants	7	-	7

(1) Including DNB.

(2) Effectenclearing and EOCC.

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
Securities settlement					
Necigef	1,142	1,159	1,193	1,323	1,145
Clearing institute central bank	2	2	3	2	2
Effectenclearing	1,001	963	938	1,195	1,155

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	NLG billions				
	1990	1991	1992	1993	1994
Necigef	n.a.	n.a.	n.a.	n.a.	n.a.
Clearing institute central bank					
CDs	11.7	9.3	11.4	15.7	25.0
CPs	13.4	14.2	21.0	17.0	39.4
MTNs	9.5	14.5	16.1	15.8	14.6
Effectenclearing <sup>(1)</sup>					
Government securities	83.4	147.8	207.2	355.8	397.1
Bonds	11.3	12.3	16.2	28.2	27.0
Shares	75.4	73.9	80.3	125.4	156.0

(1) The figures show the turnover of ASE.

**Table 13**

Nominal values registered by the securities settlement systems  
(end of year)

	NLG billions				
	1990	1991	1992	1993	1994
Necigef	217.1	270.6	309.3	394.7	414.0
Clearing institute central bank					
CDs	5.5	4.8	7.8	7.0	13.6
CPs	3.4	4.5	4.7	9.1	13.8
MTNs	8.1	14.2	21.3	27.2	31.9

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	260.0	247.0	221.9	180.5	144.8
Payments by debit and credit cards	27.0	32.0	46.6	91.7	192.7
Paper-based credit transfers	102.0	98.0	105.0	101.4	79.1
<i>customer initiated</i>	102.0	98.0	105.0	101.4	79.1
<i>interbank/large-value</i>	0.0	0.0	0.0	0.0	0.0
Paperless credit transfers	956.0	963.0	1,003.1	1,382.2	1,481.0
<i>customer initiated</i>	953.8	960.5	1,000.8	1,379.9	1,478.6
<i>interbank/large-value</i>	2.2	2.5	2.3	2.3	2.4
Direct debits	360.0	392.0	431.4	479.5	531.0
<b>TOTAL</b>	<b>1,705.0</b>	<b>1,732.0</b>	<b>1,808.0</b>	<b>2,235.3</b>	<b>2,428.6</b>

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	NLG billions				
	1990	1991	1992	1993	1994
Cheques issued	35.0	33.0	32.0	25.9	21.0
Payments by debit and credit cards	1.3	2.0	3.8	10.0	21.6
Paper-based credit transfers	48.0	45.0	48.0	36.5	26.4
<i>customer initiated</i>	48.0	45.0	48.0	36.5	26.4
<i>interbank/large-value</i>	0.0	0.0	0.0	0.0	0.0
Paperless credit transfers	18,141.7	17,032.0	18,741.2	21,188.1	22,195.0
<i>customer initiated</i>	2,751.8	2,475.8	3,027.7	2,877.0	2,872.9
<i>interbank/large-value</i>	15,389.9	14,556.2	15,713.5	18,311.1	19,322.2
Direct debits	223.0	246.0	226.0	229.8	239.8
<b>TOTAL</b>	<b>18,449.0</b>	<b>17,358.0</b>	<b>19,051.0</b>	<b>21,490.2</b>	<b>22,503.8</b>

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	53	54	55	59	55
<i>of which:</i>					
<i>members</i>	29	30	29	30	27
<i>sub-members</i>	23	23	25	28	28
<i>participants</i>	1	1	1	1	0
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,256	4,623
<i>of which:</i>					
<i>members</i>	1,812	1,963	2,074	2,244	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,887	2,023
<i>participants</i>	63	78	91	125	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	12,168,453	12,944,496	13,547,572	14,543,442	15,253,265
<i>of which:</i>					
<i>category I</i>	5,836,114	6,071,972	6,310,685	6,474,480	6,508,032
<i>category II</i>	2,743,791	2,790,345	2,733,648	2,912,403	3,107,787
<i>sent/received to/from domestic users</i>	999,117	1,419,578	1,763,389	1,996,747	1,750,991
Total messages received	11,331,221	12,158,421	12,865,625	13,983,712	14,538,364
<i>of which:</i>					
<i>category I</i>	-	-	4,941,606	5,169,497	5,279,922
<i>category II</i>	-	-	1,921,436	2,066,993	2,081,037
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>AGB</b>	Austrian Government Bonds
<b>APSS</b>	Austrian Payment Systems Services GmbH
<b>DAIC</b>	Direct Austrian Interbank Communication
<b>DCM</b>	Direct Clearing Membership
<b>DG</b>	<i>Direktgeschäft</i>
<b>DS</b>	Direct Settlement System
<b>EBK</b>	<i>Elektronisches Banken- und Kundenkommunikationssystem</i>
<b>EBKIS</b>	EBK Interface System
<b>EBK-ISS</b>	EBK Integrated Security Sub-system
<b>EQOS</b>	Electronic Quote and Order Driven System
<b>GABE</b>	<i>Geldausgabeautomaten-Service GmbH</i>
<b>GCM</b>	General Clearing Membership
<b>GOMEX</b>	<i>Geldmarktrelevante Offenmarktgeschäfte in expansiver Richtung</i>
<b>LEOs</b>	Long-term Equity Options
<b>LZ</b>	<i>Lieferung gegen Zahlung</i>
<b>MBS</b>	Multi-Bank-Standard
<b>OeNB</b>	Oesterreichische Nationalbank
<b>OeNEZ</b>	<i>Oesterreichische Nationalbank Elektronischer Zahlungsverkehr</i>
<b>OEVZ</b>	<i>Österreichische Eurocheque-Verrechnungszentrale</i>
<b>OKB</b>	Oesterreichische Kontrollbank
<b>ÖTOB</b>	<i>Österreichische Termin- und Optionsbörse</i>
<b>PATS</b>	Partly Assisted Trading System
<b>PICS</b>	Price Information, Clearing and Settlement System
<b>REGOM</b>	<i>Restriktive geldmarktrelevante Offenmarktgeschäfte</i>
<b>RIVA</b>	Risk Valuation System
<b>STUZZA</b>	<i>Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr</i>
<b>WBI</b>	<i>Wiener Börse Index</i>
<b>WDBO</b>	<i>Wertpapierdatenbank Österreich</i>
<b>WSB</b>	<i>Wertpapiersammelbank</i>
<b>WU</b>	<i>Wertpapierübertrag</i>

## Introduction

Austria's payment system is characterised by a dense network of bank outlets and post offices and a large number of payment products. The infrastructure available today comprises uniform systems for the processing of payment transactions with traditional instruments such as transfers, debits or cheques, and for the rapidly growing number of electronic payment media, which in Austria focus primarily on cash dispenser (ATM), point-of-sale (POS) and electronic purse (from 1996) transactions.

The Austrian system is marked by a high degree of co-operation in the banking sector and essentially functions on the basis of contractual agreements. The common platform for this co-operation is the Research Association for Payment Co-operation, known as STUZZA (*Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr*).

This association was founded in 1991 and is owned by Austria's large commercial banks and the central bank, the Oesterreichische Nationalbank (OeNB).

The OeNB's operational role in the non-cash payment sector is limited to the settlement of interbank transfers. For this purpose, an electronic communications system (*Elektronische Bankenkommunikation, EBK*) has been in operation since 1989. This system enables participating banks to make real-time interbank payments on their OeNB accounts. In tandem with the efforts of other EU member countries, this system is currently being transformed into an RTGS system interlinkable within the future TARGET system.

In its function as a central bank, the OeNB has a voice in all payment developments of relevance for the economy in general, in particular through its participation in specialised institutions. Apart from its activities within STUZZA, the OeNB also has a holding in Austrian Payment Systems Services GmbH (APSS), which is responsible for the processing and clearing of a large share of electronic interbank payments, and in the plastic card manufacturer Austria Card.

## I. Institutional aspects

### 1.1 General legal aspects

Austria does not have a specific law regulating payment transactions in a comprehensive way. Instead, the legal foundation is provided by various Acts: Austrian Banking Act 1993 (*Bankwesengesetz*), Austrian Postal Savings Bank Act 1993 (*Postsparkassengesetz*), National Bank Act 1984 (*Nationalbankgesetz*), Cheques Act 1955 (*Scheckgesetz*), Bills of Exchange Act 1955 (*Wechselgesetz*), with the individual contractual design of payment systems hardly being subject to restrictions.

Pursuant to the Austrian Banking Act, the task of effecting non-cash payment transactions on a commercial basis has been exclusively entrusted to banks, which, for this purpose, require a licence issued by the Federal Minister of Finance.

The Postal Savings Bank Act sets out the Austrian Postal Savings Bank's involvement in payment transactions. Moreover, the Postal Savings Bank plays a central role with respect to the federal government's payment transactions.

Pursuant to the provisions of the National Bank Act, the Oesterreichische Nationalbank also enjoys a special position in payment system matters. The Bank has the exclusive right to issue banknotes, and, according to its legally defined tasks, has the right to act as clearing house for payment transactions, cheque and bill business. Moreover, the Bank is also legally empowered to conduct the federal administration's banking business, a task which in practice is almost exclusively performed by the Austrian Postal Savings Bank (see Section 1.4.1), which is also legally empowered to carry out this task.

In Austria, the actual legal character and conduct of payment transactions on an interbank basis or between banks and their customers is governed by civil law (in

particular the Austrian Civil Code, Cheques Act, Bills of Exchange Act), with the banks' Standard Terms and Conditions (*Allgemeine Geschäftsbedingungen*) applying to such civil law contracts, especially to transactions in retail banking. Certain regulations also apply to consumer giro accounts, both under the former Banking Act (*Kreditwesengesetz*) and the Austrian Banking Act currently in force (*Bankwesengesetz*). Moreover, consumers benefit from the Consumer Protection Act, which, among other things, provides the possibility for a review of the contents of the Standard Terms and Conditions.

Foreign payment transactions are essentially governed by the Foreign Exchange Act (*Devisengesetz*) and the OeNB's Official Announcements with regard to the Foreign Exchange Act. They have been fully liberalised since 1991. Simultaneously, a new Foreign Transactions Reporting System came into operation. Based on these statistical data, the OeNB establishes the balance of payments. For legislation with regard to securities trading, see Section 4.1.1.

### 1.2 Financial intermediaries that provide payment services

Austria's 1,053 independent banks (December 1994) are divided into seven categories or sectors according to their legal status and membership of a sector association: joint stock banks and private bankers (53), savings banks (80), rural credit co-operatives (728), industrial credit co-operatives (80), special purpose banks (98 including the Austrian Postal Savings Bank), regional mortgage banks (9) and building societies (5).

With the exception of the building societies, the entire banking industry, including the Austrian Postal Savings Bank and the Oesterreichische Nationalbank, are entrusted

with the task of providing the Austrian economy with payment services.

Credit card business is conducted by various companies: *VISA-Service Kreditkarten AG*, *Eurocard Austria Kreditkartengesellschaft mbH*, *Air Plus Travel Card Vertriebsgesellschaft mbH* and *Diners Club Austria AG*, all of whom are majority-owned by Austrian banks.

During the past two decades, the differences between the sectors have become less and less clear-cut. This has mainly been the result of competitive pressures that have forced individual banks and entire sectors to offer all their customers a comprehensive range of financial and payment services. This development has turned Austria's banking system into a typical universal banking system.

One consequence of the banks' determined efforts in recent years to enlarge their market shares has been a proliferation of banking outlets in Austria. The country's 1,053 different credit institutions have a total of 4,683 branches. This means that each banking outlet serves less than 1,400 customers, making Austria one of the world's most bank-intensive countries.

### 1.3 The role of the central bank

#### 1.3.1 General responsibilities

The OeNB is the central bank of the Republic of Austria and has the exclusive right to issue banknotes. It is a joint stock company with legal provisions stipulating who may be a shareholder.

Article 2, paragraph 2 of the National Bank Act 1984 assigns the OeNB the function of "regulating the circulation of money in Austria and attending to the settlement of payments with foreign countries".

#### *Provision of notes and coin*

Notes and coin are provided to the Austrian economy through the OeNB's Vienna headquarters and its seven branches located in the capitals of Austria's Länder. Banks and the Austrian Post Office meet their cash needs at the central bank's head office or at the nearest branch and in turn debit their account with the OeNB. Cash no longer needed is returned to the OeNB and the respective accounts are credited. This procedure enables banks and the Post Office to keep their cash holdings to a minimum.

The notes and coin delivered to the Cashier's Division at the OeNB's headquarters and to the branches are counted by banknote sorting machines; soiled and damaged notes as well as any counterfeits are culled and destroyed together with called-in banknotes of earlier series. Banknotes are produced in the OeNB's own Printing Works; coins are struck by the Austrian Mint (*Münze Österreich AG*), which is wholly owned by the OeNB.

#### *Non-cash payments*

The OeNB's role in non-cash payments is limited to the settlement of interbank payments (see Section 1.3.2). Apart from their use for money market transactions, the fulfilment of minimum reserve requirements and the provision of cash, the accounts the OeNB holds for Austrian banks are used especially for the settlement of bilateral clearing positions between the banks. The OeNB has no operational function in non-cash retail payments (for the settlement function for retail payments, see Section 3.1).

#### *Establishment of common rules*

Against the background of European and international harmonisation requirements, the OeNB considers the establishment of general

framework conditions for the banks' payment systems as a new task and is intensifying co-operation with the banks in this field.

In July 1991 the OeNB and Austria's largest banks founded the aforementioned Research Association for Payment Co-operation, a body charged with examining Austrian payment systems for their rationalisation potential and with elaborating concepts for speeding up and reducing the cost of domestic and cross-border payments. The OeNB holds 25% of the association's equity and nominates the chairman of its supervisory board.

In September 1993 *Europay Austria Zahlungssysteme Gesellschaft mbH* was founded as the result of a merger of *Eurocard Austria Kreditkartengesellschaft mbH* and *GABE Geldautomaten Servicegesellschaft mbH*, which had already been in charge of Austria's POS and ATM network and which had been owned by Austria's banks and the OeNB. Europay is owned by a total of thirty-two Austrian financial institutions and is a central switching centre for all bank payment media.

Another company founded in 1993, Europay Austria's subsidiary Austrian Payment Systems Services (APSS), in which the OeNB holds a 10% share, carries out all Europay Austria's technical service functions in Austria - eurocheque POS business, ATM transactions and domestic and foreign Eurocard transactions (see also Section 1.4).

This co-operative policy was continued by the 100% purchase of Austria Card, the plastic card manufacturer which plays an important role in Austria in the development of chip card technology.

By taking such steps, the OeNB supports every initiative taken by the banking industry to promote efficiency, rationalisation and the stability of the public's confidence in existing and future systems without seeking to play an active operative role.

#### *Supervision and audit*

While banking supervision and regulation is clearly the responsibility of the Federal Ministry of Finance, there is no statutory framework for the supervision or regulation of the Austrian payment system as such.

Banking supervisors have access to a number of instruments that facilitate early risk detection and timely counteractive measures, which range from banks' comprehensive duty to publish reports (monthly asset and liability summaries, quarterly income statements, special audit reports) to the supervisor's right of inspection.

The Oesterreichische Nationalbank has been charged with a number of supervisory tasks. Most importantly, Austrian banks must provide the Oesterreichische Nationalbank with copies of all their declarations and reports. The OeNB uses them to check compliance with banking regulations and as a basis for the preparation of expert opinions for the Federal Ministry of Finance.

In its new Banking Act 1994, Austria has fulfilled its duty to incorporate the EU Banking Directives and Recommendations in its own legislative framework. The most important are the two banking law co-ordination Directives and the Directives on capital adequacy, solvency, balance-sheet accounting and the supervision of banks on the basis of consolidated accounts. The existing system of deposit protection was also incorporated into the new Banking Act. Austria's deposit protection facilities guarantee deposits up to a maximum of ATS 260,000 (ECU 19,202.36) per person. The Banking Act has also integrated the EU Directive on money laundering into Austrian law. Austrian credit and financial institutions must now inform the competent state authority (*Staatskommissär*) of their own accord of anything that gives them reason to suspect that money is being laundered. Moreover, they now have generally stricter duties regarding care and prudence.

The new Banking Act has also led to closer collaboration between the Federal Ministry of Finance and the Oesterreichische Nationalbank. The Federal Minister of Finance is now empowered to commission the Oesterreichische Nationalbank to carry out on-site inspections in specific cases.

### **1.3.2 Provision of processing and settlement facilities**

#### *Settlement facilities*

The Oesterreichische Nationalbank handles payment transactions only for banks and for the Republic of Austria (for historical reasons, there are still some accounting connections with the corporate sector).

According to the National Bank Act, the Oesterreichische Nationalbank provides no interest, requires minimum deposits and does not permit any overdrafts. Apart from the daily settlement of accounts (see Section 3.1), and the money market transactions connected therewith, the banks use the funds held on OeNB accounts to meet their minimum reserve requirements, for cash settlements, refinancing and exchange transactions. Furthermore, the balances from ATMs and POS terminals are cleared by APSS and settled via OeNB accounts.

At present, the OeNB keeps 647 settlement accounts for domestic customers, so-called *Girokonten*, (385 for domestic banks, 262 for public authorities and private firms) and 108 settlement accounts for foreign customers, so-called *freie Schilling-Konten*, (ninety-one for foreign banks, seventeen for monetary institutions such as the IMF, etc.).

Participation in the OeNB's payment transactions is regulated by general business conditions.

In November 1989 the Oesterreichische Nationalbank started operation of its internal electronic payment transactions network,

OeNEZ, which allows intraday settlement of interbank and intrabank credit transfers between accounts at the OeNB and all its branches. OeNEZ is connected to the EBK system (see Section 3.2.1).

#### *Credit facilities*

Banks' access to refinancing at the OeNB is limited to discount, lombard and open market transactions within individually fixed lines known as refinancing limits. Intraday refinancing will only be possible when RTGS is introduced (1997).

The limits are determined in keeping with the monetary policy concept followed by the central bank, i.e. it takes into account the intermediate interest rate policy objective and the exchange rate objective (see Section 1.3.3).

#### *Pricing policies*

The OeNB's payment services are free of charge. These provisions will be changed in line with the future RTGS system (see Section 3.2.2).

### **1.3.3 Monetary policy and payment systems**

Having opted for an exchange rate target (i.e. Austrian policy consists in keeping the exchange rate of the Austrian schilling stable vis-à-vis the Deutsche Mark), the OeNB cannot autonomously influence the development of domestic liquidity, as the central bank money supply, the liquidity of the banking system and the money stock are endogenous variables.

The continuous provision of the Austrian banking sector with central bank money is ensured by means of so-called standing facilities. This means that credit institutions have a permanent refinancing volume (refinancing ceiling) at their disposal. This

figure is geared to the level of central bank money needed for meeting the minimum reserve requirement.

Within this framework, there are basically three refinancing possibilities: the rediscount of bills of exchange (trade bills), borrowing from the central bank against securities (lombard loans) and the securities repurchase deals (GOMEX). The discount rate, which in spite of the declining utilisation of this instrument continues to play a role as a key interest rate, is normally fixed at a substantially lower level than the short-term money market rates. The lombard rate constitutes the most expensive form of refinancing for credit institutions (penalty rate) and is therefore hardly ever used. The interest rate applied to so-called GOMEX transactions constitutes the floor for short-term money market rates.

On the one hand, additional fine-tuning instruments are designed to overcome short-term liquidity bottlenecks and to provide credit institutions with funds beyond the regular refinancing ceiling, while on the other, contractionary money market operations are designed to absorb excess liquidity.

Expansionary operations consist of the so-called special open market lines (SOMAL; current maximum amount ATS 20 billion, i.e. ECU 1.48 billion), which are organised as repurchase agreements for one week or, if necessary, longer, and foreign exchange swaps. Regular open market transactions at the central bank's discretion, aimed at fine-tuning short-term interest rates and bank liquidity respectively, do not occur in Austria.

Contractionary measures are the reversed or REGOM transactions, whereby securities are offered to credit institutions at close-to-market rates, as well as the issue of certificates in accordance with Article 55 of the National Bank Act (*Kassenscheine*; maximum volume is currently ATS 30 billion, i.e. ECU 2.22 billion).

However, a change in the OeNB's monetary policy instruments and procedures is in preparation with the intention of developing a framework for a supply-driven management of central bank money that will also serve the intraday liquidity needs of the future RTGS system (see Section 3.2.2).

#### **1.3.4 Major projects being implemented**

Construction of a new printing works is currently under way.

Apart from the above-mentioned transformation of the EBK system into an RTGS system and its participation in the TARGET (see Section 3.2.2), the introduction of prepaid cards is a major project in the field of non-cash payments.

Taking into account the recommendation of the EMI Council of May 1994, that only banks should be authorised to issue prepaid cards, the OeNB closely monitors developments in this area, with the main emphasis being placed on the security of the technology applied to protect the overall integrity of the payment system.

At the end of 1994 *Europay Austria Zahlungssysteme GmbH* along with *Austria Card - Plastikkarten und Ausweissysteme GmbH* started a field test with an electronic purse at Eisenstadt (Burgenland) (see Section 2.2.4).

## **1.4 The role of other private and public sector bodies**

### **1.4.1 The Postal Savings Bank's role in payment transactions**

The Austrian Postal Savings Bank (*Österreichische Postsparkasse*) is an institution having separate legal personality, with its business policy geared to profitability considerations. The Federal Republic (*Bund*) is fully liable for the Austrian Postal Savings Bank's debts. The Federal Republic must

accept deposits and make payments through the Post Office giro and savings system on behalf of, and for account of, the Austrian Postal Savings Bank.

In conducting business, the Austrian Postal Savings Bank must pay due regard to the financial policy of the federal government and must support the OeNB in performing its monetary and credit policy functions; it serves as an agent with regard to the central bank's minimum reserve mandate. Since the balances held with the Postal Savings Bank can be counted towards the minimum reserve, banks consider these holdings as central bank money. The Austrian Postal Savings Bank, in turn, is required to hold the equivalent amount of minimum reserves with the OeNB.

In this function, the Postal Savings Bank acts as a conduit for interbank payment transactions. Consequently, almost all Austrian banks hold accounts with the Postal Savings Bank.

The distribution network of the Postal Savings Bank comprises 2,300 post offices. The density of this network has made the Postal Savings Bank a payments centre for over a hundred years. With approximately 200 million forms handled annually, the Postal Savings Bank is one of the leading banks in domestic retail payment transactions.

#### *Principal banker of the Federal Republic*

The Austrian Postal Savings Bank performs the function of "principal banker of the Federal Republic", i.e. all payment transactions of the Federal Republic are effected through its account system.

#### **1.4.2 Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr (STUZZA)**

The Research Association for Payment Co-operation, known as STUZZA, was established in 1991 as a common forum for co-operation to improve the Austrian payment system. This association is owned by the OeNB and large commercial banks. Thus, STUZZA brings together the major players in payment transactions and indirectly also all sectors of the Austrian banking system.

The major task of STUZZA is to work out efficient - and thus cost-effective - operational sequences with regard to the organisation of payment transactions and to reach agreement on common standards. However, it is neither authorised to define binding rules - i.e. the implementation of proposed new measures requires the consent of all sectors - nor does it have an executing function - i.e. it does not provide payment services.

Major projects so far have been the introduction of cheque truncation, the implementation of a Multi-Bank-Standard for electronic banking, the standardisation of payment forms and the establishment of rules with regard to image technology in paper-based payment transactions.

#### **1.4.3 Europay Austria/Austrian Payment Systems Services GmbH**

In 1993 Austrian credit institutions - in their capacity as shareholders - decided to merge the activities of Eurocard Austria and of GABE (*Geldausgabeautomaten-Service Gesellschaft mbH*) with regard to Eurocard/MasterCard, debit card POS and ATMs, and established *Europay Austria Zahlungssysteme GmbH*.

Since then Europay Austria has served as the switching centre for all card-based payment systems within Austria and with the rest of the world.

While all strategic and marketing issues for the products Eurocard/MasterCard, EFTPOS and ATMs are dealt with by Europay Austria, all EDP-based technical service functions of Eurocard Austria and GABE (i.e. for all eurocheque transactions at POS terminals, for all ATM transactions and for all Eurocard transactions in Austria and abroad) are carried out by Austrian Payment Systems Services GmbH (APSS), which was also established at the time of the merger.

#### 1.4.4 Organised economic interests

The representation of banks' economic interests is organised along similar lines to the structure of the banking industry: there is

the Austrian Chamber of Commerce (*Bundeskammer der gewerblichen Wirtschaft*), the Federation of Austrian Banks and Private Bankers (*Verband der österreichischen Banken und Bankiers*), the Federation of Rural Credit Co-operatives (*Fachverband der Kreditgenossenschaften nach dem System Raiffeisen*), the Federation of Austrian Savings Banks (*Hauptverband der österreichischen Sparkassen*), the Federation of Austrian Credit Co-operatives (*Österreichischer Genossenschaftsverband*), and the Federation of Austrian Regional Mortgage Banks (*Verband der österreichischen Landes-Hypothekenbanken*). The interests of consumers are represented primarily by the Austrian Chamber of Labour (*Österreichische Arbeiterkammer*).

## 2. Payment media used by non-banks

### 2.1 Cash payments

Cash has legal tender status in Austria. Banknotes of six denominations: ATS 5,000 (ECU 369,28), ATS 1,000 (ECU 73.86), ATS 500 (ECU 36.93), ATS 100 (ECU 7.39), ATS 50 (ECU 3.69) and ATS 20 (ECU 1.48) and nine denominations of coins: ATS 20 (ECU 1.48), ATS 10 (ECU 0.74), ATS 5 (ECU 0.37), ATS 1 (ECU 0.07); 50, 20, 10, 5, 2 and 1 groschen are used in non-banks' cash payment transactions.

In absolute terms, the volume of cash in circulation has increased markedly on a long-term basis. It expanded more than sevenfold from 1960 to average ATS 151 billion (ECU 11.15 billion) in 1994. However, there is a distinct long-term trend toward a contraction of growth, as indicated by the decline as a percentage of GDP from 11% in 1960 to 6% in 1994.

Nevertheless, cash still plays a dominant role in direct payments between non-banks. In

everyday life the vast majority of Austrian consumers have traditionally paid for goods and services in cash and credit cards are hardly ever used to acquire essential goods.

### 2.2 Non-cash payments

Nowadays almost all payments made by enterprises and public authorities are non-cash payments. Moreover, most of private households' payments to public authorities (e.g. for gas, electricity, water, etc.) are cashless (apart from certain fees that must be paid in the form of fee stamps), while cash still plays a dominant role in retail business.

Private households and enterprises have access to payment systems through the banking sector (see Section 1.2). As for money deposited on giro accounts (i.e. sight deposits), funds transfers (credit transfers, direct debits, standing orders) account for the largest share. Payments by credit card have gained in importance, while cheques

are insignificant, accounting for only about 6% of the total volume of transactions.

The giro account constitutes the hub of payment transactions. Cash can be drawn from the giro account (cash dispensers, POS transactions and payments by credit card are also based on the giro account). Last but not least, transactions by cheque and funds transfers are effected through giro accounts.

Since the introduction of a system of paperless salary and pension payments, the number of giro accounts at Austrian banks has risen to a total of 5,747 million in 1994 (5,612 million in 1993), of which 4,051 million (approximately 70%) are private salary and pension accounts and the rest are mainly accounts of business enterprises. At the end of 1994, over 50% of the Austrian population held salary or pension accounts.

### 2.2.1 Credit transfers

Credit transfers are the most popular non-cash payment media in Austria.

As in other countries, increasing automation has led to a significant increase in paperless payments. With the number of private giro accounts (i.e. current accounts) rising, funds transfers have expanded, with paperless direct debiting orders and standing orders (the instruction to the bank to make certain recurrent payments from one's account) being particularly popular. These transfers are largely automated.

### 2.2.2 Cheques

Although the cheque has been in use in Austria for quite some time, it acquired importance only relatively late. In 1969 the first cheque guarantee card was issued, but it was not until the introduction of the eurocheque card in 1981 that the cheque

became a universal payment instrument. All Austrian banks participate in the eurocheque system and offer their customers eurocheque cards with ATM access (see Section 2.2.4).

For the purpose of customer payment transactions, the eurocheque system was standardised, with cheques being subject to a limited acceptance guarantee. Cheques are used primarily in payment transactions between consumers and retailers. Since June 1990 it has also been possible to use the eurocheque card to obtain cash from cash dispensers in other EU Member States.

One indicator of the number of cheques used is the eurocheque forms issued to the banking system since 1982. Taking into account reserves held at banks or by customers, for which an exact distinction is not possible, an average of 60 million individual cheque forms were distributed annually between 1982 and 1989. The number of cheque forms delivered has been falling rapidly since 1989.

While at the beginning of the 1980s cash was mainly obtained by cheque from bank counters, the situation changed in the mid-1980s as a result of the rapid increase in the number of cash dispensers (automatic teller machines). This put a damper on the expansion of cheque transactions, which was also due to the cost involved (ATM transactions are free of charge, while fees are charged for cheques). In recent years, substitution processes have been observed from the cheque to the cash dispenser system and credit cards, and the cheque has lost considerable ground. While in 1993 about 40 million cheques were used, the number fell to just over 35 million in 1994, of which 21.5 million were made out at wholesale and retail establishments and service companies.

Domestic cheques are cleared bilaterally between the banks. The handling and clearing of cheques made out by non-residents in Austria or by Austrians abroad is effected

through the *Österreichische Eurocheque-Verrechnungszentrale* (OEVZ), which has been part of the APSS since the beginning of 1995.

### 2.2.3 Direct debits

Since the beginning of the 1960s direct debits - besides cheques and direct transfers - have been an important payment instrument and nowadays some 30% of all non-cash payments take the form of direct debits. Most of the transactions are effected on a paperless basis. In contrast to cheques or direct transfers, the payment transaction is initiated by the creditor. The direct debit is made out by the payee and presented to his/her bank for collection of the amount from the payer's bank. However, this requires the agreement of the payer, with two different legal forms of direct debits having emerged: first, the pre-authorized payment mandate, with the payer instructing his/her bank to debit his/her account, and second, the automatic debit transfer, which is an agreement between the payer and the payee, with the possibility of retransfer.

Large enterprises in particular use direct debits, almost exclusively on a paperless basis, for the collection of regular payments.

### 2.2.4 Payment cards

#### *Debit cards*

Debit cards in Austria comprise around 2.5 million eurocheque cards and about 1.1 million bank customer cards. Debit cards are associated with a giro account and the amounts transacted are debited to this account usually on a same-day basis. In 1994 almost 9 million transactions were effected electronically via POS terminals.

#### *Credit, travel and entertainment cards*

The first credit card in Austria was the Diners Club card introduced in 1975, followed by VISA and Eurocard in 1980, as well as Amexco (1985) and Air Plus (1987). For a long time credit cards in Austria were used almost exclusively by affluent citizens, but they have turned into a mass payment medium in recent years. By now, almost 15% of Austrian households use credit cards. Credit cards are issued by Austrian banks. At 1,064,000, the number of credit cards in circulation exceeded 1 million for the first time in 1994, rising by 9% from the year before. VISA and Eurocard dominate the Austrian market, with each company having issued over 440,000 cards by the end of 1994, which corresponded to a market share of over 41% each.

Total turnover (at home and abroad) amounted to close to ATS 42 billion (ECU 3.1 billion) in 1994. As credit cards were used in approximately 24 million transactions, the average amount involved per transaction came to some ATS 1,790 (ECU 132.2), compared with ATS 1,830 (ECU 135.16) in 1993. This indicates an increasing trend to use credit cards also for minor transactions.

About half of the credit card transactions nowadays are effected through POS terminals, with authorisation being given and a receipt being printed automatically. In this way, handling costs can be reduced substantially.

#### ■ Europay Austria (see Section 1.4.3)

Europay is in charge of the Eurocard/MasterCard credit card, the debit card function at POS terminals (including the corresponding European and world-wide function edc/Maestro), the ATM function (including the corresponding European and world-wide function ec-Piktogramm/Cirrus) and the eurocheque card. The Eurocard is sold by Austrian credit institutions. The number of cards in circulation rose to over 444,000 in 1994. There were almost 28,000

card acceptors at the end of 1994. World-wide co-operation with MasterCard means that Austrian retailers can also accept MasterCards. Total turnover in 1994 amounted to just under ATS 16 billion (ECU 1.18 billion) and involved almost 10 million transactions.

#### *Retailer cards*

There is a variety of customer cards, issued mostly by retailers, which, however, can only be used locally. In some Austrian skiing regions, for example, ski passes are issued in the form of chip cards (including the function of an electronic purse for using the tourism infrastructure). *KKD Kunden-Karten-Dienstleistungs-GmbH* is an Austrian company owned by Europay and VISA whose business purpose is to design, implement and technically handle customer card systems for third parties that also enable the cardholder to purchase goods and services exclusively from this third party on a non-cash basis.

#### *Prepaid cards*

Prepaid cards so far have been used primarily in the form of phone cards.

At the end of 1994, however, *Europay Austria Zahlungssysteme GmbH* and *Austria Card Plastikkarten und Ausweissysteme GmbH* (wholly owned by the OeNB since 1994) jointly launched an "electronic purse" pilot project. This pilot project for cashless payments by means of loadable chip cards started at Eisenstadt. From December 1994, some 17,000 cardholders could use their smart cards to pay for goods and services at over one hundred terminals in retail stores, at the tobacconist's, in taxis or coffee-houses. Two types of card were issued: a customer card (EC card or bank customer card) and an anonymous "*Eisenstadt-Wertkarte*" (quick card). With both types of card a maximum amount of ATS 1,999 (ECU 147.64) can be loaded onto the "electronic purse" from the

cardholder's account at ATMs of credit institutions participating in the project. Moreover, the customer card could be used for off-line POS payments.

The Austrian project is a "sight deposit-type" of prepaid card scheme, as the circulated electronic money in all its stages of processing is posted to bank accounts and, like sight deposits, is thus under the central bank's control. This scheme provides for a circuit from the customer's bank account to a collective account of the prepaid card-issuing bank and back to the account of the payee's bank.

This model thus takes account of the recommendation of the EMI Council of May 1994, that only banks should be authorised to issue prepaid cards, and it allows the OeNB to obtain information on the security of the technology used with a view to protecting the overall integrity of the payment system. Following the results of the Eisenstadt pilot project, a eurocheque card with an integrated chip will be introduced nationwide in 1996 (see Section 2.3).

#### *ATM and POS network*

In 1980 Austrian banks joined forces to set up a uniform system of automatic cash dispensers. In 1987 the system was extended by the POS terminal component.

The ATM system is based on the eurocheque card in combination with a four-digit PIN code to obtain cash from cash dispensers. At the end of 1994, 1,639 million eurocheque cards with a PIN code were in circulation compared with 1,590 million cards in 1993, of which 1,438 million were actually used, which corresponded to a utilisation rate of almost 88%. By the end of 1994, 1,821 outdoor ATMs had been installed nationwide (344 in Vienna), almost 17% more than a year earlier (1,564 in 1993). In 1994 ATS 74 million (ECU 5.47 million) was obtained on average from each cash dispenser in Austria;

the utilisation rate has declined somewhat due to the growing number of ATMs.

A total of ATS 126 billion (ECU 9.31 billion) was obtained from ATMs in 1994, up from ATS 112 billion (ECU 8.27 billion) in 1993. The average amount of cash withdrawn per month was therefore over ATS 10 billion (ECU 0.74 billion) in 1994. The average monthly amount withdrawn per card was just below ATS 2,000 (ECU 147.71).

In addition to the 1,821 outdoor ATMs, 1,242 ATMs had been installed in the foyers of banks by the end of 1994, bringing the total number of ATMs in Austria to almost 3,100, which means a ratio of over 2,500 inhabitants to one ATM. Since it is a nationwide system, the same card can be used all over Austria. The operation of the system has been uniform ever since its introduction, and cash supply through ATMs is widely accepted by the Austrian population, one of the reasons being, without doubt, that ATM transactions are free of charge. Holders of Austrian eurocheque cards with an ATM function can now make withdrawals from cash dispensers in many other European countries.

In addition to cash dispensers, there were 2,410 POS terminals in operation at petrol stations or in retail stores at the end of 1994. Although the number of POS terminals has been rising, retailers make only very limited use of this possibility for the time being.

Until 1993 GABE *Geldautomaten Servicegesellschaft mbH* was in charge of the Austrian POS and ATM system. Since the merger with *Eurocard Austria Kreditkartengesellschaft mbH* in September 1993, *Europay Austria Zahlungssysteme Gesellschaft mbH* has been acting as the central switchboard for electronic bank payment media (see Section 1.4.3).

### 2.2.5 Postal instruments

The Austrian Postal Savings Bank (*Österreichische Postsparkasse*, see Section 1.4.1) - owing to its long-established special position - operates the largest giro network in Austria, using the approximately 2,300 post offices as access to the Austrian Postal Savings Bank's payments system. About 35% of all Austrian payment forms are handled through post offices.

In 1994 290 million transactions were made through the Austrian Postal Savings Bank's 524,000 payment accounts, with the total volume of turnover amounting to ATS 15,800 billion (ECU 1,166.91 billion).

About 40% of the transactions are carried out in paperless form. Non-cash credits and debits as well as funds transfers have recorded significant increases. The number of cash transactions has declined, not least because there are charges on payments to banks outside the PSK system. The development of a uniform payment form marked another step towards the paperless handling of payments.

## 2.3 Recent developments

With regard to direct customer payments, electronic banking facilities (such as home and telephone banking) have become increasingly popular. Since the beginning of the 1980s, various electronic banking facilities have been introduced, including the BTX system of the Austrian Post Office and electronic banking for commercial banks. Some banks already offer access to accounts via the Internet.

A uniform standard for electronic banking was introduced in the first half of 1995 in the form of the Multi-Bank-Standard (MBS). Companies will be able to communicate with different credit institutions via a uniform user interface and with uniform technical interfaces (communication and security).

Another project deals with the use of scanners and image technology in paper-based payment transactions. The objective is to implement uniform standards by mid-1996. Cheque truncation was introduced at the beginning of 1995.

In the wake of the Eisenstadt pilot project, the eurocheque card with an integrated chip will be introduced nationwide in 1996, thus

providing offline POS and electronic purse functions. Starting in the autumn of 1995, as part of the routine exchange, all 2.5 million magnetic stripe cards issued are to be replaced by this new card. For reasons of international compatibility, the card will initially also be provided with the magnetic stripe now in use. ATMs must be equipped with suitable reading and writing devices.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

The present Austrian interbank settlement procedure makes no distinction between retail and large-value payments. The vast majority by far of payment transactions in the Austrian banking sector - regardless of the amount - are effected by means of bilateral netting arrangements at a decentralised level. Processing is done on a peripheral basis, and the settlement of the banks' clearing positions is effected through OeNB and Postal Savings Bank accounts (net settlement).

In line with the structure of the Austrian banking sector, payment transactions are effected through the circuits of the OeNB, the Austrian Postal Savings Bank, the major Austrian banks or those of multi-tier sectors with central institutions (savings banks, rural credit co-operatives, industrial credit co-operatives).

Intersectoral payments are carried out through bilateral accounts or holdings with third-party banks. In the multi-tier sectors, the central institutions are in charge of intra- and intersectoral liquidity equalisation. Banks not belonging to a multi-tier sector keep bilateral settlement accounts. In general, the larger institution acts as the account-keeper, conducting so-called *ordinario* accounts, while the smaller institution keeps control records (known as *mirror* accounts). The *ordinario*

accounts are conducted as creditor accounts, i.e. they carry interbank deposits for payments and liquidity management.

Bilateral preliminary clearing (*Vorclearing*) represents another of the account-keeper's tasks: under this scheme, a value date agreement between the banks provides for payment orders to be collected by 12 noon every day, to be transmitted via a data medium to the account-keeping institution and to be netted out there, with the value date being the next banking day. The resulting payment obligations remaining after preliminary clearing are processed for final settlement on OeNB or Postal Savings Bank accounts.

The linking system between the banks and the OeNB is the Electronic Bank/Customer Communications System (*Elektronische Banken- und Kundenkommunikationssystem*, EBK, see Section 3.2), which was established in 1989. So far, the appeal of this real-time system, which can be used by Austrian banks, major enterprises and the OeNB, has been rather limited, mainly for financial reasons. Currently, about 900,000 transactions a year are processed through the EBK system, comprising small tax payments as well as money market payments amounting to billions of schillings. Close to 66,000 of these EBK payments are transactions between banks and the OeNB.

### **3.2 Real-time gross settlement (RTGS) systems: Electronic Bank/Customer Communications System (EBK system)**

In view of the requirements to be met on a national level with regard to the European TARGET system, programmes to streamline interbank circuits and to reorganise the settlement procedure of large-value payments towards RTGS are currently in preparation. This reorganisation will be based on the existing EBK system, which has been in use since 1989.

#### **3.2.1 Functioning, participation in the system, types of transactions handled**

The EBK system offers electronic communication to participants, with the APSS (see Section 1.4.2) serving as the centre. The system manages and controls electronic payment transactions between Austrian banks, the OeNB and commercial customers. It allows the paperless handling and transmission of data between the participating banks and their customers. Apart from the OeNB, sixty-eight banks and ten business enterprises currently participate in the system.

The EBK system was conceived as a star network with its central node in the APSS, which monitors the exchange of data between the individual EBK participants, as well as the network control of the overall system. The system is a store-and-forward system and does not provide for banks' internal processing of the individual messages.

The EBK system accepts incoming messages (from a sender) and forwards these messages instantaneously to the recipient. If the addressee is not ready to receive the message, the EBK system will store the message until the addressee logs in. The sender of a message may request an end-to-end confirmation from the addressee in order to be sure that the message has actually been received. If an addressee fails to send such a confirmation within ten minutes (e.g. because

the addressee is not ready to receive) the EBK system will send an overdue warning informing the sender of the message about the delay in the transmission.

In order to ensure security and data integrity, each message can be authenticated and coded. The authentication and coding of messages is end-to-end, i.e. only the sender or the addressee can process, change or decode messages within the EBK system. Within the framework of the EBK system, payment orders, account information of the OeNB and private authenticator key exchange information can be handled.

#### **3.2.2 Transaction processing environment**

The central computer in the APSS store-and-forward system is an IBM S/88.

With a view to rationalising and simplifying user access points, software for IBM host computers (Direct Austrian Interbank Communication, DAIC) and for DEC computers (EBK Interface System, EBKIS) has been developed in co-ordination with the development of the central computer in the APSS and is made available by the manufacturers against payment of licence fees.

For the wide utilisation of PCs or networks, PC software is available through the APSS and the Austrian banks under the label of EBK-PC. Part of this software is the EBK-ISS (Integrated Security Sub-system) function, which is integrated when using EBK-PC. EBK-ISS supports the automatic coding and authorisation of EBK messages. When using DAIC or DEC, this function is supported by PCs running EBK-ISS software.

This function allows uniform and easy-to-handle automatic end-to-end coding. The entire EBK system uses general standard data formats over the LOGICA protocol and a predefined selection of basic network protocols (SNA LU2, SNA LU6.2, X.25).

### 3.2.3 Settlement procedures

EBK payments through OeNB accounts can be ordered at any time during operating hours (i.e. between 8 a.m. and 1 p.m.). As settlement is gross, in real time and with finality, the EBK system meets the basic requirements of an RTGS system.

The settlement of EBK payments without the involvement of the OeNB is analogous to the procedures of bilateral netting outlined above (see Section 3.1).

### 3.2.4 Credit and liquidity risk

Since the EBK system is a mere message system for the exchange of coded information on payment transactions, it does not offer any credit lines to participants. Participants are therefore responsible for risk management with regard to intraday credit. They may avoid settlement risk completely by effecting EBK payments through the OeNB and thus enjoying the systemic security associated with an RTGS system.

### 3.2.5 Pricing

The charges for the EBK system consist of a licence for EBK (ISS) PC software (one-off payment ATS 20,000/ECU 1,477.10) and two options for transaction cost scales:

Option 1: Prorated software development cost one-off payment ATS 425,000 (ECU 31,388.48).

Option 2: For the first 40,000 transactions, ATS 30 (ECU 2.22) per transaction; over 40,000 transactions, sliding-scale prices apply. Transaction cost scale for banks ranging between:

Number of transactions	Cost per transaction
1 - 5,000	ATS 15 (ECU 1.11)
5,001 - 12,000	ATS 14 (ECU 1.03)
12,001 - 21,000	ATS 13 (ECU 0.96)
21,001 - 35,000	ATS 10 (ECU 0.78)
35,001 - 60,000	ATS 7 (ECU 0.57)
60,001 - 100,000	ATS 4 (ECU 0.35)
over 100,000	ATS 3 (ECU 0.26)

The scale applies to one calendar year.

## 3.3 The future Austrian RTGS system

In order to provide the Austrian interbank system and the OeNB with a suitable basic infrastructure for payment settlement within the future framework of the ESCB (TARGET), the EBK system is to be redesigned as a new RTGS system. The OeNB is developing the project in close co-operation with the banking sector. The new RTGS system outlined below is scheduled to be put into operation in the course of 1997.

### 3.3.1 Functioning rules

#### *General features of the system*

The future RTGS system is going to be designed primarily for the settlement of large-value interbank payments, with no limits in terms of value. The main criterion for using the RTGS system will be the size and/or urgency of the payment. Participants in the system will have to decide on a case-by-case basis whether or not to effect or demand payment through RTGS, taking into consideration the priority of the payment and/or the credit standing of the other party to the transaction.

Provided cover is available, payment orders will be settled on a gross basis, and posted immediately and irrevocably to OeNB accounts. The system will be characterised by

the highest security standards and maximum transparency. The RTGS user will be able to check his/her latest account balance at any time during operating hours and may follow the account transactions of the day.

The future Austrian RTGS system will consist of two components: communication (transmission of messages) and payment order management/account management.

### 3.3.2 Participation in the system

In principle, banks licensed in Austria and banks based in the EU (as remote access participants) will be qualified to participate in accordance with access criteria to be defined. Non-banks will not be allowed to participate.

Banks may also take part in the RTGS system as indirect participants, i.e. they may assign the authority to operate an account to another bank. The network access point of the authorised institution will be used for the entire technical communication. Participation in the system will be specified further in line with the EU.

### 3.3.3 Types of transactions handled

Via the RTGS system participants will be able to execute credit transfer orders, assign priorities to their orders, cancel payment orders and apply for daylight overdrafts (see Section 3.3.8). Moreover, the system will provide for various enquiries. Participants may check their account balance, giro account entries, daylight overdraft line and recourse to it, as well as any outstanding orders (own orders and expected incoming orders in the queue).

From the outset, it will be possible to carry out the following types of payments via RTGS:

- OeNB payments (money market operations, cash transactions, etc.);

- interbank payments arising from money market and foreign exchange transactions;
- interbank payments for customers (if they are to be credited on the same day).

Both the originator and the receiver institution must be holders of an account with the OeNB. Only same-day payment orders will be accepted.

### 3.3.4 Operation of the transfer system

In the payment order management/account management component, orders will be processed (queue management, posting and relevant information functions, management of daylight overdrafts) and posted to the participants' giro accounts at the OeNB.

All incoming payment orders will be placed in the waiting queue of the account to be debited and will be processed according to the FIFO (first-in, first-out) principle. If at the moment a payment order comes in there is no other payment pending in the waiting queue and the account has sufficient cover, the payment order will be settled and posted immediately. Thus the waiting queue will be worked off the moment a payment order comes in.

The originator will have the possibility of assigning a priority status to each payment order. All orders relating to the OeNB will have top priority. All other orders can be classified as either "urgent" or "standard". The waiting queue will be worked off in order of priority and in accordance with the FIFO principle. Payment orders pending in the waiting queue may be cancelled by the originator at any time.

Only formally correct messages will be accepted. A message will be considered formally correct if the account numbers of the originator/recipient are valid and if the originator is authorised to carry out the transaction on the account to be debited. If a

message is formally defective, it will be rejected by the system and an error message will be issued. Any formally correct payment order will be accepted by the system and properly processed. Any transaction errors will be treated according to the causation principle.

There will be no value dating. At the end of the day, payments that have not been executed will be returned, with notification sent to the originator of the payment order.

### 3.3.5 Transaction processing environment

The RTGS system will incorporate various measures to safeguard access to the system and the correct execution of payment orders. The RTGS system will be designed in such a way so as to minimise the risk of system failure. Even if the connection between the participant and the RTGS system is cut (problems on the part of the participant, line problems, network problems), it will still be possible for the participant to place its payment orders in the conventional manner, i.e. by telex or telephone.

The communication component will be designed to link technically the participants to the RTGS system, i.e. payment orders will be transmitted by the originator to the OeNB. Various precautionary measures will provide a high degree of systemic security.

The RTGS application will be implemented and operated on the system platform of the OeNB, thereby providing connection with the OeNB account management and/or the OeNB securities system and connection with the interlinking system (i.e. the TARGET system).

The system will make use of an existing network with store and forward functions (APSS/EBK). The format used will be the S.W.I.F.T. format or a format that can easily be converted into S.W.I.F.T. Payment orders will be transmitted in full to the OeNB

(V-principle). Once payment has been settled, the originator will receive confirmation of execution and the payee institution a credit advice containing full information on the initial payment order. Furthermore, a separate backup system will be available for the network node.

### 3.3.6 Settlement procedures

The RTGS system will provide the following procedures and time schedules to be fixed in accordance with TARGET requirements:

#### *Order accepted*

From this time on, the RTGS participant may transmit orders for the current day to the RTGS system, although orders are not processed up to the time at which settlement starts.

#### *Settlement starts*

Payment orders are processed as from the start of settlement. Moreover, all information functions (enquiries) are available to the participants.

#### *Cut-off 1*

This marks the time at which participants are requested to close their accounts for customer orders. From this time on, only interbank payment orders for the settlement of debit balances and the repayment of daylight overdrafts are admitted.

#### *Cut-off 2*

From this time on, RTGS participants can no longer initiate transactions on their accounts.

*Close of posting 1*

Between Cut-off 2 and Close of posting 1, payment orders may still be transferred from OeNB systems to the RTGS system. At Close of posting 1, all unsettled payment orders in the waiting queue are returned to the participants. A negative account balance at Close of posting 1 leads to the purchase of securities by the OeNB to cover the account (see Section 3.3.8).

*Close of posting 2*

This marks the time at which RTGS is closed. After Close of posting 2, the OeNB sends account statements to the participants.

**3.3.7 Credit and liquidity risk**

The OeNB will not incur any risk because payments will only be executed on condition that the current account has sufficient cover or the participant is within its overdraft line. In order to facilitate participants' liquidity with regard to RTGS operations, the OeNB plans to grant individual overdraft lines (DO lines) to participants. A DO line will be the maximum amount by which an account may be overdrawn during the day. The DO line will be fixed by the OeNB in consultation with the participant and will be adjusted on the basis of experiences with the RTGS system.

During RTGS operation, a participant may apply for a DO line. It will be granted if eligible collateral is provided on the securities deposit account. For protection against exchange losses, the haircut (difference between the market value of a security and its collateral value) will be applied to collateral securities.

The participant will be notified of granting or refusal by electronic means, with a positive response immediately initiating the working-off of the waiting queue of the

account concerned. Any DO line granted will be valid until the end of the day.

Before the close of posting, an automatic verification will be effected as to which banks have recourse to a DO line. If an account is not covered at Close of posting 1, the OeNB will make a compulsory purchase of the securities provided as collateral. The account holder is then obliged to buy back these securities the next day (purchase with repurchase obligation). The securities to be sold will be selected in consultation with the account holder.

**3.3.8 Pricing policies**

RTGS transactions will be subject to fees to cover costs. The OeNB's pricing policy provides for a fee to be charged on each transaction and for a transaction fee depending on the time of execution and the payment amount (discrimination against smaller amounts). Transactions connected with the OeNB's own-account business (refinancing, cash transactions, foreign exchange business, etc.) will remain free of charge.

From the implementation of the RTGS system, orders delivered in paper-based form rather than electronically to the RTGS network will be subject to the maximum transaction fee plus an additional handling fee.

No interest will be charged on daylight overdrafts. However, interest will be charged in the event of compulsory overnight securities purchases by the OeNB. The interest rate will be geared to the applicable market rate (plus a penalty).

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Austria does not have a specific law regulating securities transactions in a comprehensive way. Instead, the legal foundation is provided by various laws. The following legal texts contain provisions with regard to securities trading:

- Stock Exchange Act (requirements for the admission of securities to listing on the stock exchange, trading rules, supervision, regulative standards applied to issuers and dealers, insider-dealing provisions);
- Securities Deposit Act (provisions regarding the custody of securities and the safeguarding of the owner's rights);
- Banking Act (obligation to obtain a licence for securities trading; securities and custody business has been entrusted to banks exclusively);
- Foreign Exchange Act and Official Announcements of the OeNB (reporting requirements);
- Ordinance issued by the Federal Minister of Justice (designating *Oesterreichische Kontrollbank*, OKB, as the Central Securities Depository).

#### 4.1.2 The role of the central bank

##### *General responsibilities*

As far as the settlement of securities transactions is concerned, the OeNB is involved neither in supervisory aspects nor in actual settlement procedures; its role is restricted to being a market participant and user of the OKB systems (see Sections 4.3.1

and 4.3.2). With a view to sustained financial market stability, however, the OeNB has a vital interest in the smooth settlement of transactions.

##### *Monetary policy operations and securities settlement systems*

A different stand is taken with respect to monetary policy instruments. In line with the OeNB's refinancing policy, banks have recourse to discount, lombard and securities repurchase deals within individually fixed limits, so-called refinancing lines (described in greater detail in Section 1.3.3). As lombard loans are banks' most expensive source of central bank funds, this facility is unused at the moment and has been of little importance in the past. The vast majority of the current standing facilities are accounted for by securities repurchase deals (GOMEX transactions).

GOMEX transactions are settled in the OeNB. The legal basis for these transactions are Articles 54 and 55 of the National Bank Act, as well as the OeNB's terms and conditions of open market transactions. Currently sixty Austrian banks are eligible for GOMEX transactions. They may initiate GOMEX transactions (purchases or sales) between 8 a.m. and 1.15 p.m. The OeNB will then check the eligibility of the securities and the degree of utilisation of the bank's refinancing line. As the bank's security deposit must have sufficient cover prior to the conclusion of the transaction, there is no default risk.

The commercial banks have to pay the applicable open market rate (GOMEX rate) for the provision of central bank funds. At present, GOMEX transactions are concluded until further notice, i.e. transactions can be settled daily by the two parties involved.

*Main projects and policies being implemented*

As far as non-cash payments are concerned, the changeover from the EBK system to RTGS and its inclusion in TARGET have top priority at the moment (see Section 3.2). As part of the OeNB's payment systems strategy, the efficient and safe settlement of securities transactions is considered particularly important from the supervisory viewpoint. The OeNB is currently engaged in defining its position in this respect.

**4.1.3 The role of other public sector bodies***Vienna Stock Exchange*

The Vienna Stock Exchange is a legal entity under public law. According to the Stock Exchange Act of 1989, its management and administration fall within the competence of the Stock Exchange Council, which consists of twenty-nine members. The Stock Exchange is supervised by the Federal Ministry of Finance, which ensures that the legally binding regulations for the Stock Exchange are upheld.

The Vienna Stock Exchange has appointed the *Oesterreichische Kontrollbank* (OKB) to run a clearing and settlement system and to provide electronic trading facilities for the cash market. The respective services for the options and futures market are provided by the Austrian Futures and Options Exchange (ÖTOB).

**4.1.4 The role of other private sector bodies***Central Securities Depository*

In 1872, the *Wiener Giro- und Cassenverein* was founded as the first institution in the world to offer central securities depository services. It was followed in 1965 by today's *Wertpapiersammelbank* (WSB), the Austrian Central Securities Depository Service operated by the OKB.

The Austrian Depository Act of 1969 provided for the introduction of global certificates allowing the collective safekeeping of securities. Collective safekeeping enables the depository to hold securities of different owners in collective safe custody without the need to segregate the securities and hold them in safe custody for each owner separately. Today, WSB has custody of more than 90% of total Austrian bonds issued and a major part of outstanding shares.

Securities are stored on the OKB's premises. Whereas shares are usually printed out individually, the majority of bonds are held in the form of global certificates. The cash settlements required in the course of securities administration are effected via the current accounts each WSB participant has to keep with the OKB. Deposit information includes regular credit and debit notes and quarterly statements. Base data of deposited securities are contained in the OKB's securities database WDBO (*Wertpapierdatenbank Österreich*).

For the purpose of stock exchange trading, disposals of securities on deposit are handled electronically in the PICS (Price Information, Clearing and Settlement System) under the Arrangement agreement. Apart from providing WSB services, the OKB is also entrusted with the clearing and settlement of securities transactions carried out on the Vienna Stock Exchange and covered by the Arrangement agreement (see Section 4.3.1). For over-the-counter (OTC) transactions, the OKB runs the Direct Settlement System (DS) (see Section 4.3.2).

WSB provides account holders with clearing and depository services to facilitate international securities business. The International Clearing and Depository Service (*Ferngiroverkehr*) helps settle cross-border securities transactions in a timely and cost-efficient way by simple book entries. Links have been created with *Deutscher Kassenverein AG* in Frankfurt, *Necigef* in Amsterdam, *SICOVAM* in Paris, *SEGA* in

Zurich and with international clearing agents such as Cedel and Euroclear.

The Foreign Depository Service (*Wertpapier-Auslandsverwaltung*) is currently in preparation by WSB for the safekeeping and administration of securities deposited abroad for the account of Austrian banks but not covered by a Ferngiroverkehr agreement, and for the clearing and settlement of securities business transacted abroad.

#### *Financial intermediaries operating in the different securities markets*

Austrian banks play an important role in both the bond and the equity market. The vast majority of Austrian banks are universal banks (see also Section 1.2) offering, among other things, a variety of securities-related services (trading securities, settlement, custodian business, investment counselling, underwriting of new securities issues).

On the official market of the stock exchange, the official brokers (*Sensale*) act as intermediaries in securities transactions. Subject to official appointment, they act solely on behalf of others and are not permitted to trade on their own account. Non-official brokers (*freie Makler*) act as intermediaries on semi-official and unregulated markets but can also trade on their own account.

## **4.2 Summary information on securities markets**

### **4.2.1 Main features of different securities markets**

The size of the Austrian government bond market has more than tripled since 1989 from ATS 152 billion (ECU 11.23 billion) in January 1989 to ATS 473 billion (ECU 34.93 billion) in December 1994. The Austrian

bond market is smaller than the country's credit market, but still considerably larger than the equity market.

In recent years several measures have been taken to deregulate the primary and secondary markets, increase trading volumes and reduce investors' transaction costs. The reforms have included the introduction of a market maker system and the revision of issuance procedures for government bonds.

Most bond trading takes place in the interbank market or involves institutional investors. Government bonds are usually traded over the counter. Only a very small proportion is traded on the Vienna Stock Exchange. Measures recently taken to increase government bond market liquidity helped total market turnover to increase to ATS 2,549 billion (ECU 188.26 billion) in 1994.

By year-end 1994, government bonds and federal debt securities accounted for 43% of the market's total outstanding volume. The corresponding figure for bank bonds was 53%. Corporate bonds accounted for about 5% of the market. Despite continuing deregulation, the corporate segment is rather small.

In November 1991 the Oesterreichische Nationalbank comprehensively deregulated cross-border foreign exchange and capital transactions, formally removing any remaining barriers to foreign issuers and freeing them from authorisation procedures.

Until 1989, supra-national and development banks were the only foreign issuers, but foreign public and private borrowers have since discovered the market, benefiting from its continuing deregulation.

The re-emergence of the stock market in the late 1980s and early 1990s triggered a substantial number of initial public offerings and capital increases among companies that

were already listed on the Vienna Stock Exchange. Many of the initial public offerings resulted from privatisation and public share issues by young innovative companies.

Demand has been stimulated by fiscal measures (e.g. tax concessions on purchases of newly issued shares) and investors' growing willingness to take risks. At the same time, many companies have rediscovered the capital market as a source of investment finance. New shareholders have been attracted by public share issues by a large number of private companies and the privatisation of formerly nationalised enterprises. By year-end 1994, the number of shares had increased considerably, totalling 176.

#### 4.2.2 Recent developments

In the past few years, a number of steps have been taken to enhance the competitiveness of Austria's capital markets in the international market-place. The most important changes to affect the financial markets to date are:

- The 1991 Capital Markets Act (*Kapitalmarktgesetz*) constituted an important step towards deregulating Austria's capital markets. It introduced comprehensive disclosure standards to protect investors and at the same time abolished approval procedures for new issues.
- The Stock Exchange Act (*Börsegesetz*), introduced in 1989, fundamentally reformed the organisation of the stock market and stock exchange supervision by granting greater autonomy to the Vienna Stock Exchange. It also introduced new standards for the admission of securities and more detailed and precise duties of disclosure (listing particulars and reports) and moreover tightened up regulations to protect investors, bringing them into line with EU directives.

The 1993 amendment to the Stock Exchange Act made the misuse of insider information a criminal offence and required participants in the market to take effective steps to prevent insider dealing.

- The endorsement of the Standard Compliance Code by banks and the acceptance of individual compliance rules by investment trusts, pension funds, insurance companies and investment consultants should enhance transparency and fairness of pricing on Austria's financial markets.
- The 1994 tax reform, which included the abolition of stock exchange turnover tax, wealth tax and trade tax, gave the equity market fresh stimulus, making this segment more attractive to both issuers and investors.

The Austrian Financial Markets Initiative is an ongoing reform aimed at enhancing Austria's attractiveness as a financial centre. It focuses primarily on taxation, stock exchange regulation, the development of rules and standards for both investors and issuers and further improvement of corporate investor relations. Plans for 1995-96 include:

- implementation of the fully electronic screen-based trading system EQOS (Electronic Quote and Order Driven System) by the OKB at the Vienna Stock Exchange to improve market transparency and liquidity, inclusive of market maker support;
- agreement and preparation of a new settlement procedure for the Vienna Stock Exchange with daily settlement on a T+3 basis;
- planning work on the installation of an independent market supervisory authority.

### 4.3 Settlement and clearing of securities transactions effected on the Vienna Stock Exchange

#### 4.3.1 Major regulations

Settlement and clearing of transactions effected on the Vienna Stock Exchange are based on the long-standing Arrangement system. The Arrangement desk (*Arrangementbüro*) of the OKB, set up in 1949 by virtue of a decree of the Vienna Stock Exchange Council, serves as the central clearing agency for all transactions covered by the Arrangement agreement. The Arrangement procedures are set out in the Arrangement regulation of the Vienna Stock Exchange and the business terms of the Austrian Central Securities Depository (WSB).

All securities admitted to official trading or to the semi-official market on the Vienna Stock Exchange participate in this clearing system, and thus all transactions made are usually settled in accordance with the Rules for the Clearing of Dealings on the Vienna Stock Exchange.

#### 4.3.2 Participation in the system

Participation in the Arrangement is limited to, and mandatory for, all Stock Exchange Members (banks and non-official brokers) and the official brokers. Each participant has to maintain a cash account with OKB for the settlement of all financial transactions occurring in the course of settlement.

#### 4.3.3 Types of transactions handled

The Arrangement system provides clearing facilities for all transactions in securities effected on the Vienna Stock Exchange.

#### 4.3.4 Operation of the system

In 1989, the Arrangement system (PICS - Price Information, Clearing and Settlement System) was linked to PATS (Partly Assisted Trading System), and in 1996 to EQOS (Electronic Quote and Order Driven System), the fully automated screen-based trading system at the Vienna Stock Exchange. Data on transactions are collected directly when deals are closed and are automatically fed from the trading systems into the settlement system, with a further interface to the central depository system where most securities transfers are administered.

#### 4.3.5 Transaction processing environment

PICS is run on the same IBM/AS 400 platform as PATS, but unlike PATS does not offer direct communication facilities to the members of the Vienna Stock Exchange. The system is provided with interfaces for clearing and settlement to:

- PATS and EQOS for receiving price and transaction data;
- WSB for the transfer of book-entry instructions to be booked on the various deposits and accounts held at the WSB (without the actual exchange of any documents).

With the integration of the trading systems and the settlement system with the WSB, full data integrity has been achieved from the moment of the order-entry procedure at the bank to the moment of book-entry in the central securities depository system.

#### 4.3.6 Settlement procedures

The trading structure in Vienna, where the intermediaries do not disclose the identity of the trading counterparties to each other, is based on a settlement system using a pool. The Members of the Vienna Stock Exchange can

net all the buy and sell transactions for settlement purposes, as only the balance per category has to be settled against the pool. According to the settlement cycle in Vienna, a Member of the Vienna Stock Exchange has to settle just one balance per category per week. Settlement work regarding the cash leg, which is also taken care of by the OKB is also minimised. The cash settlement for all trades is effected with a single cash transfer per member.

The Arrangement system is based on a settlement cycle of one week. All stock exchange trade carried out in one week is collectively settled during the following week for value of the first business day of the next week (account day).

On each stock exchange day (trading day), required data on transactions are entered and stored for further processing and settlement, provided such data have not been transmitted automatically via the PATS interface. On settlement day, the transaction list containing all transactions concluded by the participant during the relevant Arrangement trading period, the settlement note for these transactions and the lists of the securities to be received or delivered on account day are delivered to Arrangement participants. On delivery day, delivery via book entry in the central depository system is prepared. Any account holder not having made sufficient provisions is notified. The OKB is empowered to buy securities immediately to cover the open position. On account day, cash entries are made in participants' cash accounts with the OKB in accordance with the settlement notes, and the relevant entries are made in the securities accounts using the OKB's central depository system.

#### **4.3.7 DVP arrangements**

On account of the netting effect that goes along with the pool character of the Arrangement system, DVP arrangements apply to the net balances per category and to the net balance of the cash leg of all trades in

all categories. It is guaranteed that a participant will be paid only if it is able to deliver the balances of the individual securities that it has to deliver and vice versa.

#### **4.3.8 Credit and liquidity risk control measures**

The Members of the Vienna Stock Exchange have to deposit clearing collateral. The collateral requirements are calculated by the Vienna Stock Exchange and depend on the types of securities and the volumes traded by each Member of the Stock Exchange.

#### **4.3.9 Pricing policies**

For the settlement of the Arrangement, rates of charges apply that are calculated on the basis of the market value and may range from 0.1 to 0.5% depending on the category of securities.

#### **4.3.10 Main projects and policies being implemented**

On 1st March 1995, the Vienna Stock Exchange Council decided to introduce new rules for the clearing of transactions at the Vienna Stock Exchange. The new system will reduce the volume of open (not yet settled) trades by switching from the settlement period to rolling settlement, and reducing the settlement time to five days at first and later to three days. Collateral requirements will be calculated and adjusted at least once a day and will reflect the total financial risk to which each participant is exposed by his open trades. The new system, in which the settlement counterparty for each trade will again be a pool, is scheduled to be introduced in mid-1996.

## 4.4 Settlement and clearing of transactions effected outside the Vienna Stock Exchange

### 4.4.1 Major regulations

The Direct Settlement System (DS), designed for off-floor transactions and securities transfers, was developed by the OKB and went into operation on 4th March 1991. It consists of an automatic accounting and settlement system for securities transactions that are not channelled through the stock exchange settlement system and a securities transfer system that can be accessed by users via an electronic network. The use and operation of the DS system are governed by the stipulations of the business terms of the WSB.

### 4.4.2 Participation in the system

Every WSB deposit holder with the necessary electronic facilities is entitled to use the DS system. A WSB participant must be a credit or financial institution, a member of the Vienna Stock Exchange, an official broker on the Vienna Stock Exchange or a foreign CSD or clearing house that has been deemed eligible by the Austrian CSD.

### 4.4.3 Types of transactions handled

DS supports settlement of the following types of transaction:

- DG (*Direktgeschäft*: direct transaction): a direct transaction is a securities transaction concluded between two DS users at a given price;
- LZ (*Lieferung gegen Zahlung*: delivery versus payment transaction): a delivery versus payment transaction is a securities transaction concluded between two DS users against payment of an agreed and fixed sum;

- WU (*Wertpapierübertrag*: securities transfer): a securities transfer is a transfer without payment of the countervalue.

### 4.4.4 Operation of the system and transaction processing environment

The central computer serving the DS system is linked to DS participants through the computer network originally created for the PATS trading system. The DS system is run on an IBM/AS 400 platform. All data entries and inquiries can be made via PATS terminals using specific codes. Data entry and release by the participant are sufficient to trigger the book entry in the WSB and to display the credit entry in the recipient's account.

### 4.4.5 Settlement procedures

In the case of DG and LZ transactions, both parties have to arrange for the data on their own side of the transaction to be entered by an authorised employee using an input device that has been approved by the WSB (for WU transactions, the assigning party enters the data). DG and LZ transaction data that have been entered but not yet matched will remain directly accessible to the DS user who entered them until the value date. This means that they can still be unilaterally corrected or cancelled.

In the matching of DG and LZ transactions, the data on one side of the transaction will be matched with the data on the other side of the transaction, and the transaction will be released for further settlement if they correspond. The parties can only cancel matched transactions by mutual agreement.

On the value date the WSB debits the ordering party's deposit and credits the beneficiary's deposit. The WSB will only carry out orders if there is a sufficient credit balance in the ordering party's deposit.

If the deposit balance or the credit balance on the current account is insufficient at the time of the accounting deadline on the value date, the WSB will decide which of the transactions pending settlement on the particular value date will not be booked (open positions). The WSB will reschedule open positions by one banking day, taking into account the sequence for the prioritisation of settlement within the DS system. The rescheduling process will be repeated up to two times. If sufficient cover is not available on the fourth day, the open position will automatically be eliminated from the DS system.

In the case of DG and LZ transactions, the WSB will debit the current account of the party that makes it necessary to reschedule the transaction and make a credit entry for default interest on the current account of the party that is affected by rescheduling.

#### **4.4.6 Risk control measures**

The DS system is a mere execution system, i.e. it simply executes the orders given by the contract partners, without any possibility of interference on the part of the system.

#### **4.4.7 Pricing policies**

In the case of LZ and DG transactions, charges are staggered depending on the number of transactions carried out over one year; for WU transactions there is a fixed amount per transfer.

#### **4.4.8 Main projects and policies being implemented**

In November 1994 the OKB issued a Request for Proposal in order to review the various possibilities offered by the market to prepare the implementation of a booking system for securities which would be based on a modern technical platform and offer a broad range of

functionality. One core functionality is the ability to settle securities transactions against payment in real time. A feasibility study is currently being prepared.

## **4.5 Settlement and clearing of standardised derivative products**

### **4.5.1 Major regulations**

The Austrian Futures and Options Exchange (*Österreichische Termin- und Optionsbörse*, ÖTOB) is responsible for the trading and settlement of standardised derivatives business in Austria on behalf of the Vienna Stock Exchange. In general, the Rules of the Stock Exchange and the Austrian Banking Act are applicable. Other regulations are the rules and regulations of the ÖTOB, which consist of the following parts: extracts from the Stock Exchange Act and the Rules of the Stock Exchange, rules for trading, rules for clearing, contract specifications, position limits, margin calculation, effects of capital measures, market-making, general clearing, fee structure and other agreements.

### **4.5.2 Participation in the system**

The ÖTOB clearing house clears exclusively for carefully chosen clearing members. The clearing house is the counterparty in all transactions, as buyer to the seller and vice versa, and therefore guarantees all transactions. Trades from a Stock Exchange Member who might not be a clearing member, i.e. a non-clearing member, have to be cleared through a general clearing member. There are two different types of membership of the clearing house:

- **General Clearing Membership (GCM):** General clearing members may clear for their own transactions, client transactions and in general for any other exchange member's transactions and/or those of non-clearing members. The financial requirements for general clearing

membership are significantly higher than for a normal direct clearing membership;

- **Direct Clearing Membership (DCM):** Direct clearing members of the clearing house may clear for their own transactions and for client transactions. They are not allowed to clear for non-clearing members.

#### 4.5.3 Types of transactions handled

The ÖTOB provides clearing for all standardised derivative products in the three market segments, i.e. the stock market, the index market and the bond market. All contracts are cleared according to the different product specifications. These specifications naturally require different systems, settlement procedures and handling. This allows flexible treatment of the different trading periods in these market segments.

Historically, the first ever traded and cleared products in the ÖTOB were options on certain Austrian blue chip stocks. These are traded and cleared in the stock market.

After consolidation of the stock market, the ÖTOB launched equity index-based products via its index market. All index-related products are derivatives based on the Austrian Traded Index, which covers the most liquid equities on the Vienna Stock Exchange. On its index market, the ÖTOB lists the usual short-term index options and index futures. The product range in the index market was significantly extended by specific long-term equity options (LEOs). The futures on Austrian Government Bonds (AGB) are traded and cleared in the ÖTOB's third market, the bond market.

#### 4.5.4 Operation of the system and transaction processing environment

The OM clearing system running at the ÖTOB is a real-time clearing system which is fully integrated with the ÖTOB exchange system. The transaction transport mechanism

enabling the integration is the network OMnet. OMnet is also the external network used for members to access the exchange and clearing house via the respective user devices. Information on accepted and matched trades is received over OMnet in real time on a transaction basis from the market-place system.

The clearing system consists of several sub-systems, e.g. the Accountable-Payable-Receiveable system (APR), which is the bookkeeping system of the derivatives market. All payment transactions within a market are booked on a daily basis in the APR sub-system. On settlement day, a file with all relevant booking instructions is sent to the custodian bank electronically, which subsequently processes the booking instruction automatically.

#### 4.5.5 Clearing procedures

The clearing procedures reflect the market structure of the clearing system, i.e. procedures for every market segment. The main operational phases at the ÖTOB are reconciliation (7.30 - 8 a.m.), trading (9 a.m. - 2 p.m., bond market 8.30 a.m. - 4.30 p.m.), exercises (2.15 - 3 p.m.) and after-business functions.

The first operation on an exchange day is the reconciliation of settlements and margins to make sure that the results from the clearing are consistent. As the instructions are also sent automatically to the ÖTOB bookkeeping system, the completeness and consistency of all settlement transactions can be continuously supervised.

The after-business functions include batch procedures and all relevant clearing information is generated, the margin requirements are calculated and the settlement function is performed. After all functions have been processed, the payment data are moved automatically to the APRs where payments and accounting are handled.

The members have to pay the amounts outstanding by 7.30 a.m. at the latest on the next banking day. In the event that a member defaults, the ÖTOB will start a specific default procedure, i.e. closing out positions and calling in margins. Hitherto, this has never happened.

#### **4.5.6 Risk management system**

The heart of the risk management system of the ÖTOB is the Risk Valuation system (RIVA), which actually calculates the margin requirements of the clearing members. The RIVA system analyses the derivatives portfolios of the members and computes the appropriate margin to cover the risk of the clearing house and its members. The system regularly informs clearing members of the actual value of their total position and calculates the collateral requirements. Both writers of options and buyers and sellers of futures and options must provide collateral. The collateral requirement is updated at least once a day. This ensures a secure options and futures market-place.

#### **4.5.7 Pricing policies**

Every participating GCM and DCM has to pay an initial joining fee and an annual business fee. Collateral and guarantees are

calculated on the basis of the equity capital of the GCM/DCM.

#### **4.5.8 Main projects and policies being implemented**

The Central European Clearing House and Exchanges (CECE) forms a network of automated eastern and western European spot and futures exchanges with an international shareholder structure. CECE provides risk management tools for the financial and commodity markets. A uniform medium for access to international markets will be established and CECE Service Company will provide the electronic trading system, clearing, marketing and training, while other tasks, such as the admission of members, supervision of trading, product design, etc. are co-ordinated on site by the member exchange.

The EXODAT system of the ÖTOB is a specialised tool dedicated to organisers and regulators of electronic markets, ultimately enhancing the supervision and controlling power of its users. This information system allows analysis of risks in real time and enables the related parties to supervise all relevant transactions and positions.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	7,729	7,813	7,914	7,991	8,030
Gross domestic product (ATS billions)	1,801.3	1,926.5	2,047.2	2,124.1	2,262.9
Exchange rate vis-à-vis ECU <sup>(2)</sup>	14.4387	14.4305	14.222	13.6266	13.5413

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

*(end of year)*

	ATS billions				
	1990	1991	1992	1993	1994
Notes and coins <sup>(1)</sup>	106.6	113.3	120.9	127.4	133.6
Transferable deposits <sup>(2)</sup>	156.0	170.9	180.9	207.2	222.0
Narrow money supply (M1) <sup>(1)</sup>	262.6	284.2	301.8	334.6	355.6
Transferable deposits in foreign currencies	16.0	19.0	22.0	24.7	27.2

(1) Without coins in gold and silver.

(2) In local currency only.

**Table 3**
**Settlement media used by deposit-taking institutions**

*(end of year)*

	ATS billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank	56.14	57.63	59.08	58.44	61.47
Free reserves held at central bank <sup>(1)</sup>	1.19	0.41	0.51	0.01	0.00
Transferable deposits at other institutions <sup>(2)</sup>	155.93	170.81	180.86	207.19	222.01

(1) Average of end-of-month figures.

(2) Average of end-of-quarter figures.

**Table 4**  
**Banknotes and coins**  
*(total value, end of year)*

	ATS millions				
	1990	1991	1992	1993	1994
Total banknotes issued (Banknotes in circulation)	119,130.10	127,403.03	134,981.37	143,215.89	151,449.92
<i>of which denomination belongs to the new series:</i>					
5,000/I	16,713.65	22,900.61	28,759.65	33,471.97	38,294.52
1,000/IV	75,436.79	76,353.18	77,097.82	79,556.04	82,061.12
500/III	10,426.33	10,981.44	11,433.23	11,961.47	12,396.72
100/VI	10,837.57	11,441.84	11,929.66	12,415.95	12,809.57
50/IV	1,896.99	1,988.74	2,062.51	2,118.53	2,194.90
20/V	1,487.58	1,654.21	1,769.31	1,875.94	1,962.02
<i>old series:</i>					
1,000/III	879.85	802.00	741.97	695.47	660.72
500/II	390.55	346.31	313.95	291.45	274.17
100/V	481.15	443.12	414.49	393.65	377.31
50/III	218.83	198.30	184.67	175.17	168.20
20/IV	360.81	293.28	274.13	260.25	250.67
Coins issued (Coins in circulation)	5,452.24	5,832.40	6,172.59	6,537.95	6,890.61
<i>of which denomination:</i>					
ATS 20	336.38	368.59	401.52	435.12	470.57
ATS 10	2,118.71	2,267.24	2,404.60	2,560.60	2,702.62
ATS 5	1,409.63	1,517.54	1,606.84	1,699.10	1,782.38
ATS 1	1,133.09	1,199.77	1,258.35	1,320.09	1,390.86
ATS 0.50	214.35	225.55	235.56	245.27	254.46
ATS 0.10	222.92	236.46	248.39	260.42	272.33
ATS 0.05	12.79	12.87	12.92	12.92	12.97
ATS 0.02	4.13	4.14	4.17	4.18	4.19
ATS 0.01	0.24	0.24	0.24	0.24	0.24
Notes and coins held by credit institutions	18,084	20,041	20,242	22,309	24,767
Notes and coins in circulation outside credit institutions	106,498.34	113,194.43	120,911.96	127,444.84	133,573.53

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (ATS billions)
Central bank	1	7	0.640	55,930
Credit institutions	1,052	4,683	5,351	208,998
Postcheque	1	2,300	396	12,991
<b>TOTAL</b>	<b>1,054</b>	<b>4,690</b>	<b>5,748</b>	<b>221,989</b>
Branches of foreign banks	5	-	0.004	0.156
<i>of which EC-based</i>	3	-	0.001	0.19

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks <sup>(1)</sup>	1	1	1	1	1
Number of machines <sup>(2)</sup>	1,576	1,796	2,060	2,558	3,063
Volume of transactions (millions) <sup>(3)</sup>	41.7	48.5	53.3	57.7	63.5
Value of transactions (ATS billions) <sup>(3)</sup>	69	82.2	95	105.6	118.3
<b>EFTPOS terminals</b>					
Number of networks <sup>(1)</sup>	1	1	1	1	1
Number of POS terminals	678	1,050	1,496	1,831	2,410
Volume of transactions (millions)	1.7	3.2	4.9	6.7	8.9
Value of transactions (ATS billions)	0.9	1.5	2.4	3.5	5.1

(1) APSS network.

(2) Including vestibule cash dispensers (1990: 588, 1991: 666, 1992: 800, 1993: 994, and 1994: 1,242).

(3) Without vestibule cash dispensers.

**Table 7****Number of payment cards in circulation***(end of year)*

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	2,022	2,302	2,931	3,243	3,512
Cards with a debit/credit function	2,666	3,022	3,351	3,712	4,022
<i>of which:</i>					
<i>cards with a debit function</i>	2,022	2,302	2,528	2,779	3,003
<i>cards with a credit function</i>	644	720	823	933	1,019
Cards with a cheque guarantee function	2,033	2,358	2,340	2,396	2,324
Retailer cards	57	84	123	188	224

**Table 8****Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions**

	millions				
	1990	1991	1992	1993	1994
EBK (Elektronisches Banken- und Kundenkommunikationssystem)	0.21	0.33	0.53	0.72	0.89

**Table 9****Payment instructions handled by selected interbank funds transfer systems:  
value of transactions**

	ATS billions				
	1990	1991	1992	1993	1994
EBK (Elektronisches Banken- und Kundenkommunikationssystem)	2,129	3,288	5,160	5,443	6,295

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers <sup>(1)</sup>	Settling cash directly in central bank accounts <sup>(2)</sup>
<b>“Arrangement” system (transactions on the Vienna Stock Exchange)</b>			
Banks	73	-	-
Stockbrokers	5	-	-
Securities houses	-	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	-	-
<b>Direct Settlement (DS) (transactions outside the VSE)</b>			
Banks	104	-	-
Stockbrokers	5	-	-
Securities houses	-	-	-
Insurance companies	-	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	1	-	-
Foreign CSD	3	-	-
<b>ÖTOB-Clearing (for standardised derivative products)</b>			
Banks	12	12	-
Stockbrokers	-	-	-
Securities houses	-	-	-
Insurance companies	-	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	-	-

(1) Personal securities accounts and customers' securities accounts are not separated in the Arrangement and DS system.

(2) Cash is served in the accounts with Oesterreichische Kontrollbank (OeKB).

**Table 11****Transfer instructions handled by securities settlement systems:  
volume of transactions**

	1990	1991	1992	1993	1994
<b>"Arrangement" system <sup>(1)</sup></b> (transactions on the Vienna Stock Exchange)					
Government securities	n.a.	n.a.	n.a.	5,095	11,176
Bonds	n.a.	n.a.	n.a.	41,786	52,431
Shares	n.a.	n.a.	n.a.	216,571	234,768
CDs	n.a.	n.a.	n.a.	)	)
Others (warrants, investment certificates)	n.a.	n.a.	n.a.	)	)
Futures	-	-	-	-	-
Options	-	-	-	-	-
<b>Direct Settlement (DS) system</b> (transactions outside the VSE) <sup>(2)</sup>					
Government securities	60,531	62,078	93,179	11,043	28,252
Bonds	)	)	)	17,706	39,884
Shares	)	)	)	48,417	71,778
CDs	)	)	)	)	)
Others (warrants, investment certificates)	)	)	)	)	)
Futures	-	-	-	-	-
Options	-	-	-	-	-
<b>ÖTOB-Clearing</b> (for standardised derivative products) <sup>(3)</sup>					
Government securities	-	-	-	-	-
Bonds	-	-	-	-	-
Shares	-	-	-	-	-
CDs	-	-	-	-	-
Others (warrants, investment certificates)	-	-	-	-	-
Futures	-	-	4,461	12,734	24,131
Options	-	21,652	112,987	122,387	100,312

(1) A breakdown into sub-items has been available since week 12 (1993).

(2) Database: central securities depository (CSD); the DS system was started on 3rd March 1991.

(3) ÖTOB started on 4th October 1991.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	ATS millions				
	1990	1991	1992	1993	1994
<b>"Arrangement" system <sup>(1)</sup></b> (transactions on the Vienna Stock Exchange) <sup>(2)</sup>					
Government securities	9,790	8,263	7,577	5,876	5,579
Bonds	)	)	)	)	)
Shares	84,709	48,457	35,082	48,494	57,298
CDs	-	-	-	-	-
Warrants	16,273	5,321	2,131	1,804	1,721
Investment certificates	73	50	66	87	105
Futures	-	-	-	-	-
Options	-	-	-	-	-
<b>Direct Settlement (DS) system</b> (transactions outside the VSE) <sup>(3)</sup>					
Government securities	n.a.	n.a.	269,637	225,222	778,613
Bonds	n.a.	n.a.	)	237,528	884,896
Shares	n.a.	n.a.	132,867	60,537	50,535
CDs	n.a.	n.a.	)	55,733	66,222
Others (warrants, investment certificates)	n.a.	n.a.	)	)	)
Futures	-	-	-	-	-
Options	-	-	-	-	-
<b>ÖTOB-Clearing</b> (for standardised derivative products) <sup>(4)</sup>					
Government securities	-	-	-	-	-
Bonds	-	-	-	-	-
Shares	-	-	-	-	-
CDs	-	-	-	-	-
Futures	-	-	10,180	122,890	320,120
Options	-	30,560	181,720	301,970	384,440

(1) A breakdown into sub-items has been available since week 12 (1993).

(2) Turnover on the Vienna Stock Exchange (VSE).

(3) Database: central securities depository (CSD); the DS system was started on 3rd March 1991.

(4) ÖTOB started on 4th October 1991.

**Table 13**

**Nominal values registered by securities settlement systems**  
(end of year)

	ATS millions				
	1990	1991	1992	1993	1994
<b>"Arrangement" system</b> (transactions on the Vienna Stock Exchange) <sup>(1)</sup>					
Government securities and bonds	816,712	881,149	951,737	1,113,301	1,127,246
Shares, CDs and others	281,016	259,126	230,105	330,003	321,341
<b>Direct Settlement (DS) system</b> (transactions outside the VSE) <sup>(2)</sup>					
Government securities and bonds	797,946	875,927	918,862	1,050,064	1,133,766
Shares, CDs and others <sup>(2)</sup>	251	442	341	787	1,635

(1) Total value.

(2) Securities registered by the central securities depository (CSD), for government securities and bonds: nominal value; for shares, CDs and others: in millions of units.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions <sup>(1)</sup>

	millions				
	1990	1991	1992	1993	1994
Cheques issued	54	53	46	40	36
Payments by debit and credit cards	9	11	14	17	20
Paper-based credit transfers	265	277	289	304	310
Paperless credit transfers	70	78	87	98	122
Direct debits	156	167	180	188	188
Other (EBK)	0.21	0.33	0.53	0.72	0.89
<b>TOTAL</b>	<b>554.21</b>	<b>586.33</b>	<b>616.53</b>	<b>647.72</b>	<b>676.89</b>

(1) Apart from the EBK system, only customer-initiated transactions have been counted.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions <sup>(1)</sup>

	ATS billions				
	1990	1991	1992	1993	1994
Cheques issued	948	1,018	1,041	996	1,009
Payments by debit and credit cards	13	15	18	23	25
Paper-based credit transfers	2,621	2,850	3,108	3,209	3,407
Paperless credit transfers	621	799	1,031	1,221	1,593
Direct debits	238	282	341	400	401
Other (EBK)	2,129	3,288	5,160	5,443	6,295
<b>TOTAL</b>	<b>6,570</b>	<b>8,252</b>	<b>10,699</b>	<b>11,292</b>	<b>12,730</b>

(1) Apart from the EBK system, only customer-initiated transactions have been counted.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	n.a.	n.a.	n.a.	75	77
of which:					
<i>members</i>				62	62
<i>sub-members</i>				13	15
<i>participants</i>				0	0
Memorandum item:					
Total S.W.I.F.T. world-wide	n.a.	n.a.	n.a.	4,004	4,623
of which:					
<i>members</i>				2,103	2,412
<i>sub-members</i>				1,802	2,023
<i>participants</i>				99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	n.a.	n.a.	n.a.	10,803,051	11,725,379
of which:					
<i>category I</i>				4,421,615	4,739,357
<i>category II</i>				2,697,142	2,969,812
<i>sent/received to/from domestic users</i>				2,488,985	2,698,880
Total messages received	n.a.	n.a.	n.a.	8,823,926	9,521,143
of which:					
<i>category I</i>				3,614,711	3,892,118
<i>category II</i>				1,518,477	1,692,293
Memorandum item:					
Global S.W.I.F.T. traffic	n.a.	n.a.	n.a.	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>APB</b>	Portuguese Banking Association - <i>Associação Portuguesa de Bancos</i>
<b>CCCAM</b>	Central Mutual Agricultural Credit Bank - <i>Caixa Central de Crédito Agrícola Mútuo</i>
<b>Interbolsa</b>	Transferable Securities Centre and Nationwide Settlement and Clearing System
<b>MIC</b>	Interbank Foreign Exchange Market - <i>Mercado Interbancário de Câmbios</i>
<b>MIT</b>	Interbank Transaction Market - <i>Mercado de Operações de Intervenção</i>
<b>MMI</b>	Interbank Money Market - <i>Mercado Monetário Interbancário</i>
<b>MULTIBANCO</b>	Nationwide ATM Network
<b>PMB</b>	Multi-purpose prepaid card - <i>Porta Moedas Multibanco</i>
<b>SIBS</b>	Interbank Services Company - <i>Sociedade Interbancária de Serviços, SA</i>
<b>SICAM</b>	Integrated Mutual Agricultural Credit Scheme - <i>Sistema Integrado de Crédito Agrícola Mútuo</i>
<b>SISTEM</b>	Interbank Markets Telephone Communications System - <i>Sistema Telefónico de Mercado</i>
<b>SLOD</b>	Settlement System for Other Depositors - <i>Sistema de Liquidação de Operações de Outros Depositantes</i>
<b>SPGT</b>	Large-value Real-time Gross Settlement System - <i>Sistema de Pagamentos de Grandes Transacções</i>
<b>SSM</b>	SPGT Security Modules - <i>Módulos de Segurança do SPGT</i>
<b>TEI</b>	Electronic Funds Transfer System - <i>Transferências Electrónicas Interbancárias</i>
<b>TELE-</b>	
<b>COMPENSAÇÃO</b>	Automated Clearing System - <i>Sistema Electrónico de Compensação de Valores</i>
<b>TRM</b>	Central Bank Monetary Certificates - <i>Títulos de Regularização Monetária</i>
<b>UNICRE</b>	International Credit Card Company - <i>Cartão de Crédito Internacional, SA</i>

## Introduction

Payment systems in Portugal have experienced noteworthy change in recent years. Extensive interbank co-operation has facilitated the swift development of modern systems based on the automated processing of payment instructions. A cheque teleprocessing system (see Section 3.4) was implemented in 1989, an electronic funds transfer system (TEI) began operating in 1992 (see Section 3.4), the multi-purpose prepaid card was introduced in March 1995 (see Section 2.2.4), and the new bills of exchange teleprocessing system became fully operative in July 1995 (see Section 3.4).

The Banco de Portugal, a state-owned company, which, under the law, is responsible for the regulation, oversight and promotion of the smooth operation of payment systems, has given full support to the modernisation

of the payment industry. At the moment, the Banco de Portugal is working on the RTGS payment system, *Sistema de Pagamentos de Grandes Transacções* (SPGT) (see Section 3.2), which is scheduled to come fully into operation in the second half of 1996.<sup>1</sup>

The securities settlement systems will have to adjust to the new RTGS system. The restructuring of *Sistem* (see Section 4.3.2), an intervention transactions market created in 1978 by the Banco de Portugal, is under consideration since its processing time is not compatible with SPGT standards. As for the privately run *Interbolsa* system (see Section 4.3), a project envisaging the real-time transfer and settlement of securities deposited with the *Interbolsa*, which is involved in intraday operations, has been undertaken with the assistance of the Banco de Portugal.

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<sup>1</sup> The operation of SPGT started on 1st February 1996. However, it involves solely the communication highway (see Section 3.2.4) between the Banco de Portugal and the participants for the transmission of payment orders and settlement confirmations.

## I. Institutional aspects

### 1.1 General legal aspects

A strong impetus towards diversification, modernisation and competition in the financial system resulted in the opening-up of the banking sector to private investors in 1983, and in the partial privatisation of state-owned banks initiated in 1989. The prospect of the Single Market and the establishment of an increasing number of foreign banks resulted in the expansion of new market sectors.

Since 1986 legislation has been introduced aimed at the harmonisation of national law with that prevailing in the EU. It has focused, inter alia, on the following aspects: the definition of credit institutions; rules for the granting and revocation of licences to establish credit institutions; rules for the operation and supervision of credit institutions, solvency and liquidity ratios, and the protection of competition.

The objective of creating the Single Market led to further changes, induced by the need for legal harmonisation, viz. regulating the types of credit institutions and financial companies and their activities (Decree Law No. 298/92), and liberalising capital flows (Decree Law No. 170/93).

On 10th April 1991 a new Stock Market Code was published. It provided for liberalising and privatising stock exchange operations on the basis of more frequent clearing and settlement through a single national system, for which the Banco de Portugal is the settlement agent.

Credit institutions and financial companies are the main providers of payment services owing to the nature of their activity. This activity is explicitly identified in regulations established by the government and the central bank, in its role as the monetary authority.

Decree Law No. 298/92, which regulates credit institutions and financial companies, stipulates that credit institutions are those whose activity consists, inter alia, in taking deposits or other repayable funds from the public and in granting credit on their own account.

A Deposit Guarantee Fund has existed since 30th December 1994, in which all deposit-taking institutions participate, with a view to ensuring the protection of smaller deposit holders and, ultimately, to the stability of the financial system.

### 1.2 Financial intermediaries that provide payment services

#### *Credit institutions*

At the end of 1994 the Portuguese banking system was composed of forty-six banks, ten saving institutions, and 208 mutual agricultural credit institutions (one of which is a central institution: the Central Mutual Agricultural Credit Bank (CCCAM)).

Increased competition has led to a gradual repeal of previous regulations which sought to restrict the activity of commercial and investment banks.

As at 31st December 1994, the five largest Portuguese banks held approximately 60% of total deposits. *Caixa Geral de Depósitos* - the largest Portuguese bank, which is totally owned by the State - held 25% of all deposits at the end of 1994. There are ten branches of foreign credit institutions operating in Portugal, eight of which are from the EU.

Savings institutions are the financial unit of the mutual associations and their role in collecting small savings is not inconsiderable.

At present, the CCCAM and all but three mutual agricultural credit institutions form the Integrated Mutual Agricultural Credit Scheme (SICAM), within which exists a co-responsibility system. The CCCAM has powers to monitor compliance with the applicable prudential ratios and limits.

Moreover, the Guarantee Fund, the aim of which is to guarantee the solvency of the institutions, is financed by the mutual agricultural credit institutions, the CCCAM and the Banco de Portugal, through periodic contributions.

#### *The postal system*

With 981 offices throughout the country, the postal system participates in the Portuguese payment system in two ways: first, as an agent of the Savings Postal Office, a department of the *Caixa Geral de Depósitos*, it offers accounts and payments services; and second, it also offers a specific system, distinct from the banking system, for making national and international payments through postal money orders.

#### *Credit card companies*

Credit cards are regulated by Decree Law No. 166/95 and Notice No. 4/95, which stipulate that only credit institutions or credit card companies are authorised to issue credit cards, and also determine the contracts' clauses.

In 1974 *Unicre* - International Credit Card - was set up as a corporation owned by eighteen banks to centralise the issue of credit cards. This interbank organisation had the exclusive right to represent all foreign cards in Portugal and was the only organisation authorised to issue domestic credit cards until 1988, when other banking entities were allowed to issue credit cards under the centralised management of *Unicre*. *Unicre* is the issuer of the *Unibanco* card, which is linked with VISA at the international level. In May

1991 a resolution of the Secretary of State to the Treasury announced the total liberalisation of the issue and management of credit cards. The number of cards issued independently by credit institutions currently exceeds that issued by *Unicre*.

## **1.3 The role of the central bank**

### **1.3.1 General responsibilities**

#### *Statutory responsibility*

Pursuant to the Organic Law of the Banco de Portugal, approved by Decree Law No. 231/95 of 12th September, the Bank is responsible for the direction and control of the money, financial and foreign exchange markets as well as for the supervision of credit institutions, financial companies and other bodies legally subject to the Bank.

With respect to the specific field of payment systems, Article 20 of the Organic Law states that it shall be incumbent on the Banco de Portugal to regulate, oversee and promote the smooth operation of payment systems.

#### *Establishment of common rules*

The Banco de Portugal prepares regulations and issues instructions regarding the operation of clearing systems and interbank markets. The existing rules relating to payment systems cover interbank transfers derived from: i) the manual and automated clearing of cheques and other payment instruments; ii) interbank money and securities market transactions; iii) money and foreign exchange market operations.

#### *Supervision and audit*

According to its Organic Law, the Banco de Portugal has the authority to lay down general regulations and to supervise the money, financial and foreign exchange

markets. In this context, the Bank is entrusted with the supervision of credit institutions and other financial institutions (excluding insurance companies) which, by virtue of specific legislation, are subject to its supervision. As supervisor, the central bank has the power to establish the rules of conduct to be followed by these entities. In performing this function, the Bank may take any measures necessary to prevent or halt actions which contravene existing regulations, including those related to the payment system.

### **1.3.2 Provision of processing and settlement facilities**

#### *Provision of settlement accounts*

All participants in the interbank clearing system, in the interbank money market and in the RTGS payment system (SPGT) - the Treasury, credit institutions, and financial companies - must hold a single current account with the central bank for settlement purposes, which does not bear interest. The Banco de Portugal is also the financial settlement agent for stock exchange transactions.

The Banco de Portugal is not involved in retail activities, except for some transfers from abroad to beneficiaries resident in Portugal (mainly embassies). Therefore, it does not hold accounts for non-financial institutions.

Credit transfers between institutions which do not participate in the SPGT (see Section 3.2), and which are not related to stock exchange operations are performed by telex or secure telefax.

Transactions on the Interbank Money Market (*Mercado Monetário Interbancário*, MMI) and on the Interbank Transactions Market (*Mercado de Operações de Intervenção*, MIT) are transmitted via a telephone communications system - *Sistem* - which connects the Banco de Portugal with each participant in the interbank markets. Each

participant communicates to the Banco de Portugal by telephone the interbank money market operations it wishes to carry out with the central bank, or those it has already effected with any other participant, for portfolio management, clearing and monetary statistical purposes.

#### *Provision of credit facilities*

Before the complete implementation of the SPGT, any institution which incurs an overdraft on its settlement account at the end of the day is obliged to cover the position on the same day, usually by means of the interbank money market or - although only used in extreme circumstances due to the formalities involved - by resorting to central bank credit, which must always be collateralised. For the new instruments for granting intraday liquidity, see Section 3.2.

The Organic Law of the Banco de Portugal provides for credit facilities which banks may utilise, such as rediscount, secured credit, and securities repurchase agreements.

#### *Pricing policies*

The Bank's pricing policy is based on the principle of recovering the cost of the banking services it provides.

### **1.3.3 Monetary policy and payment systems**

The Organic Law confers autonomy on the central bank for the conduct of monetary policy. The indirect monetary control system is based on the daily management of bank liquidity, with prices (interest rates) being freely established both at the market level and at the level of the financial market in general. This objective is mainly achieved by: i) the Bank's role in regulating bank liquidity, through very short-term instruments, namely repos on government debt and central bank monetary certificates (TRMs); ii) a reserve

requirement system which is currently (since 1994) set at 2% of deposits and other liabilities, calculated on a weekly basis (average amount of daily balances).

The provider of liquidity is the SPGT system. This is carried out by means of the peripheral systems of the Banco de Portugal, which possess an automated interface with the SPGT system: the money market system (*Sistem*) and the foreign exchange system.

#### **1.3.4 Main projects and policies being implemented**

SPGT, the RTGS payment system, is currently the main project of the Banco de Portugal (see Section 3.2).

### **1.4 The role of other private and public sector bodies**

The main banking institutions are members of the APB (Portuguese Banking Association), whose goal is to promote and implement all

necessary measures to contribute to the technical, economic and social progress of the members' business. On a national level, the APB participates in all initiatives concerning new interbank payment schemes, from conception to implementation.

The Treasury, which performs an important role in the state payment sector as a result of the process of modernising the structure of its traditional payment system, has adopted the Treasury cheque to effect its payments, being an instrument fully consistent with the automated interbank data processing systems.

The Interbank Services Company (SIBS), founded in 1983 by twenty-six banks, then representing 98% of the retail banking market, is the central operational body of the automated interbank system, and has played a central role in all projects related with payment systems: the ATM and EFTPOS network, automated clearing systems, multi-purpose prepaid cards and the RTGS system.

## **2. Payment media used by non-banks**

### **2.1 Cash payments**

The legal tender in circulation consists of five denominations of banknotes (PTE 10,000, 5,000, 2,000, 1,000 and 500) issued by the Banco de Portugal, and nine denominations of coin issued by the Treasury (PTE 200, 100, 50, 20, 10, 5, 2.5, 1 and 0.5).

At the end of 1994, notes accounted for 95% of the stock of currency in circulation, which amounted to PTE 841.2 billion (ECU 4,272 million). The large denominations (PTE 10,000 and 5,000) represented 85% of the total value of banknotes in circulation.

The share of cash in MI has fallen progressively over the past ten years, from 29.9% in 1986 to 26.5% in 1990 and to 21.9% in 1994, as a result of the increasing use of cashless payment media. The development of ATMs for direct credit transfers (to water, electricity, telephone, insurance companies, etc.), and the spread of EFTPOS terminals and multi-purpose prepaid cards suggest that the downward trend in the use of cash is likely to continue.

## 2.2 Non-cash payments

Non-cash payments mainly originate from sight accounts.

The number of sight accounts as at 31st December 1994 was estimated at 18.3 million, which represented an average of 1.9 per capita.

There are no limits regarding the payment of interest on sight accounts. Direct debits are normally free of charge, provided they are effected through an automatic system. The issuing of new cheque books is subject to charges. Some banks collect an annual fee for cheque guarantee cards and debit cards. Dormant sight accounts are usually penalised with a maintenance fee. Banks are free to set charges for the services they provide, and the interest rates paid on sight and time deposits are agreed between banks and individual customers.

The practice as regards value dates is as follows:

- same-working-day value date, when an account is debited;
- following-working-day value date, when an account is credited.

The legal framework concerning non-cash payments is provided in part by the Portuguese Commercial Code, supplemented by the uniform laws on bills, certificates of indebtedness and cheques. By law, the drawee bank is obliged to honour cheques up to PTE 5,000 (ECU 25), regardless of whether funds are available or not.

### 2.2.1 Credit transfers

The two main forms of credit transfer - standing order and variable standing order - are the most common means of payment used by corporate customers to pay their suppliers and employees. Nearly 56% of credit transfers are paperless transfers.

### 2.2.2 Cheques

Despite the increasing importance of paperless means of payment, the cheque is by far the most utilised instrument and its usage continues to grow. In 1994, 255.5 million cheques totalling PTE 62,000 billion (ECU 315 million) were issued. The cheque still represents 56% of non-cash payments. Cheques for less than PTE 200,000 (ECU 1,015) (around 85% of the cleared cheques) are truncated for clearing.

### 2.2.3 Direct debits

The direct debit is also a commonly used instrument, mainly in larger urban centres, simplifying the payment of public utility services (water, electricity, telephone, insurance, etc.). In 1994 the number of direct debits reached 43.3 million and a total value of PTE 4,506.8 billion (ECU 22.9 billion).

### 2.2.4 Payment cards

#### *Debit cards*

The massive increase in the use of debit cards in Portugal is linked to the creation of the Interbank Services Company (SIBS), in which thirty-three credit institutions representing nearly all retail banks participate. SIBS specialises in payment system automation services. In 1985 the national ATM network (*Multibanco*) was implemented. Later, this network was extended to include EFTPOS terminals. Access to the system is safeguarded by means of magnetic stripe cards and PINs. At present *Multibanco* is the sole ATM network in Portugal.

The ATM system offers several services: the deposit and withdrawal of funds, account balance notifications and statements, the placing of orders for cheques, alteration of the PIN code and certain payment services. At the end of 1994, the number of ATMs installed was 3,329 (400% more than in

1990) - covering the whole country - and the number of cards in circulation was 5.3 million (220% more than in 1990). Withdrawals represented 67.6% of total transactions, followed by account balance inquiries and payment of services. In 1994, 115.7 million transactions (cash and debit) were effected (234% more than in 1990), amounting to about PTE 1,231 billion (ECU 6.3 billion). The daily usage rate is 145 operations per machine (188 in 1991).

Originally, the location of ATMs was restricted to bank branches. In recent years it has been extended to supermarkets, large enterprises and public services.

Electronic transfers at the point of sale - EFTPOS - are expanding rapidly. At the end of 1994, 32,700 terminals were already installed (against 2,672 in 1990) and registered an annual turnover of PTE 573.7 billion (ECU 2.9 billion), corresponding to 90.3 million operations (compared with PTE 45.5 billion and 7.8 million operations in 1990). New EFTPOS terminals are mainly being installed in retail outlets - especially smaller ones - and at filling stations.

The *Multibanco* network also caters for international transactions as a result of mutual agreements with other international chains (eurocheque and VISA, Bancontact in Belgium, 4B in Spain, SSB in Italy, CLAU in Andorra, and LINK in the United Kingdom). Thus, the holder of a *Multibanco* card has access to terminals in other European countries. In 1994, 1,884,000 operations were effected with foreign cards, representing an increase of 538% compared with 1990.

Banks began to issue cheque guarantee cards in the mid-1980s. An estimated 542,000 cards were in circulation in 1994. The issuing of these cards is subject to a fee, which varies from bank to bank.

Eurocheque cards are issued by some Portuguese banks, which must deal directly with the eurocheque organisation. The

financial settlement of transactions resulting from the use of eurocheques by foreigners is effected directly by the Portuguese banks or by SIBS with the eurocheque organisation.

#### *Credit cards, travel and entertainment cards*

The first credit cards circulating in Portugal date from the 1950s. In 1974, *Unicre* began to operate (see Section 1.2).

Apart from *Unibanco*,<sup>2</sup> *Unicre* also represents VISA and MasterCard for a great number of banks under the labels: *Premier*, *Classic*, *Gold* and *Prestige*. Some of the cards issued have both credit and debit functions, and offer a wide range of additional services, such as travel and personal accident insurance, car rental and discounts on various hotel chains.

At the end of 1994, the total volume of credit card business was over PTE 374 billion (ECU 1.9 billion) - PTE 139 billion in 1990 - of which the cards issued in Portugal by *Unicre* and by the Portuguese banks accounted for 78% and foreign cards (mainly VISA and MasterCard) accounted for 22%.

#### *Retailer cards*

Large retail outlets, car rental companies and oil companies issue their own in-house cards. At the end of 1994 oil companies had issued 90,774 cards, with an annual volume of 4.9 million transactions for a total value of PTE 27 billion (ECU 137 million). Petrol vouchers issued by GALP (a branch of the Portuguese Petroleum Company) reached a total of PTE 12.5 billion (ECU 63,5 million) in 1994.

<sup>2</sup> *The credit card issued by Unicre - International Credit Card (see Section 1.2).*

*Prepaid cards*

The volume of prepaid cards issued by Portugal Telecom (the telecommunications company) and used in payphones reached a total of 4.8 million for a value of PTE 4 billion (ECU 20.3 million), in 1994.

The Portuguese multi-purpose prepaid card, PMB (*Porta Moedas Multibanco*), started operating in March 1995. It was developed by SIBS and the Banco de Portugal, which although not directly involved in the development of the electronic purse system, are regularly informed thereof. The objective is to offer a more convenient means of payment than banknotes and coin for transactions that may average PTE 400 (ECU 2). Only banks may issue the PMB; clearing and settlement of transactions are performed through SIBS and the Banco de Portugal, respectively.

This electronic purse can be loaded either at PMB terminals or at ATMs. The loading procedure at ATMs is as follows: i) the *Multibanco* card (debit card) is inserted and the personal code is introduced; ii) the PMB loading operation is chosen; iii) any amount between PTE 1,000 (ECU 5) and PTE 40,000 (ECU 203) can be entered; iv) the *Multibanco* card is withdrawn and the PMB card inserted; v) when the loading process is finished a statement is issued. The maximum value per card transaction is PTE 63,000 (ECU 320), which is the maximum amount that can be stored on the card.

The card is used in transactions as follows: i) the shopkeeper enters the amount of the purchase in the PMB terminal; ii) the customer checks the amount and inserts the card; iii) the PMB terminal shows the initial and final balances on the card, and the payment is effected - by transferring the value from the card to the PMB terminal memory. In the case of portable terminals not connected online to SIBS, at any time of the day, the retailer's deposit card can be inserted into the terminal, loaded with the accumulated

value stored in the terminal, and later unloaded at any ATM machine crediting the retailer's bank account. Both card issuing and transactions are anonymous - this means that a lost PMB card is equivalent to lost cash. Any ATM or PMB terminal can provide cardholders with information on a card's stored value, and also produces a record of the last thirty transactions made with the card.

The scheme was first launched at a local level but is expanding rapidly throughout the country. After only a few months, at the end of July 1995, there were 17,458 terminals accepting the PMB (some EFTPOS are dual-purpose). The 66,354 PMB cards in circulation had been loaded with PTE 236 million (ECU 1.2 million) - with an average loading of PTE 2,630 (ECU 13) -, and had been used in 147,152 transactions - with an average value of PTE 374 (ECU 1.9). At present no fee is paid by the users of the card. In the future, *Multibanco* cards will contain the PMB facility.

*ATM and POS networks*

In Portugal there is only one ATM and POS network, which is operated by SIBS. All ATMs installed by a bank can be used by all the customers of other banks, with the exception of some machines installed inside bank's premises, as these machines provide special services for the bank's own customers.

**2.2.5 Postal instruments**

Outside the banking system, the postal transfer is an important means of payment, mainly used by the social security authorities to pay low-value pensions, and, on a minor scale, by companies and by individuals. Recently, since the social security authorities have campaigned for the payment of pensions via bank transfer, the issuing of national postal transfers has shown a downward trend. This system benefits from a larger and denser network of branches than the banking

network. In 1994 the issuing of national and international postal transfers reached 36.7 million in volume - compared with 30.3 million in 1990 - and a value of PTE 619 billion (ECU 3.1 billion) - compared with 460 billion in 1990 - which represented an average of PTE 23,163 (ECU 117) per transfer.

### 2.3 Recent developments

In the mid-1980s, Portugal witnessed rapid developments in the telecommunications field, making it possible to implement teleprocessing networks, either within the larger banks, or through interbank links. Interbank links and interbank co-operation, promoted by the Portuguese Banking Association together with the central bank, resulted in the creation of the two above-mentioned interbank companies SIBS (automated networks) and *Unicre* (credit cards).

Banks have made great efforts to modernise customer access to payment services. Home-banking is now available in Portugal, as well as online connections with corporate clients.

SIBS which already operates the ATM network, the EFTPOS network, the automated cheque clearing (see Section 3.4), and the TEI Electronic Funds Transfer system (see Section 3.4.4), has also been operating the multi-purpose prepaid card, PMB (see Section 2.2.4), since March 1995, and the automated bills of exchange clearing became fully operative in July 1995 (see Section 3.4.4).

As regards the ATM/EFTPOS networks, further developments have been made. It is possible to pay road tolls using either the *Multibanco* card or *Via Verde*. *Via Verde* is used as follows: the driver is electronically identified by means of a magnetic tag placed on the car windscreen as he/she drives past. The debit is effected by electronic processing from the driver's bank account.

The use of the newly launched multi-purpose prepaid card, PMB, in payments for a wide range of services such as for parking, canteens, vending machines, taxis, newsstands, café terraces, etc., is expected to increase in the near future.

## 3. Interbank exchange and settlement systems

### 3.1 General overview

The Banco de Portugal is the settlement agent for the Traditional Clearing and for the Automated Clearing - two interbank net settlement systems - and for SPGT, the large-value RTGS system.

All banks possess electronic processing networks (*teleprocessamento*) for their inter-branch transactions, enabling the immediate transmission of data among branches, and thus making it possible for a customer to access his/her bank account at any branch of the bank's network.

Direct payment flows between banks are effected by means of accounts held with the central bank or, to a lesser extent, *nostro/loro* accounts. For the exchange of information on direct interbank payments, banks use either the interbank electronic transfer system (TEI) or the traditional processes (telex, secure telefax, S.W.I.F.T. network). Clearing of the debits/credits between institutions is effected mainly through the traditional or automated clearing circuits which culminate in the final settlement of the accounts held with the central bank.

The automated clearing system, *Telecompensação*, is an automated interbank exchange and settlement circuit, allowing the (indirect) channelling of information between banks through a central interface (SIBS), which selects and directs the processed information to the various entities: receivers, drawees and the central bank, which effects final settlement each day. This system is based on an online electronic processing system, which operates twenty-four hours a day.

Transactions between institutions on the domestic markets - Interbank Money Market (MMI), Interbank Transactions Market (MIT), and Interbank Foreign Exchange Market (MIC) - are settled on a gross basis by the Banco de Portugal, which debits and credits the participants' settlement accounts (see Section 1.3.2).

In mid-1993, the Banco de Portugal, as agreed at the European level, started to implement the Portuguese RTGS system with the direct participation of SIBS and the resident credit institutions.

Once in full operation (see Footnote 1), this large-value system, which is the first to be implemented in Portugal, will channel all payments above a predefined amount which were previously processed through the interbank netting systems (see Section 3.4).

### **3.2 Large-value real-time gross settlement system (*Sistema de Pagamentos de Grandes Transacções, SPGT*)**

The Portuguese RTGS system (*Sistema de Pagamentos de Grandes Transacções, SPGT*) is a system operated and managed by the Banco de Portugal. The system communications between participants and

the Banco de Portugal are based on the SIBS network. The main objectives of the SPGT are:

- to minimise credit, liquidity and systemic risks through the intraday controlling of participants' positions;
- to provide participants in the course of the day with information on the balance of their positions with the Banco de Portugal, on operations which have been carried out and on queuing operations; as such, it will constitute an essential instrument to help participants manage their funds;
- to convert the payment orders to be processed by the Banco de Portugal into electronic form, so that they can be handled automatically.

#### **3.2.1 Functioning rules**

The operating rules of the SPGT are laid down in its specific "Regulation" approved by the Board of Directors of the Banco de Portugal and contractually accepted by the participants in the system. The SPGT Regulation stipulates the basic lines of the system and the relations and responsibilities of the intervening parties.

The Procedures Manual is also a main reference document of the SPGT and provides the participants with the detailed and practical procedures to be followed in order to ensure the correct operation of the system.

The System Manual (a non-binding document) aims to provide an overview of the main operational features of SPGT and a complete description of its components: the message processor, the settlement processor, the SPGT control system, and the interfaces with the participants and with the Banco de Portugal.

### 3.2.2 Participation in the system

Provided that they possess the minimum technical facilities required by the system, and that they have signed the SPGT membership contract and paid the membership fee, the following entities have access to the SPGT: banks, the Central Agricultural Credit Bank (CCCAM), the other credit institutions which are direct participants in the interbank clearing systems, the Treasury, and other public bodies forming part of the Central Administration which take part in large-value transfers with other SPGT participants.

The number of potential participants in the SPGT amounts to approximately fifty.

The other 250 financial institutions not eligible to participate in the SPGT (namely the mutual agricultural credit banks, investment, leasing and factoring companies, etc.) which hold deposit accounts with the Banco de Portugal, mainly due to the need to settle operations in the *Sistem* - the interbank money market and securities primary market system operated by the Banco de Portugal - are integrated in a specific gross settlement system called SLOD - Settlement System for Other Depositors - which is governed by more restrictive rules (e.g. participants have no access to the SIBS transfers channel and cannot be granted intraday credit).

### 3.2.3 Types of transactions handled

The operations described below must be processed by the SPGT, irrespective of their unit value:

- i) clearing system settlements (settlement of Traditional Clearing balances);
- ii) settlement of automated clearing systems balances (cheques and *Multibanco* sub-systems), TEI, *Efeitos* (bills of exchange); settlement of stock exchange operations clearing balances;

- iii) operations contracted and processed via *Sistem* (money market system) (contracting and repayment of operations);
- iv) operations with the Banco de Portugal (excluding *Sistem*).

Credit transfers must be channelled via the SPGT, provided that their unit value is over PTE 100 million (ECU 512,363) and their value date falls within two subsequent working days.

Credit transfers ordered by participants in the SPGT in favour of non-participants must be channelled via the SPGT irrespective of their unit value.

Credits ordered by non-participating entities are also processed by the SPGT.

### 3.2.4 Operation of the transfer system

The strategy for implementing the SPGT was to open a communications highway between the Banco de Portugal and the participants - for the transmission of payment orders and also as a means of channelling the settlement confirmations - thus maintaining the processing of the central bank's operating systems mainly as it was at that time. Special interfaces were built in order to link the operating system of the Banco de Portugal with that of the SPGT settlement system.

The information system of the SPGT is based on the following principles:

- creation of a new internal system at the Banco de Portugal for continuous position control, which features specific facilities enabling the operational departments of the Banco de Portugal to enter operations directly, if necessary; this system constitutes the heart of the SPGT;
- development of a new system based essentially on the infrastructure of SIBS (as a communications network), and

intended to channel details of large-value payments made by SPGT participants to the Banco de Portugal, and to send back the relevant confirmations and rejections;

- non-interference with the interbank and stock exchange clearing systems already in operation, but simple reception and handling of the respective clearing balances;
- maintenance of the other peripheral systems already operating within the Banco de Portugal - the money market system (*Sistem*), foreign exchange system, etc. - and creation of automatic interfaces to transfer details of completed operations to the SPGT settlement system;
- creation of an interactive enquiry facility to allow SPGT participants to consult their positions online, using a direct link to the Banco de Portugal (not compulsory).

The SPGT system (see Chart 1) is mainly made up of the following components: the SPGT communications system (between the Banco de Portugal, SIBS and the participants) and the SPGT settlement/processing system. The latter is made up not only of the continuous position accounting system, but also of the sub-system which incorporates the processing of payment orders channelled by SIBS (operations (ii) and (iii) of Section 3.2.3), settlement orders received from the Banco de Portugal operating systems (operations (i) and (iv) of Section 3.2.3), queuing operations, and the SPGT control system. The set of interfaces which link the original operating systems and the clearing systems to the SPGT settlement processing system completes the SPGT system.

Independent from the SIBS communications structure, the Banco de Portugal has built an online direct link between the central bank settlement system and the participants in the SPGT. This optional information channel provides participants with full details on the

settled operations, the queuing operations, the operations with a subsequent value date, the balance on the settlement account and the amount of intraday credit granted.

As far as the SPGT participants are concerned, SIBS has developed a standard Treasury Management Application which performs not only the role of interface between the participants, SIBS and the Banco de Portugal, but which also provides additional facilities which allow the participants to channel their transactions to the SPGT at a suitable time, to foresee the flows to and from other participants and to control the reserve requirements at the central bank.

### 3.2.5 *Transaction processing environment*

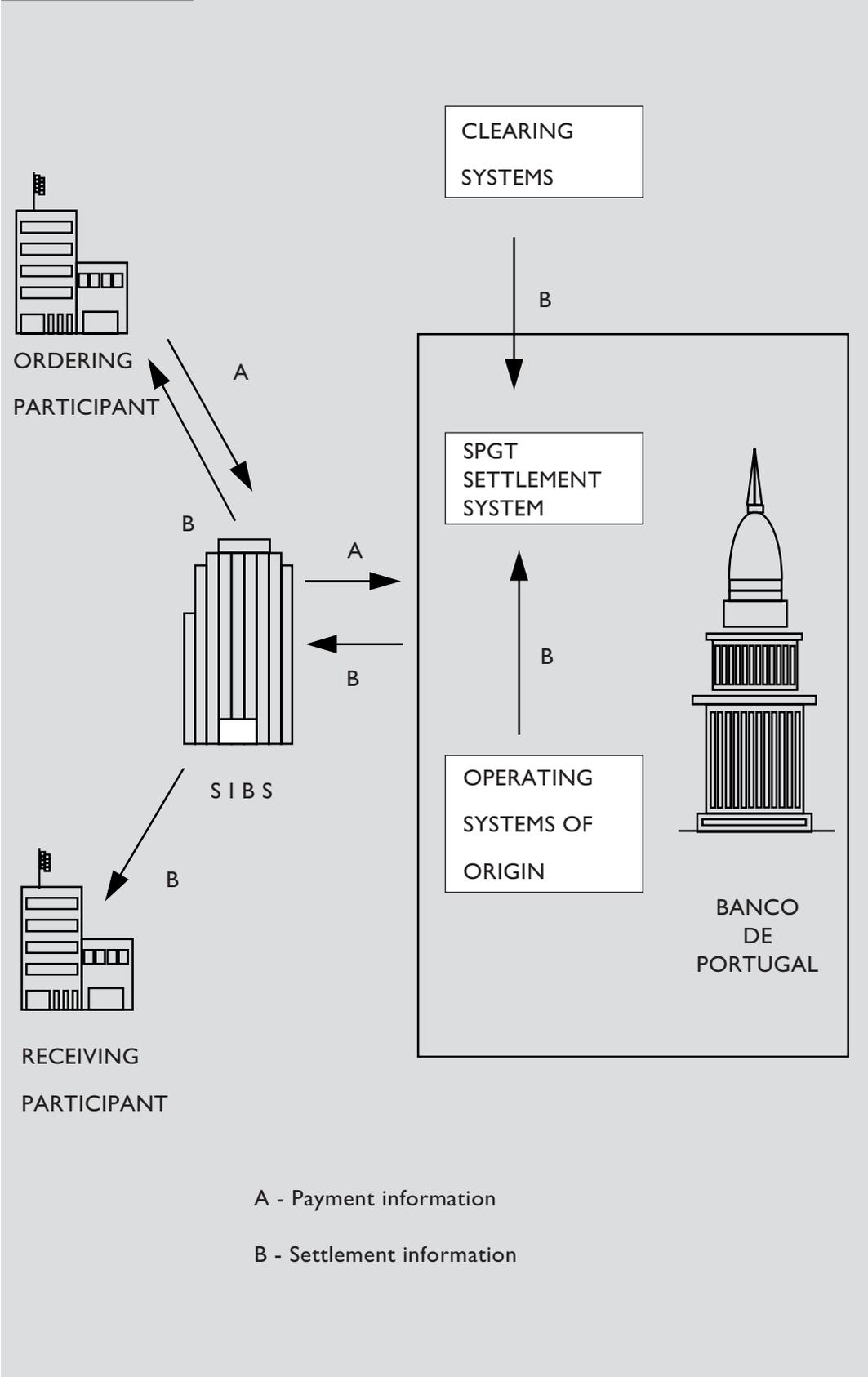
In the context of the message routing configuration, the SPGT is a Y-shaped system (see Chart 1).

As a message-based system, the SPGT was structured with a view to facilitating a fast, confidential and secure exchange of information among the users of the system.

Chart 2 illustrates the major links between the intervening parties/systems in the SPGT, namely the links with the clearing systems (interbank electronic/automated clearing systems and stock exchange clearing systems), with the operational systems of the Banco de Portugal, and with the online direct link between participants and the Banco de Portugal for information on settlement accounts only.

Also relevant is the emergency circuit which consists in the entering of SPGT operations by the Banco de Portugal staff on behalf of participants who are temporarily unable to use the mechanisms normally provided for this purpose. As a general rule, all the means of communication used should have authentication and confidentiality mechanisms similar to the normal mechanisms. The following communication devices may be

Chart I



used: telefax (provided that it accepts authentication keys and allows the content of messages to be encoded), keyed telex and courier (only in the event that the previous solutions are not operating).

In order to meet the computer security objectives established for the SPGT, all system users are obliged to use cryptography equipment (security modules) known as SSM (the SPGT security modules to be connected to each participant's application gateway).

The equipment is protected by physical and computerised devices against misuse, which would cause all the information it contains (program and data) to be destroyed.

The confidentiality of SPGT messages is guaranteed at two levels: at the message cipher level (messages exchanged in the context of the SPGT can circulate from sender to receiver in coded form) and at the message structure level (SPGT messages are structured on the basis of the concept of data blocks). For instance, the latter requirement enables details of payment orders - as SPGT is a Y-shaped system - to be maintained at SIBS, which delivers the data only when the central bank settlement system of the SPGT confirms the debit/credit entries.

The projected global volume of payment orders and settlement confirmations processed by the SPGT settlement system amounts to approximately 2,000 per day.

### 3.2.6 Settlement procedures

The core segment of the SPGT is the current account settlement application for use by the almost fifty SPGT participants.

<sup>3</sup> Whenever an operation is settled, placed in the queue or cancelled, and the collateralised current account credit facility is increased for a participant, the system calculates the global netting of all operations.

Intercommunication between the SPGT and the SLOD systems is assured by the Banco de Portugal, as operator and manager of both systems (see Section 3.2.2).

Every institution participating in the SPGT holds a single settlement account with the Banco de Portugal, the debit balance of which cannot exceed the standby collateralised credit ceiling previously agreed with the central bank.

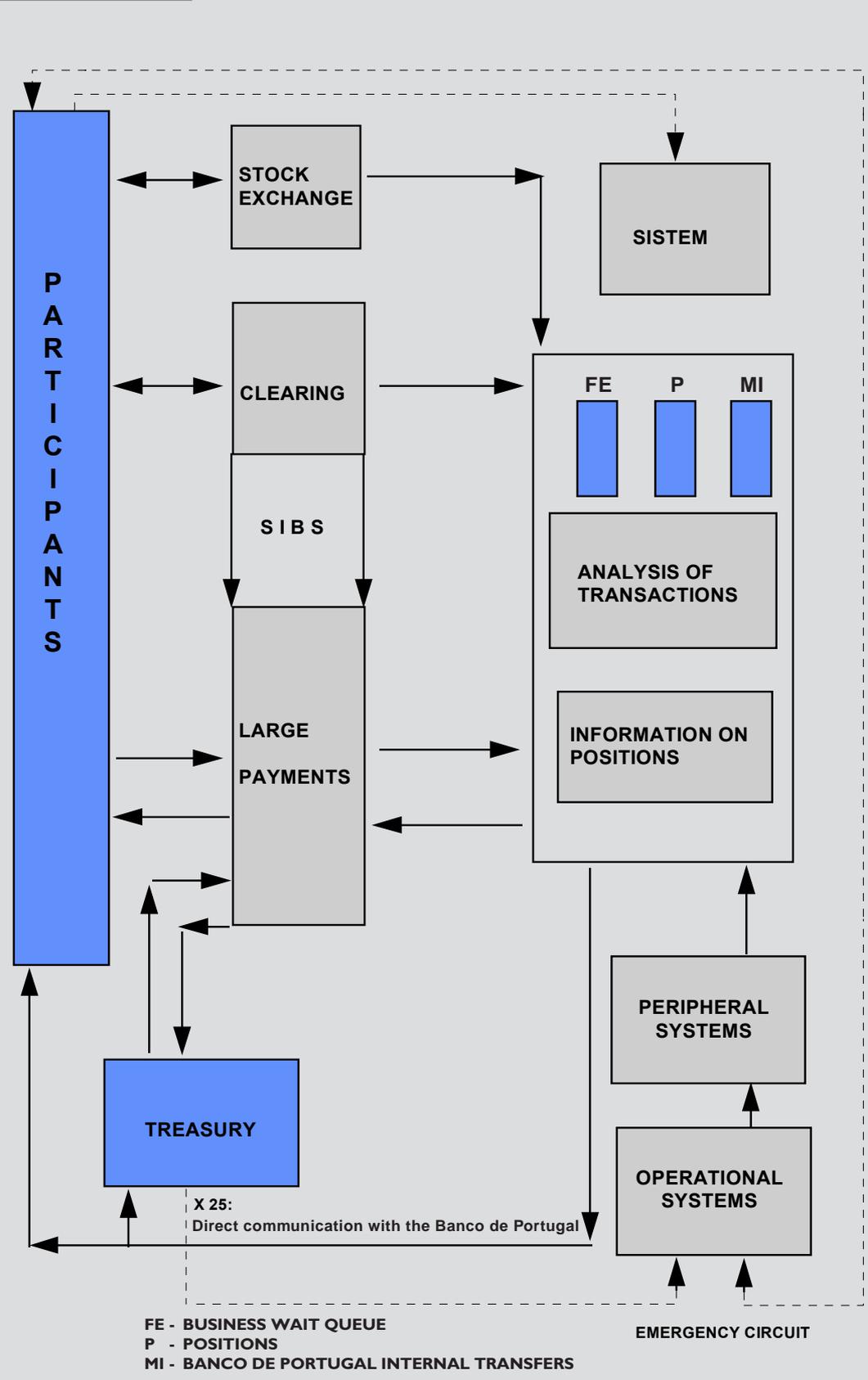
The operations entered in the system are processed/settled in accordance with a schedule starting at 8.30 a.m. and ending at 4 p.m. Credit transfers channelled via the SPGT highway end at 1.30 p.m. (normal period).

Orders which give rise to a position which exceeds the predefined credit ceiling are held in a queue. Operations are placed in the queue according to one of three levels of priority - A, B and C. For instance, operations related to the electronic/automated clearing procedures have the highest priority - priority A. The remaining pending operations are stored, within each block of priorities, in chronological order (FIFO). In order to accelerate the settlement of queuing operations there are specific operational and technical procedures, such as:

- permanent virtual global netting;<sup>3</sup>
- periodic simulations;
- ordering in the same priority by increasing value;
- changing the predefined priorities (B and C) to priority A; this can only be done while the settlement of the balances of interbank clearing systems is pending.

Any operation which enters the queue must be covered within an hour and a half and always before the time at which the queuing mechanism normally closes (1.30 p.m.). Later

Chart 2



PT

transfers can be effected until 4 p.m., but they are subject to additional fees.

The ordering participant may ask the system to cancel a queuing operation; confirmation by the beneficiary of the transaction is required for this purpose.

The operations and transfers are considered final from the moment they are entered in the receiving settlement account.

### 3.2.7 Credit and liquidity risk

SPGT participants may use their reserve requirements as intraday liquidity to effect payments. If needed they may also use the following instruments: a standby collateralised current account credit facility and a special credit facility known as a supplementary intraday liquidity facility.

The standby collateralised current account credit facility allows the participants to have a debit position of the settlement account up to a predefined amount which is calculated on the basis of certain indicators, e.g. debt balances in the clearing systems.

Participants have to cover intraday standby collateralised credit by 2.30 p.m., by means of market operations among themselves and/or with the Banco de Portugal via *Sistem*. As a last resort and depending on an assessment on a case-by-case basis, the Banco de Portugal may authorise the use of collateralised overnight credit to cover the amount of standby collateralised credit utilised. Such an operation would be of an exceptional nature and would be subject to an interest rate higher than the highest overnight interest rate observed on the interbank money market during the day.

The supplementary intraday credit facility is a form of repo of eligible securities (Treasury bills, central bank deposit securities and other money market instruments issued by the Banco de Portugal). This intraday credit

instrument is created with a view to providing participants with a means of satisfying the intraday liquidity requirements arising from the necessity to cover queuing operations within the time limit of an hour and a half.

### 3.2.8 Pricing

The main purpose of the SPGT pricing list lies in promoting the correct and efficient use of the system with a view to:

- stimulating the gross settlement of large-value payments;
- ensuring the smooth operation of the system, avoiding gridlock situations, mainly at the SPGT's closing time;
- covering the operating costs of the system.

The price structure of the SPGT is based on parameters such as the amount, entry time, queuing time, and settlement time (normal and late) of the payment.

The price structure includes three price categories: membership fee, monthly user charge, variable charge for each type of operation.

As regards late transfers (after 1.30 p.m.), there are additional charges which increase according to the following time tiers: 1.30 to 2.30 p.m.; 2.30 to 3.30 p.m.; and 3.30 to 4 p.m.

In order to accelerate the transmission of orders and avoid gridlock situations at the normal closing hour (1.30 p.m.), there are lower prices for transfers channelled to the SPGT earlier in the day. With the same objective, a penalty charge is applied to the cancelling of queued payments after the time limit for their settlement has expired (an hour and a half).

### 3.2.9 *Main projects and policies being implemented*

No major modifications or changes in policy are expected with regard to the SPGT. Nevertheless, some adjustments at the organisational and information system level are planned which are particularly related to the implementation of the Interlinking/TARGET system for Stage Three of EMU.

## 3.3 **The Traditional Clearing System**

### 3.3.1 *Functioning rules*

This system covers paper-based interbank transactions which are not yet included in the Automated Clearing system - *Telecompensação* (see Section 3.4).

The operating rules of this system are based on the Clearing Service Regulations, issued by the Banco de Portugal, after consulting with the participants.

The aforementioned Regulations lay down the rules and procedures with which participants must comply, namely with respect to the types of transaction covered by the system, the way in which documents are to be submitted, the media utilised, the entities that may participate, the locations at which sessions are held, the deadlines for the return of documents, the way in which the financial settlement is carried out, and the circumstances that may lead the Banco de Portugal to impose penalties on participants.

### 3.3.2 *Participation in the system*

Banks and other similar entities may participate in the system if authorised to do so by the Banco de Portugal. At present, direct participants in the system number forty-one.

The institutions not authorised to participate may be represented by another institution,

the latter assuming the rights and obligations of the institutions it represents vis-à-vis the other parties.

The Banco de Portugal may cancel previously granted authorisations, in particular, as a result of non-compliance with the rules laid down in the Clearing Service Regulations, delays or failure to participate in the sessions, and in the event of a lack of liquidity.

### 3.3.3 *Types of transactions handled*

This system processes paper-based interbank transactions without any limit on their amount. The system currently covers the following types of paper-based transaction:

- cheques in escudos, issued by non-resident banks;
- payment orders issued by resident banks;
- payment orders issued by public institutions;
- money orders and payment orders in escudos issued at foreign branches of Portuguese credit institutions.

In 1994 12.1 million operations for a value of PTE 177,119 billion (ECU 899 billion) were carried out in the Traditional Clearing. Cheques accounted for 56% of the operations but only 0.8% of the total value.

### 3.3.4 *Operation of the transfer system*

Clearing sessions are held daily at 10 a.m. in the following cities: Lisbon, Oporto, Funchal (Madeira) and Ponta Delgada (Azores).

### 3.3.5 *Transaction processing environment*

Participants forward a diskette containing data on transactions to be cleared to the Banco de Portugal, and exchange documents

between themselves, which are grouped by types of operation, together with the lists containing debit and credit entries.

Upon reading the last diskette, the Banco de Portugal calculates the balances in a multilateral netting system via electronic data processing, and delivers a table of total debits and credits (broken down by participant) to each participant as well as the final balance to be entered in the accounts held by the participants with the Bank.

### **3.3.6 Settlement procedures**

Balances calculated at the end of each session are immediately debited from or credited to the participants' accounts with the Banco de Portugal via file transfer, thus effecting the financial settlement, which occurs daily at 10.30 a.m.

### **3.3.7 Credit and liquidity risk**

A confirmed lack of funds on the part of the intervening institutions implies the unwinding of the entire clearing session and causes the automatic suspension of the defaulting institution's participation in the clearing system.

### **3.3.8 Pricing**

The Banco de Portugal does not charge the participating entities.

### **3.3.9 Main projects and policies being implemented**

The Banco de Portugal is endeavouring to include all paper-based transactions in the Automated Clearing System

(*Telecompensação*) in the medium term. With this change, the system will be reduced to a mere physical exchange of documents (cheques are not truncated, although electronically cleared).

## **3.4 The Automated Clearing System (*Telecompensação*)**

### **3.4.1 Functioning rules**

The operating rules of this system are based on the Clearing Service Regulations, issued by the Banco de Portugal, and on the Technical Specification Manuals agreed between the commercial banks and SIBS (as the ACH), circulated by the central bank.

The Clearing Service Regulations lay down the system guidelines and the responsibilities of and relationships between participants.

The Technical Specification Manuals are also important documents, since they define detailed procedures with which participants must comply in the field of data transmission, with regard to the smooth operation of the system. Currently, there are four Technical Manuals, one for each of the present sub-systems (see Section 3.4.4).

### **3.4.2 Participation in the system**

Banks and other similar entities may participate in the system if authorised to do so by the Banco de Portugal.

The institutions not authorised to participate may be represented by another institution, the latter assuming the rights and obligations of the institutions it represents vis-à-vis the other parties.

The Banco de Portugal may, for technical reasons, cancel any authorisations already granted.<sup>4</sup> A lack of liquidity and non-compliance with rules laid-down in the Clearing Regulations also lead to the

<sup>4</sup> For example, frequent breakdowns in a participant's communications.

cancellation of previously granted authorisations.

### 3.4.3 Types of transactions handled

The system covers automated clearing of the following types of transaction at ATM and EFTPOS terminals, cheques, transfer orders and commercial bills.

In 1994 *Telecompensação* handled 424.2 million operations representing a total of PTE 50,045 billion (ECU 254 billion). The cheques sub-system accounted for 50.5% of the operations and 89.2% of the value, while the *Multibanco* sub-system represented 47% and 3.4%, respectively.

### 3.4.4 Operation of the transfer system

Banks participating in the system use the interbank network SIBS (as the ACH) in order to communicate their transactions.

The system covers the following four sub-systems, each with different processing procedures and data formats, which are defined in the respective Technical Specification Manuals.

#### *Cheques*

All cheques in this sub-system are processed automatically and truncated at the drawer bank, although they are subject to a limit above which cheques are exchanged among participants. Direct participants in this sub-system currently number forty-one.

#### *Multibanco*

This sub-system covers transactions made using *Multibanco* debit cards at ATM and EFTPOS terminals. It should be noted that bank customers may carry out a wide range of transactions at ATMs, viz. cash withdrawals,

deposits, transfers, payment of public utility services, payment of commercial bills, payment of monthly school fees, booking and payment of theatre tickets and train tickets, loading of a multi-purpose prepaid card, etc. Participants in this sub-system currently number thirty-one.

#### *TEI*

This sub-system covers domestic credit transfers and credit transfers from abroad. Direct participants in this sub-system currently number forty-four.

#### *Efeitos (bills)*

This sub-system is based on the truncation of commercial bills of the drawer bank which are reported by the latter to the drawee bank seven days before maturity. Bank customers may pay these bills by a debit on their account (in the case of domiciled bills) or at any bank branch of their choice or through an ATM, in the case of non-domiciled bills. Direct participants in this sub-system currently number thirty.

Banks are not compelled to participate simultaneously in the four sub-systems. However, participation in the TEI and bills sub-systems implies direct or indirect participation in Traditional Clearing and in the Automated Cheques Clearing sub-system. Once the RTGS system comes into operation, participation in the SPGT will only be compulsory for the direct participants in any of the four sub-systems.

The following table summarises the closing times of sessions in SIBS, as well as of settlements at the Banco de Portugal.

SUB-SYSTEM	CLOSING TIME OF SESSIONS IN SIBS	FINANCIAL SETTLEMENT AT THE BANCO DE PORTUGAL
TEI	10.30 a.m. <sup>(a)</sup> 6 p.m. <sup>(b)</sup>	12 noon <sup>(c)</sup> 8.30 a.m. <sup>(d)</sup>
Multibanco	7 p.m.	8.30 a.m. <sup>(d)</sup>
Efeitos (bills)	10 p.m.	8.30 a.m. <sup>(d)</sup>
Cheques	2 a.m. <sup>(d)</sup>	8.30 a.m. <sup>(d)</sup>

a) For credit transfers from abroad (as of the fourth quarter of 1995).

b) For domestic credit transfers.

c) Same day.

d) Next day.

### 3.4.5 Transaction processing environment

The system operates online for the whole day and transactions are communicated in batches, except in the *Multibanco* network sub-system, in which they are effected in real time.

### 3.4.6 Settlement procedures

The movements on the balances assessed by SIBS at the close of sessions in a multilateral netting system are communicated via file transfer to the Banco de Portugal, which carries out the respective debit and credit entries on the accounts of the different participants in the business hours given in Section 3.4.4, thus effecting the settlement of the operations.

### 3.4.7 Credit and liquidity risk

A confirmed lack of funds on the part of the intervening institutions implies the unwinding of the entire clearing session and causes the automatic suspension of the defaulting institution's participation in the clearing system.

### 3.4.8 Pricing

The basic principle of the pricing policy is based on allowing the system to be self-financing. Therefore, the interest of the participants is reflected in the mutual compensation of operating costs.

SIBS provides the participants in the system with a price list per transaction according to the type of transaction. The data-processing system also establishes a price list to be charged to the different participants in the system, defined on the basis of the administrative costs of the respective operations. In both cases, costs are assessed automatically, via electronic data processing, and the respective invoices are debited on a monthly basis. There are no common regulations governing the prices to be charged by banks to their customers, however, banks are obliged to display the respective list clearly.

### 3.4.9 Main projects and policies being implemented

Debit transfers (direct debits), which are currently operated through bilateral agreements between companies providing services and banks, are expected to be included in the TEI's sub-system in 1996.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

Portuguese financial markets are governed by the Stock Market Code which has been in force since 1991 and which extensively defines the structure and the operating rules of the primary market and of the different secondary markets, as well as the role of the private and public sector bodies involved (National Council of the Stock Exchange; Stock Market Commission; stock exchanges; Stock Market Associations; brokers; dealers; and other financial intermediaries).

In addition to this basic law there are other specific rules, in particular those governing the operation of the Transferable Securities Centre, its Nationwide Settlement and Clearing System and the stock exchanges.

For monetary policy purposes, an intervention transactions market was created by the Banco de Portugal, in 1978, on which a limited range of government securities and the central bank's securities are used in monetary policy operations. This securities market is regulated by the Banco de Portugal.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

In accordance with its Organic Law, the Banco de Portugal is responsible for the direction and control of the money, financial and foreign exchange markets. However, in practical and objective terms, its role is mainly concentrated in the regulation and control of the interbank markets. As regards the stock market, the Bank acts both as financial settlement agent of the system and as adviser to the government in the establishment of its legal framework. The Banco de Portugal is represented in two

consultative bodies: the Governor of the Banco de Portugal is a member of the National Council of the Stock Exchange, a consultative and advisory body chaired by the Minister of Finance; and another member of the Board of Directors of the Banco de Portugal chairs the Consultative Council of the Stock Market Commission.

##### *Provision of settlement facilities*

All participants in the Transferable Securities Centre and its Nationwide Settlement and Clearing System operated by *Interbolsa* (see Section 4.1.4) hold accounts with the Banco de Portugal for cash settlement purposes. However, no credit facilities are explicitly provided by the central bank.

In the case of the *Interbolsa* system, the Banco de Portugal's role is limited to the procedures related to the settlement of the net balances supplied by this association.

##### *Provision of operational facilities*

Operational facilities for the Nationwide Settlement and Clearing System are provided by *Interbolsa*.

As regards *Sistem* (see Section 1.3.2), the Banco de Portugal provides all the operational services of the system, including the supply of reports and statistical data to the participants.

##### *Monetary policy operations and securities settlement systems*

The aforementioned *Sistem* was created by the Banco de Portugal with the objective of ensuring the conditions of urgency and reliability which are required by the large-value transactions related to monetary policy

- money and securities transactions. Until recently, for security reasons, only Treasury bills and securities issued by the Banco de Portugal - which are deposited with the Bank by law - were eligible for mobilisation in this interbank market. Since 1994, a category of Treasury bonds has been added to this group. As this type of securities is deposited with the national securities depository, an online linkage between the Banco de Portugal and *Interbolsa* was established, with the aim of ensuring the necessary synchronism between cash and securities settlement.

#### *Main projects and policies being implemented*

The implementation of the Portuguese RTGS system, the SPGT (*Sistema de Pagamentos de Grandes Transacções*), will lead to the need to implement a quick operational mechanism to provide participants with the necessary intraday liquidity. As these mechanisms necessarily involve the mobilisation of the corresponding collateral, an additional effort has to be made with a view to reducing the processing time for the transfer of the eligible securities.

With regard to the third stage of EMU, other developments will be required to permit the transfer of collateral within the EU, but the definition of the model to be applied at that time will depend on the assumption of a collective position by the EU central banks.

#### **4.1.3 The role of other public sector bodies**

##### *The National Council of the Stock Exchange*

This body comprises around twenty members and is chaired by the Minister of Finance. It essentially plays a consultative and advisory role on policy issues.

##### *The Stock Market Commission*

It is incumbent on this Commission to regulate, supervise, control and promote the operation of markets and the activities of the agents involved therein.

#### **4.1.4 The role of other private sector bodies**

##### *Interbolsa*

*Interbolsa*, a private non-profit-making association, acts as the Portuguese central securities depository and as operator, at a nationwide level, of the settlement system for securities transactions.

##### *Stock Market Associations*

The Stock Market Associations of Lisbon and Oporto are private non-profit-making entities which have the following social purposes: to create, administer and carry out transactions on the stock exchanges; to constitute suppliers of specialised services; to promote the expansion and integration of the stock market; to promote and control the quality of intermediation on transferable securities within the stock exchanges; to promote the investment of savings in transferable securities.

##### *Stock exchanges*

According to the Stock Market Code, the Lisbon Stock Exchange and the Oporto Stock Exchange are financial institutions the main purposes of which are: to manage the systems provided with the means required by the creation and efficient, continuous and liquid functioning of a free and open stock market; to ensure, via a third party, the appropriate registration, clearing and settlement services of stock exchange transactions; and to publish adequate and timely information on the operations executed.

At present, the stock market is concentrated in the Lisbon Stock Exchange. Activity on the Oporto Stock Exchange is currently limited to the study and implementation of the new market for derivative instruments (futures and options), which will be centralised in this institution.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

The stock market is divided into the official market, the over-the-counter market, which deals in unlisted securities, and the recently created Special Market for Wholesale Transactions.

The following debt instruments are traded on these markets: shares, Treasury bonds and other bonds, participating bonds and units of collective investment undertakings.

*Interbolsa* ensures the operation of the trading system of the different stock markets and also provides for the registration, transfer and control of the book assets and securities, and the clearing and settlement of the transactions on the various markets. Securities settlement is considered as final on D+4, after confirmation by the Banco de Portugal that the corresponding cash settlement is completed.

The intervention of the Banco de Portugal in the money market is always made through collateralised operations involving Treasury bills, some Treasury bonds, central bank certificates and central bank intervention bills.

Treasury bills are sold by auction by the Banco de Portugal, which acts as central depository and settlement agent.

Transfer of primary liquidity between credit institutions is mostly effected by non-

collateralised loans, although repo operations on transferable securities are also used on a reduced scale. The settlement is effected on a trade-by-trade (gross) basis.

### 4.2.2 Basic quantitative aspects (basic statistics)

#### *Interbolsa*

In 1994 the annual turnover of *Interbolsa* amounted to PTE 7,075 billion (ECU 35.9 billion), corresponding to 566,184 transactions, which represents a daily average of PTE 28 billion (ECU 142 million) and 2,237 transactions.

#### *Sistem*

The volume of interbank securities operations is relatively small, owing to the fact that the transfer of liquidity between credit institutions is usually effected by non-collateralised operations. On the other hand, operations with the Banco de Portugal are always fully collateralised.

In the first six months of 1995, monthly transactions averaged 336 in terms of volume and PTE 2,044 billion (ECU 10.4 billion) in terms of value.

### 4.2.3 Financial intermediaries operating in the different securities markets

#### *Interbolsa*

The number of participants in *Interbolsa* amounts to fifty-eight, of which thirty-six are credit institutions, twenty-one are brokers and dealers and one is a public body.

#### *Sistem*

*Sistem* has 110 participants, of which ninety-eight are credit institutions, ten are financial companies and two are public sector bodies.

#### 4.2.4 Recent developments

##### *Interbolsa*

The creation of *Interbolsa* was a natural consequence of the legal framework established in the Stock Market Code of 1991. The main objective of *Interbolsa* is to operate and manage a nationwide system able to ensure the deposit, trading, clearing and settlement of transactions on dematerialised securities. Over recent years its activity has been mainly concentrated in the dematerialisation process of securities and in the improvement of the processing and settlement mechanisms.

##### *Sistem*

This system was created to process and settle the interbank money and securities transactions directly linked to monetary policy. At the time, only a specific and limited range of securities transactions was used, in the intervention by the central bank in the domestic money market.

Since this time central bank intervention mechanisms have been gradually changed and enlarged, giving rise to frequent and relevant adjustments to the information system.

### 4.3 Interbolsa

#### 4.3.1 Major legislation and regulation governing the system

This market is governed by the following main regulations: the Stock Market Code; the Transferable Securities Centre and its Nationwide Settlement and Clearing System Rules, approved by the Stock Market Commission; other government regulations on operational aspects: operational procedures, commissions and fees, etc.

#### 4.3.2 Participation in the system

The authorisation and registration of financial intermediaries are conferred by the Stock Market Commission on credit institutions, investment companies, dealers and brokers which demonstrate that they have all the means, especially data-processing facilities, and the indispensable technical and financial capacity to guarantee the provision of efficient and secure transferable securities services, and are conditional upon the financial intermediary's being admitted to the national Transferable Securities Centre.

#### 4.3.3 Types of transactions handled

The *Interbolsa* system handles the full range of authorised operations on securities: registration of the securities issued by each entity, which can be made either by the issuer or by a financial intermediary; deposit and withdrawal of securities; the settlement of the securities purchased and sold; the transfer of securities to blocked accounts; other operations concerning the management of regular securities (collection of interest and dividends; redemptions; incorporation and subscription rights, etc.).

Securities lending operations are included in the range of authorised operations but have not been used so far.

#### 4.3.4 Operation of the transfer system

Transactions carried out on the stock exchange are matched by the system and recorded at the time of execution. The cancellation of a transaction is permitted if and when both counterparties agree to it and provided this information is transmitted to the system before the close of the following business day.

Brokers transmit data relating to transactions carried out on the stock market to *Interbolsa* as the central securities depository (CSD) by 4 p.m. on the trading date and give information about the respective securities settlement accounts. Brokers also distinguish between transactions ordered for their own account and those which were transmitted by other financial intermediaries. The data relating to the over-the-counter market and to the new Special Market for Wholesale Transactions can be transmitted by the financial intermediaries until 6 p.m. On the following business day *Interbolsa* sends participants the list of operations executed via the corresponding stock exchanges.

Between the trading date and the securities settlement date (D+4) specification errors may be corrected either by brokers or by other financial intermediaries.

#### **4.3.5 Transaction processing environment**

The environment is a mainframe application which receives and checks throughout the day and until the cut-off time of 6 p.m. the online transmission of data on the transactions traded on the various securities markets.

After the daily closing time, batch processing is carried out to update the data and prepare the required outputs for the participants and the internal management.

#### **4.3.6 Settlement procedures**

The settlement of securities is carried out by *Interbolsa* on D+3, but this settlement is provisional and conditional, pending confirmation by the Banco de Portugal, at an agreed time, on D+4, of completion of the financial settlement. If a participant is unable to cover its debit position, a new netting is calculated by *Interbolsa* with the exclusion of the operations which exceed the settlement capacity of the defaulting participant.

#### **4.3.7 DVP arrangements**

An agreement between the Banco de Portugal and *Interbolsa* guarantees the DVP mechanisms: the settlement of securities only becomes final after confirmation by the central bank that the corresponding cash settlement is completed.

#### **4.3.8 Credit and liquidity risk control measures**

As can be drawn from Section 4.3.2, no specific control measures have been taken so far.

#### **4.3.9 Pricing policies**

The assessment of commissions and fees on securities transactions follows the principle of recovering their full cost. In fact, the Stock Market Code stipulates that the global operating costs of *Interbolsa* shall be borne by the financial intermediaries and by the securities issuers through the payment of commissions and fees on the services rendered by the association.

Prices are proposed by *Interbolsa* and approved by the Stock Market Commission.

#### **4.3.10 Main projects and policies being implemented**

*Interbolsa* and the Banco de Portugal are currently co-operating in a project envisaging the real-time treatment of the transfer of securities deposited with *Interbolsa* which are involved in intraday operations, thus enabling an immediate and final settlement of the two legs of the operation. These operations are fundamental to ensure the smooth operation of the new Portuguese RTGS system, the SPGT.

In the medium term, apart from some technical and functional adjustments aimed at improving the performance of the system, no substantial changes are expected.

## 4.4 Sistem

### 4.4.1 Major legislation and regulation governing the system

In accordance with its Organic Law, the Banco de Portugal is responsible for the direction and control of the money, financial and foreign exchange markets and for regulating the operations of these markets, by adopting general measures or intervening, whenever necessary.

These operating rules are communicated to the market participants through the Instructions of the Banco de Portugal.

### 4.4.2 Participation in the system

Participation in *Sistem* is conditional upon authorisation by the Banco de Portugal, as director and controller of the interbank markets and overseer of the system.

Generally, this authorisation is granted whenever the applicant is subject to reserve requirements.

### 4.4.3 Types of transactions handled

Securities repos are mostly used, but the system carries out other operations: outright purchases and sales and transfers.

### 4.4.4 Operation of the transfer system

The regular mechanism for injecting primary liquidity is the trading by auction of securities repos, which are processed as follows:

- the Banco de Portugal announces to the participants the maximum amount that it is willing to offer and the corresponding maturity;
- the interested participants transmit the amount and the interest rate to *Sistem* via a special telephone communications system;

- the results of the auction are transmitted to the participants;
- each counterpart gives written notice to the Banco de Portugal, by fax or other means, of the composition of the securities to be mobilised;
- the Banco de Portugal confirms the ownership of the proposed securities by each counterpart (by checking its own records, where it is itself the central depository, or, in the case of securities deposited with the national CSD, by obtaining an online confirmation from the Transferable Securities Centre of the blocking of the securities involved);
- finally, the Banco de Portugal executes the cash settlement of the operation.

*Sistem* operates every working day from 8.30 a.m. to 3.30 p.m.

Besides this regular arrangement, a standing credit facility is open to provide overnight credit within each 10-day reserve requirement period, at an interest rate slightly higher than the market rate.

On the last day of each period an “end-of-period lending facility” is also available, although at a penalty rate.

Absorption of liquidity is usually carried out by means of issuing central bank monetary certificates, with a maturity of between one and ten days. The interest rate for these operations is established and announced by the Banco de Portugal.

### 4.4.5 Transaction processing environment

Transactions carried out on the intervention transactions or securities markets are transmitted by the participants via a special telephone communications system. The information received by the Banco de Portugal is immediately entered in the mainframe

application. Following confirmation of the securities transfer (either within *Sistem* or by online access to *Interbolsa*), data on the cash settlement are automatically sent to the RTGS system. From the moment settlement is executed by the RTGS system, the transfer becomes final. After the closing time of the market, between 3 and 3.30 p.m., batch processing is performed and the required outputs are produced.

#### **4.4.6 Settlement procedures**

Following the full implementation of the Portuguese RTGS system in the second half of 1996, the settlement of these operations will become immediately final. Until then, unwinding is still possible as a last resort.

#### **4.4.7 DVP arrangements**

In the processing of *Sistem's* operations, the DVP mechanism is always guaranteed: when the securities to be mobilised are deposited with the central bank by the control procedures of the system; and when securities are deposited with *Interbolsa*, by online confirmation of the transfer of ownership.

#### **4.4.8 Credit and liquidity risk control measures**

The intervention transactions market is the main framework for the conduct of monetary policy, ensuring that participants are supplied with the liquidity they need, either for settlement purposes or for compliance with the reserve requirements.

Besides regular liquidity injection or absorption operations, in the event of an emerging shortage, liquidity can be restored to the required average level by resorting to the so-called "end-of-period lending facility", which is only available on the last working day of each maintenance period and subject to a penalty rate.

With the forthcoming implementation of the SPGT, two non-interest-bearing intraday liquidity facilities will be available: a standby collateralised facility and same-day securities repo.

#### **4.4.9 Pricing policies**

The underlying principle in the setting of the commissions and fees for use of the system is the full recovery of costs.

#### **4.4.10 Main projects and policies being implemented**

The implementation of the new Portuguese RTGS system gives rise to the need to reduce the processing time of *Sistem's* operations, in such a way that the settlement occurs within a period compatible with the requirements for the control and management of intraday liquidity (including the queuing mechanism). As mentioned above, this solution involves co-operation with *Interbolsa*.

From a medium-term perspective, any initiative to be taken in this field will take into consideration the impact of the third stage of EMU on securities transactions within an EU-wide money market in the single currency.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	9,896.3	9,866.6	9,862.4	9,876.1	9,876.1
Gross domestic product (PTE billions)	9,589.5	11,184.2	12,828.7	13,625.6	14,538.5
Exchange rate vis-à-vis ECU <sup>(2)</sup>	181.11	178.66	174.68	188.12	196.91

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**
*(end of year)*

	PTE billions				
	1990	1991	1992	1993	1994
Notes and coins	623.9	683.1	708.2	752.9	795.8
Transferable deposits	1,724.6	2,041.7	2,500.2	2,808.6	2,965.3
<i>of which held by:</i>					
<i>households</i>	1,020.5	1,186.5	1,420.4	1,607.5	1,732.6
<i>corporate sector</i>	667.4	797.9	988.2	991.4	1,057.9
<i>other</i>	36.7	57.3	91.6	209.7	174.8
Other	60.3	95.4	141.5	153.7	93.4
Narrow money supply (M1)	2,408.8	2,802.2	3,349.9	3,715.3	3,854.5
Deposits in foreign currencies	10.5	10.1	54.8	126.5	509.3

**Table 3****Settlement media used by deposit-taking institutions***(end of year)*

	PTE billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	1,284.3	1,652.1	1,848.4	2,042.2	330.9
<i>of which can be used for settlement</i>	<i>1,284.3</i>	<i>1,652.1</i>	<i>1,848.4</i>	<i>2,042.2</i>	<i>330.9</i>
Free reserves held at central bank	n.a.	n.a.	10.8	7.1	3.7
Transferable deposits at other institutions	20.2	15.3	10.5	18.1	23.7
Memorandum item:					
Broad money aggregate	6,909.6	8,223.8	9,292.2	9,843.1	10,783.7

(1) Including free reserves held at the central bank.

**Table 4****Banknotes and coins***(total value, end of year)*

	PTE billions				
	1990	1991	1992	1993	1994
Total banknotes issued	674.3	736.2	761.9	808.3	841.2
<i>of which:</i>					
<i>PTE 10,000</i>	<i>151.9</i>	<i>217.2</i>	<i>269.2</i>	<i>274.3</i>	<i>281.4</i>
<i>PTE 5,000</i>	<i>401.9</i>	<i>404.7</i>	<i>372.5</i>	<i>408.9</i>	<i>431.4</i>
<i>PTE 2,000</i>	<i>-</i>	<i>10.2</i>	<i>33.6</i>	<i>50.0</i>	<i>57.8</i>
<i>PTE 1,000</i>	<i>99.8</i>	<i>87.6</i>	<i>73.3</i>	<i>61.4</i>	<i>56.7</i>
<i>PTE 500</i>	<i>14.3</i>	<i>14.1</i>	<i>13.3</i>	<i>13.7</i>	<i>13.9</i>
<i>PTE 100</i>	<i>6.4</i>	<i>2.4</i>	<i>-</i>	<i>-</i>	<i>-</i>
Coins issued	23.3	35.7	40.9	41.7	44.4
Notes and coins held by credit institutions	73.6	88.8	94.6	97.1	88.8
Notes and coins in circulation outside credit institutions	624.0	683.1	708.2	752.9	795.8

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (PTE billions)
Central bank	1	12	-	-
Commercial banks	37	3,126	16,684	3,283.4
Mutual agricultural credit banks and savings banks	204	495	1,362	181.8
Post office	1	987	118	1.0
Treasury	1	-	-	-
<b>TOTAL</b>	<b>256</b>	<b>4,727</b>	<b>18,228</b>	<b>3,560.0</b>
Branches of foreign banks	11	107	64	93.8
<i>of which EC-based</i>	<i>9</i>	<i>104</i>	<i>64</i>	<i>92.4</i>

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	1	1	1	1	1
Number of machines	821	1,265	1,938	2,797	3,329
Volume of transactions (millions)	39.2	55.3	73.5	94.3	116.1
Value of transactions (PTE billions)	391.7	584.4	792.8	1,007.3	1,236.9
<b>EFTPOS terminals</b>					
Number of networks	1	1	1	1	1
Number of points of sale	n.a.	n.a.	n.a.	n.a.	25,318
Number of machines	2,672	7,097	15,540	27,554	32,700
Volume of transactions (millions)	7.8	21.9	44.7	75.4	90.3
Value of transactions (PTE billions)	45.5	160.3	304.6	448.2	573.7

**Table 7**

Number of payment cards in circulation <sup>(1)</sup>  
(end of year)

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	2,400	3,230	4,245	4,799	5,291
Cards with a debit/credit function	3,430	4,004	5,279	6,101	6,759
of which:					
<i>cards with a debit function</i>	-	-	4,649	5,095	5,669
<i>cards with a credit function</i>	-	-	630	1,006	1,090
Cards with a cheque guarantee function	n.a.	379	399	526	542
Retailer cards	9	55	70	86	91
Multi-purpose prepaid cards	-	-	-	-	-

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Telecompensação (teleclearing)	119.5	189.4	207.3	216.4	424.2
<i>of which:</i>					
<i>cheques</i>	119.5	187.2	202.4	209.6	214.2
<i>other</i> <sup>(1) (2)</sup>	-	2.2	4.9	6.8	210.0
Traditional clearing	66.7	13.5	14.0	13.1	12.1
<i>of which:</i>					
<i>cheques</i>	60.7	7.8	8.5	7.7	6.8
<i>other</i> <sup>(3)</sup>	6.0	5.7	5.5	5.4	5.3

1) Mainly electronic transfers.

2) "Telecompensação/Multibanco" was not included until 1994.

3) Mainly payment transfers.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	PTE billions				
	1990	1991	1992	1993	1993
Telecompensação (teleclearing)	30,631	44,142	49,023	49,258	50,045
<i>of which:</i>					
<i>cheques</i>	30,631	43,541	47,410	47,030	44,642
<i>other</i> <sup>(1) (2)</sup>	-	601	1,613	2,228	5,403
Traditional clearing	51,289	64,400	105,168	149,842	177,119
<i>of which:</i>					
<i>cheques</i>	11,924	1,413	1,544	1,489	1,346
<i>other</i> <sup>(3)</sup>	39,365	62,987	103,624	148,353	175,77

1) Mainly electronic transfers.

2) "Telecompensação/Multibanco" was not included until 1994.

3) Mainly payment transfers.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf on customers	Settling cash directly in central bank accounts
<b>INTERBOLSA</b>			
Banks	36	36	36
Stockbrokers	21	21	21
Securities houses	-	-	-
Insurance companies	-	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	-	-
Others (Treasury bodies)	1	-	1
<b>SISTEM</b>			
Banks	48	-	48
Stockbrokers	10	-	10
Securities houses	5	-	5
Insurance companies	-	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	-	-
Others (public bodies)	2	-	2
Others (leasing companies; factoring companies; credit- purchase finance companies)	47	-	47

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
INTERBOLSA	n.a.	n.a.	n.a.	n.a.	566,184 <sup>(1)</sup>
SISTEM	4,380	4,425	5,188	7,675	15,606
Others (securities issued by the Banco de Portugal)	2,156	1,219	1,881	1,835	2,572

(1) This figure cannot be subdivided.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	PTE millions				
	1990	1991	1992	1993	1994
INTERBOLSA	n.a.	n.a.	n.a.	4,028	5,089 <sup>(1) (2)</sup>
SISTEM	3,218	8,126	5,719	8,902	19,387
Others (securities issued by the Banco de Portugal)	8,701	8,100	7,674	11,146	8,279

(1) This figure cannot be subdivided.

(2) Stock exchange operations only.

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	PTE billions				
	1990	1991	1992	1993	1994
<b>INTERBOLSA</b>					
Government securities	n.a.	n.a.	n.a.	3,697	3,785
Bonds	n.a.	n.a.	n.a.	766	1,256
Shares	n.a.	n.a.	n.a.	1,093	1,882
CDs	n.a.	n.a.	n.a.	-	-
Participating bonds	n.a.	n.a.	n.a.	65	113
Units of collective investment undertakings	n.a.	n.a.	n.a.	12	39
<b>SISTEM</b>					
Government securities	1,086	1,544	1,139	976	1,325
Bonds	n.a.	n.a.	n.a.	n.a.	n.a.
Shares	n.a.	n.a.	n.a.	n.a.	n.a.
CDs	n.a.	n.a.	n.a.	n.a.	n.a.
Securities issued by the Banco de Portugal	74	61	381	24	1,854

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	n.a.	231.4	252.6	258.8	255.5
<i>of which truncated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	183.0	187.8
Payments by debit and credit cards	18	43.9	79.0	104.1	114.0
Paper-based credit transfers	n.a.	10.3	5.8	5.4	4.3
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Paperless credit transfers	n.a.	13.7	19.3	25.0	38.0
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Direct debits	n.a.	17.7	20.4	28.4	43.3
TOTAL	n.a.	317.0	377.1	421.7	455.1

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	PTE billions				
	1990	1991	1992	1993	1994
Cheques issued	n.a.	61,458.7	56,628.7	61,975.5	61,619.0
<i>of which truncated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	6,253.7	6,280.0
Payments by debit and credit cards	164.3	364.2	613.5	739.0	743.2
Paper-based credit transfers	n.a.	7,175.4	8,530.4	5,461.1	14,332.3
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Paperless credit transfers	n.a.	1,951.9	5,087.5	6,954.2	7,655.2
<i>customer initiated</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
<i>interbank</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
Direct debits	n.a.	738.5	790.5	1,219.7	4,506.8
TOTAL	n.a.	71,688.7	71,650.6	76,349.5	88,856.5

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	29	32	33	38	39
of which:					
<i>members</i>	18	20	20	25	26
<i>sub-members</i>	11	12	13	13	13
<i>participants</i>	-	-	-	-	-
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	2,117,984	2,434,293	2,888,879	3,233,630	3,578,502
of which:					
<i>category I</i>	445,193	546,012	678,020	754,622	853,872
<i>category II</i>	661,647	728,584	865,797	864,483	883,332
<i>sent/received to/from domestic users</i>	224,478	260,134	316,132	373,081	430,960
Total messages received	2,201,565	2,491,675	2,852,452	3,107,307	3,339,670
of which:					
<i>category I</i>	<i>n.a.</i>	<i>n.a.</i>	715,751	803,862	894,471
<i>category II</i>	<i>n.a.</i>	<i>n.a.</i>	498,878	541,420	591,849
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>APC</b>	Clearing system for physical shares
<b>BOF</b>	Bank of Finland Interbank Funds Transfer System
<b>EDI</b>	Electronic data interchange
<b>FIM</b>	Finnish markka
<b>FOEX</b>	Finnish Options Exchange Ltd
<b>HETI</b>	Helsinki Stock Exchange automated trade and information system
<b>HMMC</b>	Helsinki Money Market Centre Ltd
<b>KATI</b>	Helsinki Stock Exchange clearing and settlement system for book-entry shares
<b>OTC</b>	Over the counter
<b>POLT</b>	Banks' online ATM network
<b>POPS</b>	Data transmission and clearing system for express transfers and large-value cheques
<b>RTGS</b>	Real-time gross settlement
<b>SOM</b>	Finnish Options Market Ltd

## Introduction

The banking system, bank accounts and funds transfers between accounts together constitute the basis of the payment system in Finland. The use of advanced payment technology has made the system highly efficient by substantially reducing the need for manual work. This is reflected in a high level of automation in payments between banks and their customers (66%) and especially in interbank payments (99.9%).

The early introduction of postal (1939) and bank giro (1942) systems and their early co-operation (since 1948) prevented the cheque from developing into an important payment medium and made credit transfers the main payment vehicle for small and large-value payments. Debit cards are used fairly widely

in retail payments. Prepaid cards were introduced in 1993 and electronic purses in 1994.

There is no common multilateral clearing centre in Finland; all third-party interbank payments made from one bank or banking group to another are cleared bilaterally and settled centrally in the central bank's RTGS system (the BOF system).

The BOF system was introduced by Suomen Pankki in 1991 to handle real-time funds transfers between the banks and the central bank. The net payments of the two securities clearing systems are also settled in the BOF system.

## I. Institutional aspects

### 1.1 General legal aspects

Exchange controls on payment and other capital flows between Finland and other countries were gradually dismantled in the 1980s. Only prudential requirements such as foreign exchange position limits for banks remain.

There is no unified legislation governing payment systems in Finland. However, there are a number of separate laws regulating various areas of the payment system. The Act on Suomen Pankki (1925) sets the central bank the overall objective of promoting the smooth operation of the payment system. A committee set up to propose amendments to the Act published its report in August 1994.

The Currency Act (1993) states that notes and coin are legal tender and that Suomen Pankki has the exclusive right to issue them.

Finland has a universal banking system and the Credit Institutions Act (1994) lays down a general legal framework for banking and financial activities. This law replaced the Deposit Bank Act (1991) and the Financial Activities Act (1992). The Act on the Activities of Foreign Credit and Financial Institutions Operating in Finland (1994) governs the activities of branches of foreign credit institutions. These and separate laws on the corporate structure of different types of banks were brought into line with the European Economic Area Agreement and the EU Second Banking Co-ordination Directive at the beginning of 1994.

The Cheque Act (1932), which is based on the Geneva Convention of 1931, sets out the rules governing the use of cheques. The laws dealing with bills of exchange, promissory notes and debt securities contain general provisions concerning payments in these areas.

There is no special legislation governing card payments, and the agreements between banks, customers and service providers in this area are based on contract law. However, the Consumer Protection Act includes provisions on lost, stolen and misused cards, and also lays down the responsibilities of card issuers and cardholders. The Penal Code contains provisions on fraud involving payment media and money laundering.

### 1.2 Financial intermediaries that provide payment services

Bank accounts and funds transfers between them constitute the basis of the cashless payment system in Finland. Consequently deposit banks play a major role in the provision of payment services.

The new banking laws have put all deposit banks on an equal footing as regards prudential requirements and competition. Finnish deposit banks are divided into three categories according to their corporate structure: commercial banks, savings banks and co-operative banks. The state-owned commercial bank Postipankki Ltd (Post Office Bank) handles all government payments, except large-value foreign exchange payments, which are the responsibility of the central bank. The commercial banks' share of total bank deposits is around 65%, in terms of both volume and value.

The postal system participates in the Finnish payment system in two ways. First, as agents of Postipankki, post offices offer accounts, loans and payment services to their customers. Second, they offer postal money orders for making national and international payments in cash, and provide cash delivery services to banks.

The banks own most of the credit card companies. The largest of these, *Luottokunta*,

is owned jointly by banks and central institutions of commerce, and issues VISA cards. The central bank sold shares in the company issuing prepaid cards and electronic purses to the banks in November 1995.

At the end of 1994 there were thirteen commercial banks, forty savings banks and 302 co-operative banks in Finland, with a total of about 2,100 branches throughout the country. In addition, Postipankki provided payment and other banking services through some 960 post offices.

### 1.3 The role of the central bank

#### 1.3.1 General responsibilities

Under the Constitution of Finland, Suomen Pankki “operates under the guarantee and care of Parliament and is supervised by the Parliamentary Supervisory Board”. According to the Act on Suomen Pankki the objective of the Bank is “to maintain a stable and secure monetary system and to assist and facilitate the circulation of money in Finland”.

The central bank puts notes and coin into circulation via the banking system. It distributes notes and coin to banks according to their needs and receives surplus or unfit currency returned by them.

In order to allocate more resources to the development of payment systems, Suomen Pankki established a separate payment systems unit in 1991. Its role is to co-ordinate payment systems activities and development work within the Bank, provide expertise on payment matters, carry out research on payment systems issues, monitor developments in domestic and international payment systems and prepare changes and reforms that are deemed necessary.

Suomen Pankki may issue recommendations to banks on payment systems matters but it is not legally empowered to issue any binding regulations.<sup>1</sup> The only exception to this rule

is the reserve requirement regulation, which was added to the Act on Suomen Pankki in 1993. As regards the issue of notes and coin, the Bank has the right to issue regulations under the Currency Act (1993). Participation by the Bank in the development of banks’ payment systems is based on co-operation between the banks and the central bank.

The Bank is not yet legally empowered to oversee payment systems, but this function is included in the duties of the Bank in the proposed Act on Suomen Pankki. The settlement operations of Suomen Pankki and the BOF system are audited by its Internal Audit Department and external auditors, and monitored and supervised by its Financial Markets Department.

In October 1993 financial supervision was reorganised and transferred to the central bank. In that context, the Banking Supervision Office, a government agency subordinate to the Ministry of Finance, was abolished and replaced by a new body called the Financial Supervision Authority. From an administrative point of view, the Financial Supervision Authority is part of Suomen Pankki but it is independent in its decision-making and has its own Board of Directors.

#### 1.3.2 Provision of processing and settlement facilities

##### *Provision of settlement accounts*

Suomen Pankki offers authorised credit institutions a current account facility linked to a real-time gross settlement system for interbank payments (the BOF system). The funds transfers on these accounts are related to the central bank’s money market operations, daily interbank settlement arrangements, and currency supply and maintenance operations. The BOF system is

<sup>1</sup> No recommendations have been issued so far. The Financial Supervision Authority has the power to give instructions concerning payments.

also used for the settlement of banks' net clearing arrangements related to third-party payments as well as settlement of net balances in securities clearing by two clearing houses. To facilitate the settlement of their own and customers' payments, the deposit banks maintain current accounts at the central bank. Besides banks, some other institutions hold current accounts at Suomen Pankki for the purpose of executing large-value funds transfers.<sup>2</sup> Only funds transfers related to derivatives and some bond trades are currently not settled directly in the BOF system.

#### *Provision of credit facilities*

In order to promote the smooth operation of clearing and settlement, Suomen Pankki provides intraday and fixed-term liquidity credit facilities to the deposit banks participating in the BOF system.<sup>3</sup> A precondition for access to these facilities is that these institutions meet the conditions set by the Board of the Bank.

Intraday credit is restricted to a certain maximum amount by setting an overdraft limit for each clearing bank and, as from the beginning of 1996, by requiring each bank to deposit collateral for the full amount of the limit. The level of limits is based on banks' applications and needs of intraday credit for settlement but the Bank may use its discretion if it considers limits to be excessive. To make the credit limits and collateral requirements more binding the Bank has introduced penalties. The limits cannot be exceeded without the permission of the Bank. A flat

rate fee is collected every time the account limit is temporarily raised during a day to unlock gridlock situations. A penalty rate is applied if a bank cannot provide adequate collateral for its credit limit. Banks that repeatedly violate the rules can be placed under special surveillance or, in the event of serious offences, they may be excluded from the system.

Liquidity credit may be granted by the Bank to domestic credit institutions and to foreign credit institutions operating in Finland which are subject to minimum reserve requirements and have a current account at Suomen Pankki. Liquidity credit must be fully collateralised. The purpose of the central bank's liquidity credit facility is to safeguard a bank's liquidity in the event of an end-of-day debit balance on the bank's current account at Suomen Pankki after the daily settlement of payments. Currently there is no limit for liquidity credit.

As a rule, Suomen Pankki does not provide credit facilities for securities settlement systems. The Helsinki Money Market Centre is an exception for which the central bank operates as the lender of last resort for cash shortages by granting short-term credit against collateral.

#### *Pricing policies*

(See Section 3.2.8.)

### **1.3.3 Monetary policy and payment systems**

The Bank of Finland Interbank Funds Transfer System (the BOF system) is part of the infrastructure needed for monetary policy implementation. Transfers of funds related to the central bank's monetary policy operations in the money and foreign exchange markets are executed in the system. The BOF system is operated by the central bank itself and guarantees that these very important payment transfers are irrevocable and settled

<sup>2</sup> These are Finnish Export Credit Ltd, Helsinki Money Market Centre Ltd, the Helsinki Stock Exchange Ltd, the State Treasury, the Government Guarantee Fund and Asset Management Company Arsenal Ltd, which is owned by the state.

<sup>3</sup> The maturity of liquidity credit may be 1 day or 7, 14, 21 or 28 days. It is determined by Suomen Pankki. Since October 1992 the maturity has been 7 days. The credit must be fully collateralised.

quickly, safely and according to agreed time schedules. The Bank must be informed immediately of any disturbances.

In order to balance their books at the end of each business day, banks have to make use of the interbank market and/or central bank liquidity facilities. Each day, at about 3.45 p.m., after the net settlement of different clearing systems, banks predict their end-of-day positions on their settlement accounts and their associated financing or investment needs. In the first instance they seek to eliminate their liquidity surpluses or deficits by interbank lending or borrowing, because it is more expensive to use central bank facilities than the interbank market.<sup>4</sup> Once interbank operations have been settled, the resulting net deficit or surplus of the banking sector is reflected in a change in bank reserves on current accounts at the central bank. By holding daily or weekly tenders, Suomen Pankki can increase or decrease the banks' daily liquidity positions and exert downward or upward pressure on banks' reserve positions and thereby on short-term market rates.

In order to increase the amount of reserves available for making payments and to stabilise short-term interest rate developments, Suomen Pankki decided, in June 1995, to modify its minimum reserve system. This was done by introducing averaging provisions from 1st October 1995 and by transferring banks' reserve holdings to their current accounts. This allows banks greater flexibility in their liquidity management as they can also even out any intraday variation in payments by adjusting their non-interest-bearing minimum reserve holdings. Under the new system, only the average level of reserves during the month must satisfy the reserve requirement for each period.

The introduction of averaging also entailed a significant change in the collateral practice applied to banks' central bank borrowing. Previously, minimum reserves were used as collateral for banks' intraday overdraft limits

and liquidity credits. With the transfer of minimum reserves to banks' current accounts, they are no longer available for use as collateral. Therefore banks now have to provide Suomen Pankki with other collateral, mainly Treasury bills and Suomen Pankki certificates of deposit. The intraday limits of banks at Suomen Pankki were also lowered because banks' liquidity increased on average by an amount equivalent to the minimum reserves.

#### ***1.3.4 Main projects and policies being implemented***

On 1st October 1995 the reserve system was brought into line with the practice in other EU countries with the introduction of averaging provisions and a situation in which minimum reserves were no longer accepted as collateral (see Section 1.3.3).

From the beginning of 1996, the full collateral requirement for intraday credits came into force for all participants in the BOF system.

### **1.4 The role of other private and public sector bodies**

#### ***1.4.1 Ministry of Finance***

The Ministry of Finance grants licences for the operation of credit institutions and other financial intermediaries and prepares legislation concerning banking and other financial activities. The ministry has a representative on the Board of Directors of the Financial Supervision Authority.

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<sup>4</sup> *The rate of interest on liquidity credit is two percentage points above Suomen Pankki's tender rate and the rate on excess reserves on banks' current accounts is generally two percentage points below Suomen Pankki's tender rate. The Board makes a separate decision on the latter every time the tender rate is changed. These rates set the upper and lower level for short-term market rates.*

The State Treasury is responsible to the Ministry of Finance. It acts as the fiscal agent, co-ordinates the state's payments and acts as the state's cashier. For the settlement of large-value payments related to financial operations, the Treasury holds an account in the BOF system. The state's bulk payments are mainly effected through Postipankki.

#### **1.4.2 Finnish Bankers' Association**

The Finnish Bankers' Association has functioned as the umbrella organisation co-ordinating the joint activities and representing the common interests of the Finnish banks since 1914. Its membership base has widened significantly since 1989-90, when co-operation between all the various banking groups started under the auspices of the Association. It plays an important role as a general co-ordinator in the development by banks of payment services and banking technology for their joint use.

International developments have enhanced the role of the Finnish Bankers' Association as the representative body of Finnish banks.

The Association joined the Banking Federation of the European Community as an associate member at the beginning of 1988.

The Finnish Bankers' Association provides information and statistics on the Finnish payment system and participates in international co-operation through organisations such as the EDIFACT Board, Europay International SA, and the European Committee for Banking Standards.

#### **1.4.3 Other co-operative bodies**

The Central Association of the Finnish Co-operative Banks co-ordinates the activities of the co-operative banks. It is also involved in developing marketing, information, research and training within the member banks.

The Finnish Savings Banks' Association is responsible for co-ordinating the joint banking policy of the savings banks and oversees their interests, research and planning, information and professional journals and bank security.

## **2. Payment media used by non-banks**

### **2.1 Cash**

As mentioned above, notes and coin are put into circulation by Suomen Pankki. The notes are printed by Setec Oy, the banknote and security printing house owned by the Bank. Coins are manufactured by the Mint of Finland Ltd, which is owned and supervised by the Ministry of Finance. The monetary unit is the Finnish markka, which is divided into one hundred penniä (singular: penni).

Notes and coin are distributed to banks via Suomen Pankki's branch network and the

postal system. At the end of 1994 there were four branches. Currency in circulation consists of notes in the denominations of FIM 20, 50, 100, 500 and 1,000, and coins in the denominations of FIM 1, 5 and 10, and 10 and 50 penniä. In 1993 the FIM 10 note was replaced by a FIM 10 coin, and a new note in the denomination of FIM 20 was issued. There is also a small stock of commemorative coins in denominations ranging from FIM 5 to 1,000. These are mostly collectors' items and are very seldom used as payment media. Notes and coin in circulation at the end of 1994 amounted to

FIM 14,315 million (ECU 2,433 million<sup>5</sup>). Of this amount, notes and coin held by banks totalled FIM 3,504 million (ECU 601 million) and notes and coin held by the public FIM 10,810 million (ECU 1,853 million) (see Table 4).

Cash is the most commonly used payment medium in retail transactions. On the basis of a sample survey carried out by Suomen Pankki in the autumn of 1992, it is estimated that around 80% of the total number of retail transactions are made in cash. But as these are relatively small payments, cash plays a minor role in the payment system as a whole, measured in value terms.

Precise data on the annual volume and value of cash transactions are not available. However, some estimates have been made. According to the above sample survey, use of cash by households corresponds to about 40% of their consumption in value terms, implying that the total value of cash transactions was around FIM 90 billion (ECU 15 billion) in 1992.

The average ratio of notes and coin held by the public to the narrow monetary aggregate M1 has been around 7% in recent years (see Table 2). The respective ratio to GDP has been slightly over 2%, which is very low by international standards.

Nowadays, more than 70% of cash is withdrawn from cash dispensing ATMs, the number of which increased rapidly in the late 1980s. ATMs with transaction facilities have been in use since 1990. The number of machines with cash dispensing facility has stabilised, amounting to 2,833 at the end of 1994. The average amount withdrawn per transaction has been close to FIM 400 (ECU 65) in recent years for 2.3 million cards with cash function (see Table 7).

In 1994 the main banking groups founded a company, *Automatia Pankkiautomaatit Oy*, to administer cash dispensers in Finland.

## 2.2 Non-cash payments

Two giro-based non-cash payment systems were introduced in Finland more than fifty years ago: postal giro by the state-owned Postipankki and the post office system, and bank giro by the private deposit banks. The practice of paying wages and salaries directly into employees' bank accounts began in the 1960s, and was later extended to pensions and other social benefits. These features, together with extensive co-operation between banks, have resulted in compatible transfer systems in the banking sector and created a good basis for non-cash payments.

Today, Finnish banking customers hold nearly 13 million accounts in transferable deposits, i.e. almost three per capita (see Table 5). The amount of money deposited in these accounts at the end of 1994 was FIM 144 billion (ECU 23 billion) which corresponds to about 30% of GDP (see Tables 1 and 2). These accounts are of several different types: deposit accounts, savings accounts, postal giro accounts, transactions and cheque accounts. Some of them may have an overdraft facility. Customers can make various payments from these accounts and write cheques on cheque accounts. Corporate customers usually have bank accounts in more than one banking group.

### 2.2.1 Credit transfers

Bank and postal giros are traditionally the dominant credit transfer instruments in Finland. Until 1993 there were separate forms for bank giros and postal giros, although both giro systems have been in joint use for many years. In 1993, however, these forms were unified with the introduction of a new common giro form. At the same time, the term giro was used for both bank and postal

<sup>5</sup> The ECU/FIM exchange rate used in this section is the daily average for the period in question or, in the case of an end-of-period figure, the end-of-period exchange rate.

giros. A giro payment operates as follows: a customer gives an order to debit his/her account and to credit the payee's account in the same or another banking group, or, especially in the past, only to credit the payee's account with a sum of cash, i.e. to pay the bill over the counter in cash. In order to reduce the amount of paper - and thus expenses incurred - banks have developed electronic methods of transmitting orders (in-house and cashiers' terminals, ATMs, etc.).

The giro system was originally paper-based and thus fairly expensive to operate, which gave banks a strong incentive to develop electronic systems. By applying a pricing policy which approaches full-cost pricing, the banks have sought to persuade customers to make greater use of electronic transfer systems. In 1994 66% of all payment instructions from customers were received electronically. Over 99% of all interbank payment instructions are nowadays exchanged electronically. In 1994 the number of credit transfer orders from customers to banks totalled 434 million, of which 275 million were transfers between banking groups (see Tables 8 and 14).

In order to link the payment system to companies' billing systems the banks have developed the so-called reference number system. A "reference giro" is a giro with a pre-printed reference number that identifies the bill and the payer to the payee. The service enables creditor companies to receive data on incoming payments from banks quickly and safely via their own payment control system (EDI) or as paper statements. Separate payment vouchers are not transferred in this system.

For urgent large-value giro payments there is a special service called Express Transfer by means of which funds can be transferred to the beneficiary on the same value date (for new developments in this area, see Section 3.3.9).

### *Recurrent payments*

In Finland the transfer of recurrent payments was the first electronic payment service to be developed jointly by the banks in the 1960s. It enables corporate customers to transfer wages and salaries, pensions, payments for products and other recurrent payments in one batch to several payees from their own data-processing systems to a bank's data-processing system to be credited to payees' accounts. A corporate customer can send all the information related to its recurrent payments to its own bank, which then forwards the payments to the payees' banks. There were 93 million recurrent payment transactions in 1994.

A similar payment service is available to private customers. Previously, a customer would send bills to be paid to his/her bank in a special payment service envelope some days before they became due. The bank then debited the customer's account and credited the payee's account on the due day or on the day requested. Nowadays, a customer can authorise his/her bank on the basis of a single agreement to effect these recurrent payments, e.g. monthly rent or biannual insurance payments, from his/her account.

### **2.2.2 Cheques**

Although the Cheque Act was passed as long ago as the 1930s, cheques have never been a very common payment medium in Finland. The use of cheques has decreased sharply in recent years in volume terms. Whereas 72.3 million cheques were written in 1984, less than 6 million were written in 1994. The average value of cheques has risen from FIM 4,300 (ECU 695) in 1985 to FIM 185,000 (ECU 29,884) in 1994 (see Tables 14 and 15). Cheques are nowadays used mainly for large-value payments by companies and only to a very minor extent for retail payments by households. The main reasons for the decrease are the introduction of charges for cheques in 1988 and the increased use of

debit cards. Nowadays most retailers refuse to accept cheques because of the manual work involved. Cheque truncation is used, thus reducing the manual work involved in handling cheques at banks to a minimum.

Bankers' drafts are cheques drawn by a bank on itself against which the bank undertakes to pay a stated sum of money on demand to a named person or to his/her order. Bankers' drafts are honoured by all banks, and are comparable to cash in transactions.

### 2.2.3 Direct debit

A direct debit is a pre-authorised transaction in which the payee, through his/her own bank, debits the payer's account on the due date. This method is mostly used for regular payments of varying amounts, such as electricity and telephone bills, newspaper and magazine subscriptions, etc. The payee must inform the payer about the bill before sending the direct debit order so as to enable the payer to make sure there are sufficient funds on his/her account. The payer has no right to revoke a payment already debited.

The direct debit was introduced in 1978. It has gained strongly in popularity in the 1990s, with an average volume growth of around 30% in recent years. The number of direct debit transactions totalled 17.9 million in 1994 (see Table 14). It is a very convenient payment method for both the payer and the payee, and, since it is fully automated, the costs involved are relatively low for banks and users alike.

### 2.2.4 Payment cards

Since the early 1980s, cards, especially debit cards, have been increasingly used in daily retail payments, partly replacing cash and almost completely replacing payments by cheque. The annual growth rate of cards in circulation has varied between 10 and 15%.

In the early 1990s, however, this rate slowed down in terms of both numbers and value, thus reflecting the slump in consumption, the economic recession in general and the tightening of risk management policies and issuance criteria for cards.<sup>6</sup> Prepaid cards were introduced in 1993 and electronic purses in 1994.

The number of payment cards in circulation at the end of 1994 totalled 6.5 million (see Table 7) and 229 million payments were executed by debit and credit cards with a total value of FIM 54 billion (ECU 8.7 billion) (see Tables 14 and 15).

#### *Debit cards*

Debit cards are issued by banks.<sup>7</sup> They provide payment and ATM facilities; that is, a customer can use a card to pay for purchases in shops, to pay bills via ATMs or simply as a cash card. In addition there are "combined cards", which also provide credit or delayed debit facilities.

Finnish bank cards are valid as payment media only in Finland. Under existing agreements between banking groups, it is possible to withdraw cash from some Scandinavian banks and from cash dispensers and ATMs in Spain.

In 1994 there were thirty bank card payments per inhabitant with a value of around FIM 6,900 (ECU 1,115). The maximum value of a single payment by a bank card was limited to FIM 200,000 (ECU 32,307) in November 1995. The ratio of bank card payments to private domestic consumption was 11.9% in 1990 and 12.6% in 1994.

<sup>6</sup> For example, because of misuse of cards (credit limit overruns) and negligence and failures in payment of overdue debt, Luottokunta, which issues VISA cards, cancelled 40,000 cards in 1991.

<sup>7</sup> In Finland debit cards are called "bank cards".

*Delayed debit cards*

The most widely used delayed debit cards (excluding oil company cards), i.e. cards with a maximum of two months' delayed debit on which no interest is charged, are issued mostly by a bank-owned credit card company. Of these cards, the VISA card is available for both domestic and international private personal use, Eurocard for domestic and international use by companies only and the "OK card" for domestic personal private use only. In 1994 there were just over 800,000 such cards in circulation and the value of transactions amounted to some FIM 11 billion (ECU 1.8 billion).

No interest is charged on these cards; only an annual fee is debited, the size of which depends on the predetermined limit up to which the card may be used. Altogether there are twenty-one different cards of this type, including cards issued by oil companies. Most cards used by companies belong to this group.

*Credit cards*

There are nine different credit cards in Finland, and most are issued by bank-owned finance companies. Payments by this type of card are usually larger in value than payments by other cards. In 1994 the average value of payments was around FIM 460 (ECU 74), while for all other payment cards it was around FIM 200 (ECU 32).

The average rate of interest on credit card credit has recently been around 18% p.a. The total value of credit card payments in 1994 was FIM 3.7 billion (ECU 0.6 billion), which was only slightly higher than in 1991.

*Retailer cards*

Retailer cards represent the largest group of credit cards in terms of numbers; there were forty-seven different cards and issuers in

1994 and 1.7 million cards in circulation (see Table 7). Typically, these cards are issued by oil companies, travel agencies, furniture stores, etc. The use of these cards has decreased slightly in recent years measured in terms of the number of purchases. In 1994 the total value of transactions by retailer cards was FIM 2.5 billion (ECU 0.4 billion).

*Prepaid cards and electronic purse*■ *Electronic purse*

Avant Finland Ltd was established by Suomen Pankki in 1992 to develop a multi-purpose electronic purse system that would eventually replace cash in low-value payments. The central bank's aim was to promote the co-ordinated introduction of a nationwide electronic purse system open to any company selling services and products involving low-value payments. The Avant system was launched in 1993 with telephone cards containing a fixed amount of purchasing value, but these are gradually being replaced by the rechargeable electronic purse, which has been in production since mid-1994.

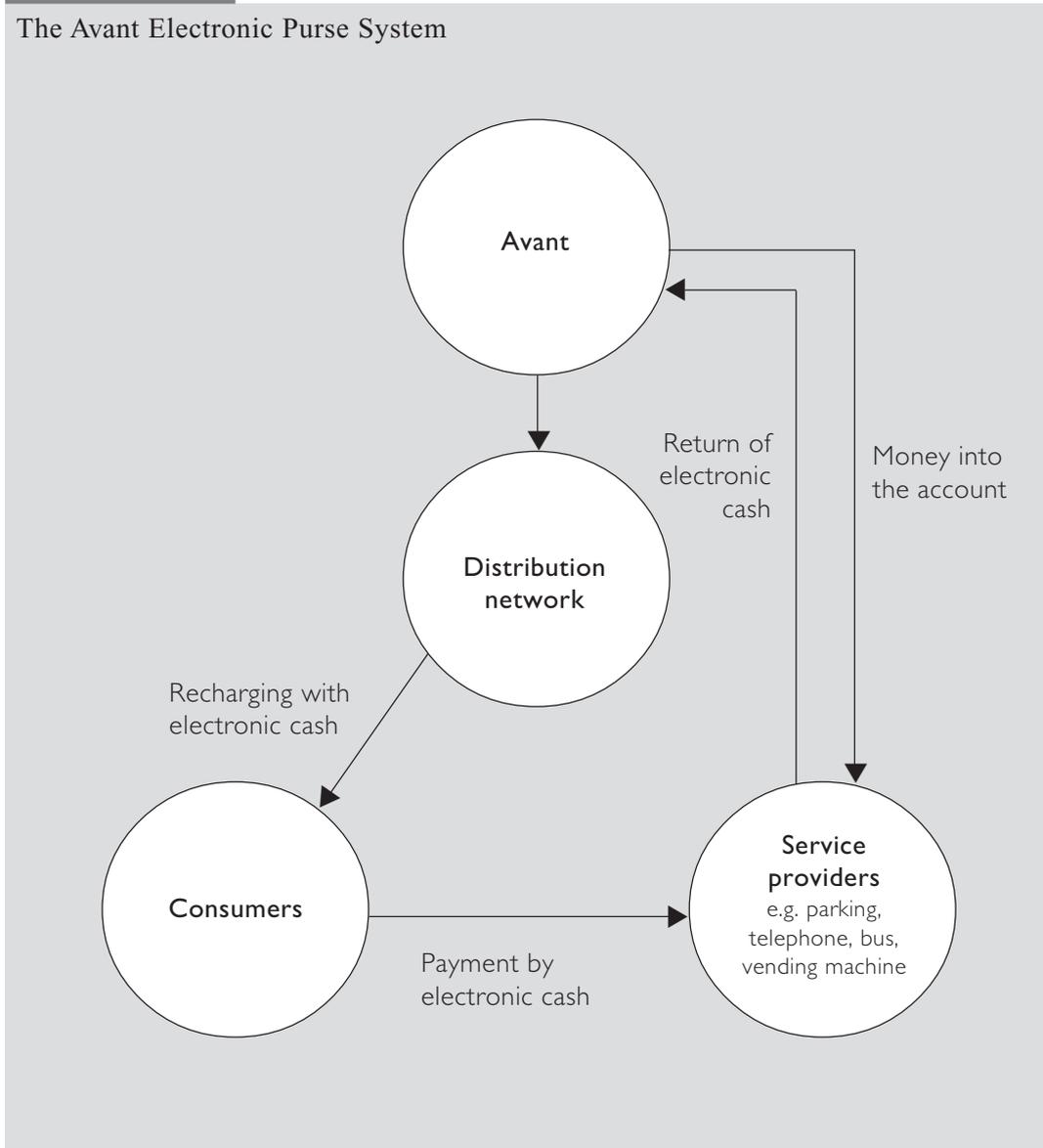
Use of the Avant electronic purse system is anonymous, and the system does not require the clearing of individual transactions. Only the total balance must be collected by each service provider accepting the Avant card. Among the areas covered by the existing range of service providers accepting payment via the Avant electronic purse are public payphones, parking, public transport, postal services and municipal services in some cities and regions.

Avant Finland Ltd transmits the electronic cash to be loaded onto Avant cards via data transmission to security modules incorporated in recharging points. When the electronic purse is used for payment, the electronic "coins" stored in the chip of the Avant card pass from the card to the payment device. The electronic cash in the payment devices of service providers is collected either via

telecommunication or by means of a collection card and then transmitted to Avant Finland Ltd. Avant Finland Ltd then remits the corresponding sum to the service providers' bank accounts (see Chart 1).

**Chart 1**

The Avant Electronic Purse System



In 1995 385,000 fixed-value cards issued by Avant Finland Ltd had been sold. Around 13,000 rechargeable Avant electronic purses had been brought into use by the end of 1995. There were 105 recharging points for recharging Avant cards, mainly in the biggest cities, and 1,500 Avant points of payment.

#### ■ Prepaid cards

In addition to the Avant electronic purse system, there are a number of other prepaid card systems in operation based on phonecards issued by Finnish Telecom and several regional telephone companies. These cards can only be used in public telephones.

The nationwide marketing company for private bus companies, Matkahuolto Ltd, is preparing to launch its own prepaid cards: an electronic season ticket, an electronic serial ticket and a flexible stored-value card. Two cities are also planning to make use of the latter card for their public transport and other municipal services. In addition, at least one city is planning to launch a local card of its own.

#### *ATM and POS networks*

Since 1989, bank customers have been able to execute credit transfers via ATMs which are owned by banks. At first, these machines and cash dispensers were installed separately. The first multi-purpose ATMs incorporating cash dispensing and credit transfer facilities were installed in 1991-92 and the number of these machines is gradually growing. ATMs with a credit transfer facility have been in joint use between banking groups since 1994, when the bank bar code system was first introduced. In February 1996 Merita Bank withdrew from co-operation and reserved its ATMs only for its own customers and Postipankki and the co-operative banks decided to continue co-operation only between themselves. In 1994 a total of 39.6 million payments were effected through

ATMs, which was more than 15% of all electronic transfers made that year.

In Finland, EFTPOS terminals are based on an offline batch transmission system. The terminal identifies a card inserted into it on the basis of the data stored in the magnetic stripe. When the transaction is made, the terminal checks the validity of the card and that the card is one of the types accepted by the retailer. In addition, the terminal checks that the card is not on the list of cancelled cards (hot card file). However, the terminal may also check whether the customer has sufficient funds on his/her account or whether he/she is within a specified limit. The terminal may be linked to a retailer's cash desk system or it may store customers' card transactions independently in the memory of a computer. From there they are transmitted electronically to banks at the end of the business day and debited from customers' accounts.

In 1994 one credit card company introduced a 24-hour telephone authorisation service for cards issued by it. This service is also available for debit cards. At the end of 1994 there were 48,000 EFTPOS card readers at 37,500 points of sale.

#### **2.2.5 Postal instruments**

(See Section 1.2.)

#### **2.2.6 Other payment instruments**

Taxi and bus vouchers are special payment media used to pay taxi and bus fares, and are primarily used by employees or customers of business enterprises. These vouchers are used in the same way as cheques. The bank credits the beneficiary's account with the total value of vouchers honoured by it. The vouchers remain with the honouring bank, which then transfers the relevant debiting data electronically to other banks for the debiting of their (corporate) customers' accounts.

Luncheon vouchers are a payment medium used by employers, who buy the vouchers from the issuer and sell them to their employees at their taxation value or offer them free of charge as a fringe benefit. Employees use vouchers to pay for meals in restaurants or cafes, which send the vouchers to the issuer. The issuer then credits their bank accounts with the respective sum of money. The highest value of a luncheon voucher is currently FIM 37 (ECU 6) and its taxation value is FIM 28 (ECU 5).

Gift vouchers are a payment medium issued by, for example, department stores and jewellery shops. They are sold in any denomination and can only be used for payment in the issuing shop or department store up to the specified value.

## 2.3 Recent developments

### 2.3.1 Bank bar code

Banks began to implement a bank bar code system from late 1993 onwards in order to rationalise the giro system. The payee pre-prints the bank bar code on the giro form that is sent to the payer. The code contains all the billing and payment information necessary for the payee to recognise the payment (account number, reference number, due date and amount of payment, etc.). The coded data are read and payment is made by passing the giro's bar code through a code-reader installed in an ATM or bank terminal. The system reduces manual work and mistakes, especially erroneously entered reference numbers, and thus speeds up the input process. The system was introduced on a large scale in 1994 and is expected to be in general use by the end of 1995.

### 2.3.2 Home banking and telebanking

Since the late 1980s it has been possible for private customers to use home terminals to make credit transfers from their own bank

accounts to other account holders. The breakthrough in home banking occurred in 1990 and 1991 and it has rapidly gained popularity with the increasing use of personal computers at home. The connection is based on an agreement between a customer and a bank. The customer's data link to his/her bank is made via a telephone line using a modem and the bank provides the customer with the program for the data transfer.

Some banks offer their customers telebanking services, i.e. banking services by telephone. Having agreed on the use of the telephone service with his/her bank, a customer may, for example, arrange an automatic payment service, negotiate loans or matters relating to deposits, pay bills or ask for the account balance or details of the most recent transactions by telephone. Information on special offers or new services provided by the bank is also available by telephone.

In 1994 there were 430,500 home banking connections and telebanking agreements, which is about ten times the number in 1990. Telebanking is still more popular than PC-based home banking.

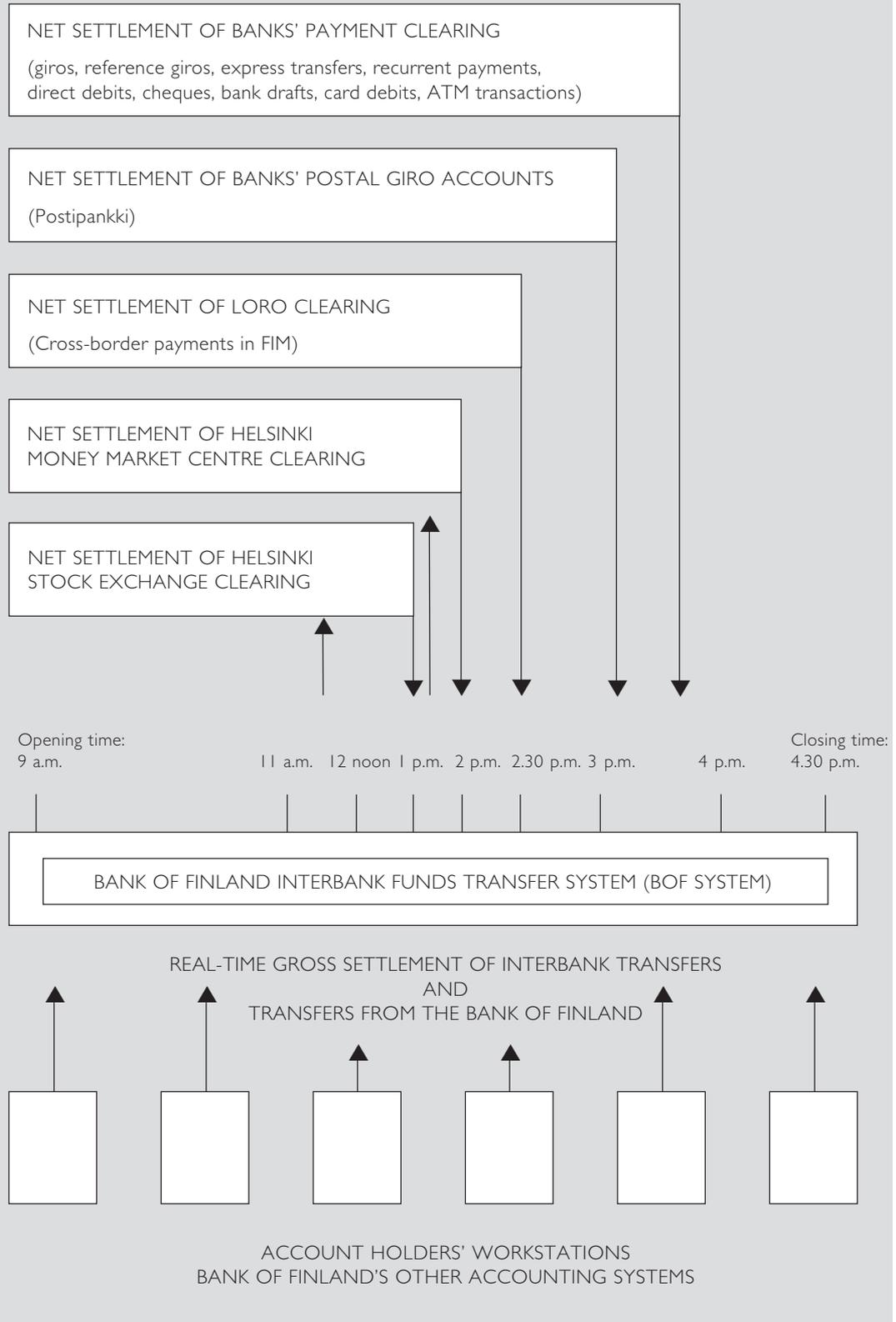
### 2.3.3 Bank statements as vouchers

Pursuant to a ruling by the Finnish Accounting Board, the traditional delivery of separate vouchers to customers has been replaced by a service whereby the customer is sent a bank statement giving details of transactions on his/her account. Instead of a printed paper statement, a machine-readable form containing the relevant additional data may be used. To be acceptable as a voucher, a paper version (hard copy) of the electronic statement must be printed out, if the entity has not been authorised by the Accounting Board to keep records in machine-readable form.

All banks issue their customers with statements with a similar data content. Statements are issued on a daily, weekly or monthly basis if there have been transactions

**Chart 2**

**Different clearing systems linked to the Bank of Finland Interbank Funds Transfer System (BOF system)**



on the account. The use of this new service has further reduced the consumption of paper in the banking industry.

#### 2.3.4 Prepaid cards

In November 1995 Avant Finland Ltd was sold to the joint electronic purse company *Automatia Rahakortit Oy* established by

Finland's three largest banks. The goal of the deal is to establish a nationwide electronic purse system. The knowhow of Avant Finland Ltd will be combined with the branch and ATM networks as well as with the customer base of the banks. It is estimated that the system meeting these goals will be built by the end of 1996.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

The Finnish interbank payment system consists of an RTGS system and several netting systems for customer payments (see Chart 2). The RTGS system was introduced in 1991 and it is used for funds transfers between the central bank and the banks. The three payment netting systems which use the central bank as their settlement agent are the Banks' Payment Clearing, Loro Clearing and Banks' Postal Giro Account Clearing. These are "mixed clearing systems" in the sense that they clear both large and small-value payments between banks. Furthermore, the two securities clearing systems, Helsinki Money Market Centre Clearing and Helsinki Stock Exchange Clearing, settle their net payments in the RTGS system.

#### 3.2 The Bank of Finland real-time gross settlement system (the BOF system)

The Finnish RTGS system, the BOF system, has been in operation since March 1991. It is owned, administered and supervised by the central bank. It is a decentralised system consisting of two sub-systems: Suomen Pankki's current account application and the account holders' application. The two sub-systems are linked by a telecom-

munications network. A multi-user option is to be added to the account holders' application in 1996.

Account holders in the BOF system have PC-based workstations which are connected to the BOF system on a real-time basis via a telecommunications network. The banks execute payments in real time by transferring funds from their own accounts to the accounts of other Suomen Pankki account holders through their workstations.

In 1994 turnover on the BOF system amounted to FIM 6,360 billion (ECU 1,027 billion) and there were 105,000 transactions in all (see Tables 8 and 9). Turnover was about thirteen times Finland's GDP.

##### 3.2.1 Functioning rules

The participants in the BOF system are governed by general rules set by the Board of the Bank and by the following agreements which form the basis of the system's operating rules:

- current account agreement;
- the BOF system delivery agreement;
- the BOF system user agreement;

- clearing agreement related to the settlement of the Banks' Payment Clearing.

Besides these rules and agreements, the Bank sets the limits and collateral requirements for the intraday and overnight central bank facilities of the participants, monitors the use of daylight credit and decides on special measures and surveillance in the event of violations (see Section 1.3.2).

### 3.2.2 Participation in the system

Suomen Pankki grants banks and other institutions the right to become participants in the BOF system by according them access to its current account facility. Under the conditions effective since November 1994, Suomen Pankki can accord access, on uniform terms, to all domestic and foreign credit institutions operating in Finland which are subject to minimum reserve requirements and meet the following requirements:

- the applicant must be subject to public supervision by the Financial Supervision Authority;
- it must meet the statutory requirements for the minimum capital ratio;
- its own funds must amount to at least FIM 30 million (ECU 5 million);
- the operations of the credit institution must be stable and managed according to sound and prudent business principles.

For special reasons and at its own discretion, the Bank may open current accounts for other institutions operating in the financial markets, such as clearing houses or securities brokerage firms. The opening of such accounts

must be deemed important from the point of view of the safety and efficiency of payment transactions, the conduct of monetary policy, or the stability or efficiency of the financial markets.

A technical requirement for access to the BOF system is that the applicant acquires a workstation application. It is also technically possible to operate such an application from abroad, and so there are no technical obstacles to remote access.

In addition to Suomen Pankki itself, there are currently eighteen institutions authorised to participate in the system. Most of these are domestic credit institutions or Finnish branches of foreign banks. There are also two institutions that can be classified as public authorities and four supervised non-credit institutions operating in the financial markets (see Footnote 2). At present there are no foreign credit institutions participating in the funds transfer system directly from abroad.

The most important indirect participants are the savings banks (forty) and co-operative banks (302). These are regional banks serving a local community or an entire economic region. Their central financial institutions, Aktia Bank for the savings banks and Okobank for the co-operative banks, have direct access to the BOF system and thus operate as their member banks' settlement agents in the system<sup>8</sup> (see Chart 3).

### 3.2.3 Types of transactions handled

At present the BOF system is mainly used for the real-time gross settlement of interbank and central bank transfers only. These transfers are typically very important large-value payments which must be settled quickly and safely. The largest group of gross transactions consists of payments between banks related to money market and foreign exchange trading and interbank lending and borrowing. The second-largest group

<sup>8</sup> From February 1996 onwards, Aktia Bank is the central institution and clearing bank of the savings banks as the previous clearing bank Skopbank will be converted into an asset management holding company.

comprises funds transfers between Suomen Pankki and the banks, and are initiated mainly by open market operations and cash delivery to and from banks. The third-largest group consists of third-party payments related to various netting systems (see Chart 2). At present there are no customer payments settled on a gross basis. There are no restrictions on the minimum size of a funds transfer in the system.

#### **3.2.4 Operation of the transfer system**

The BOF system opens at 9 a.m. every banking day, after which entries can be made until the system closes at 4.30 p.m. However, account holders can monitor their account balances until 5 p.m.

The payment transfers are sent to the Bank using workstations located on the premises of the account holders. These are linked online with Suomen Pankki's current account database via telecommunication lines, which are leased from private telecommunications companies. To ensure the security of the data, all transfers are encrypted.

Once a payment is initiated by a sending institution with an account at Suomen Pankki, a BOF funds transfer is processed by the system, the funds are debited to the sending institution's account and simultaneously credited to the receiving institution's account, and information on the transfers is forwarded to the account holders concerned within seconds of the initiation.

Suomen Pankki's application, in which accounts and basic data on them are maintained, also serves as a sub-system for the Bank's accounting system and is connected in real time to the Bank's other accounting sub-systems. Other sub-systems are used for debiting and crediting current accounts in connection with transactions between account holders and the Bank. The bulk of these payments are associated with the supply of notes and coin and with

Suomen Pankki's foreign currency transactions with the banks.

Besides transferring payments in real time, account holders can use their workstations to monitor their liquidity position. All account entries by participants are transmitted back to their workstations in real time, thus permitting account holders to monitor entries and balances on their own accounts on a continuous basis. The system is able to print out various kinds of reports, the most important of which is the daily statement of account. The Bank sends updated common data and necessary notices to the account holders.

In the event of a disturbance or malfunction, a backup system is readily available and the settlement process can be completed for the rest of the day by using it.

#### **3.2.5 Transaction processing environment**

(See Section 3.2.4.)

#### **3.2.6 Settlement procedures**

The BOF funds transfer system is a real-time credit transfer system in which the sender of funds initiates the funds transfer.

Payment transfers entered by account holders and by Suomen Pankki are settled and booked in the current account database of Suomen Pankki in real time. If there is insufficient cover on the account of the sender, the payment transfers remain unsettled on its workstation. The system has no queuing facility and so unsettled transfers must be sent again when sufficient funds become available.

The RTGS system incorporates immediate finality. Payment transfers entered in the system are final as soon as they are settled. The completion of settlement means debiting of funds to the account of the sender and

crediting of funds to the account of the receiver. Payments are not revocable after settlement. Mistakes have to be corrected by making a new transfer in the opposite direction.

At present there is no direct automated telecommunication link between the central bank's RTGS system and the customer payment netting systems operated by the banks. Large-value customer payments can

be settled individually in the RTGS system only if they are first entered into it manually via workstations.

Besides RTGS transfers, central bank funds are also used for executing the settlement of different netting systems. These include the daily net payments by securities clearing houses and the net payments by the banks' netting systems according to the timetable below.

*THE BOF SYSTEM DAILY SETTLEMENT SCHEDULE (local time)*

<b>A. REAL-TIME GROSS SETTLEMENT</b>	
1. Interbank transfers	9 a.m. - 4.30 p.m.
2. Central bank transfers	9 a.m. - 4.30 p.m.
<b>B. SETTLEMENT FOR NETTING SYSTEMS</b>	
3. Stock Exchange Clearing	
- Incoming payments <sup>9</sup>	11.30 a.m.
- Outgoing payments <sup>10</sup>	1.30 p.m.
4. Money Market Centre Clearing	
- Incoming payments <sup>11</sup>	1 p.m.
- Outgoing payments <sup>12</sup>	2 p.m.
5. Cross-Border Markka Payment Clearing (Loro Clearing)	2.30 p.m.
6. Banks' Postal Giro Account Clearing	3.15 p.m.
7. Banks' Payment Clearing	3.45 p.m.

<sup>9</sup> The latest time for net payments by stockbrokers which, according to a final net calculation, have a payment obligation vis-à-vis the Stock Exchange.

<sup>10</sup> The latest time for net payments by the Stock Exchange to those stockbrokers which, according to a final net calculation, have a net claim on the Stock Exchange.

<sup>11</sup> The latest time for net payments by clearing parties which have a payment obligation vis-à-vis the Helsinki Money Market Centre (HMMC).

<sup>12</sup> The latest time for net payments by the HMMC to those clearing parties which have a net claim on it.

### 3.2.7 Credit and liquidity risk

As funds transfers in an RTGS system are executed only if there is sufficient cover for each transfer, such a system does not involve any credit risk for the participants. The central bank incurs some risk because authorised banks are allowed to overdraw their settlement accounts during the day. In order to restrict the credit risk of intraday borrowing, Suomen Pankki has placed limits on the use of daylight credit. In addition, since the beginning of 1996 all account holders entitled to daylight credit have been obliged to provide 100% collateral for their credit limit. Likewise overnight and longer-term liquidity credits must be fully collateralised.

By introducing averaging provisions for minimum reserve deposits and by transferring these deposits to the banks' settlement accounts, Suomen Pankki has increased the amount of short-term liquidity available for payment transfers and reduced the possibility of both liquidity and gridlock risk (see Section 1.3.3).

### 3.2.8 Pricing

There is no separate entrance fee to the BOF system. When a bank joins the system it has to pay the investment cost related to the necessary workstation and software. As users of the system, the account holders pay the telecommunication charges, a flat monthly maintenance fee and a fixed fee per transaction. The fees are calculated according to the full-cost pricing principle.

### 3.2.9 Main projects and policies being implemented

Co-operation with the Finnish banks to develop domestic payment systems started in the spring of 1995 with a view to implementing the "Minimum Common Features for Domestic Payment Systems"

recommended by the EMI. A steering group and a co-operation group were set up to explore the required changes. The options of the enhancement of the netting systems to comply with the Lamfalussy standards, or of processing large-value third-party payments through the RTGS system, or a combination of the two are being studied by the above groups.

## 3.3 Banks' Payment Clearing

The Banks' Payment Clearing system is the most important netting system for customer payments in Finland. It is operated by the banks and covers both small and large-value payments.<sup>13</sup> It is mainly based on the concept of credit transfer but also includes debit transfers such as cheques. It is based on two sub-systems, the postal giro and the bank giro systems, which are now actually linked together to form one giro system. In addition, the giro forms were standardised in 1994.

In 1994 the value of interbank payment transfers was FIM 1,865 billion (ECU 301 billion) and the volume of transactions was 374 million (see Tables 8 and 9). The value was more than four times Finland's GDP. Approximately 54% of the total volume (687 million) of customer payments involved an interbank transfer.

### 3.3.1 Functioning rules

The functioning rules of the system are governed by a number of agreements between the participants. These agreements determine the code of conduct as regards, for example, operating rules, operating hours, value dates, security issues, error correction and compensation, etc. The relations between

<sup>13</sup> There are currently eight clearing banks in Finland: Aktia Savings Bank Ltd, Merita Bank Ltd, Okobank, Postipankki Ltd, Skandinaviska Enskilda Banken Helsinki Branch, Svenska Handelsbanken Helsinki Branch, Ålandsbanken Ab.

banks and their customers are not regulated by these agreements but there are general terms and conditions related to customers' domestic and cross-border retail payment orders.

The participating banks have a clearing agreement with Suomen Pankki under which the central bank undertakes to operate as settlement agent for the banks' clearing systems.

### **3.3.2 Participation in the system**

Access to the Banks' Payment Clearing system is open and can be granted to any authorised bank complying with the technical requirements of the system. An entrance fee is charged which covers part of the investment cost of the whole system. The participating banks own and operate the system and the Finnish Bankers' Association, which represents the banks collectively, decides on participation.

Participation in the system can be either direct or indirect. Direct participation is available to banks which have been granted clearing bank status. To obtain clearing bank status, a bank must apply for a current account at Suomen Pankki and thus fulfil the criteria for opening an account at the central bank (see Section 3.2.2). Direct participants have to sign the agreements governing the system and pay a fee, which goes towards covering the initial investment costs of building the system and the cost of subsequent changes caused by the entry of newcomers. A direct participant must be a deposit bank. For banks not willing or able to participate directly in the system as a clearing bank there are two indirect means to do so: either via an existing clearing bank which provides clearing services as a clearing agent, or as a customer of an existing clearing bank. In both cases these indirect participants must be a licensed deposit bank.

### **3.3.3 Types of transactions handled**

The clearing system handles both large and small-value customer payments between banks. The banks' clearing calculations for each day cover payment instructions concerning credit transfers (giros), cheques, bank drafts, direct debits and debit card transactions (including EFTPOS). Express transfers and ATM transactions are also included.

### **3.3.4 Operation of the transfer system**

The customer interbank payment system is operated by banks and is a bilateral netting system. It is exceptional in the sense that there is no common multilateral clearing centre for the clearing of payments as is customary in most countries. All customer payments made from one bank or banking group to another are cleared bilaterally between banks and settled centrally in the BOF system at the central bank (see Chart 3).

The participating banks operate the system via their computer centres and via the telecommunications networks linking them. Payments between customers who hold accounts with the same bank or banking group are executed in real time via in-house networks. The transmission of all third-party payment transactions in which the sender and the beneficiary hold accounts with different banking groups is based on direct bilateral communication links between banks. Most of these payment transactions are processed centrally in each bank and sent to the other banks in the form of batch transfers several times a day (Batch Transmission Network).

Payments originating from ATMs are transmitted via a separate online network - the Banks' Online Data Communication Network - known as POLT. A copy of this network will also be used in a new system for transferring express transfers and cheques from 1996 onwards.

### 3.3.5 Transaction processing environment

The payment transactions are initiated both in paper and electronic form by customers and bank clerks. Electronic initiation is increasingly performed outside the banks by personal and corporate customers using a PC or some other electronic means linked to the banks' systems. If paper forms are used, they are transformed into electronic messages for transmission purposes and the original messages are filed on paper in the sending bank. Payment transactions involving the same bank are transmitted to the accounting system of the bank for booking, while payment orders to other banks are collected in the sending banks' computer centres and sent two or three times a day as batches to the receiving banks.

### 3.3.6 Settlement procedures

Every day, each clearing bank calculates the net amount receivable or payable to each of the other banks in the system on the basis of all the third-party payment transactions it has forwarded to the other banks. These amounts are included in the clearing calculations which each bank transmits electronically via its workstation to the central bank's BOF system. All clearing calculations are settled in a clearing run initiated daily by the central bank at 3.45 p.m. If all the banks with a net payment obligation have sufficient cover on their accounts, the amounts due are simultaneously debited and credited to the accounts of the participants at Suomen Pankki (for the finality of payments, see Section 3.3.9).

In the clearing agreement between Suomen Pankki and the banks, a precondition for settlement is that each participant has sufficient funds to meet its payment obligations. There has never been an unwinding in the system caused by a lack of funds on the part of a participant.

### 3.3.7 Credit and liquidity risk

Each bank in the netting system receives the daily payment transactions as batches from other banks prior to settlement at the central bank at the end of the day. If the receiving bank makes funds available to its customers before settlement is executed, as is current practice, then it incurs credit risk in relation to the sending banks. So far, no counterparty limits or collateral arrangements exist between banks for managing the credit risk in the netting system.

The central bank facilities available for intraday liquidity in net settlement are minimum reserves and intraday credit. If a bank's liquidity need exceeds its intraday limit, it can negotiate a temporary increase in its limit or borrow from other participants to avoid a gridlock situation in the settlement run. A penalty fee is collected by the central bank every time the limit is temporarily increased.

(For the risks incurred by the central bank, see Section 3.3.6.)

### 3.3.8 Pricing

The pricing system between banks is based on reciprocity with the exception that banks compensate each other for payments made through other banks' ATMs. This compensation is calculated on the basis of the number of transactions.

A relatively new feature in the banks' pricing of customer payments is the service package. These are in addition to transaction fees and can be used separately or in combination with them. Service packages are free of charge for retired and young people and for account holders with a minimum balance of ECU 2,000 - 3,000 on their accounts. For ordinary customers the self-service package is the cheapest option at FIM 10 (ECU 2) per month and the individual over-the-counter service the most expensive at FIM 20 (ECU 4) per month.

### 3.3.9 Main projects and policies being implemented

A new system for clearing large-value express transfers and cheques (POPS) is under development. When in operation it will enable banks to effect large-value payments between customers in real time more safely and more efficiently than is currently the case. The system will use a copy of the banks' online network (POLT) to transmit payment transactions. Payment transactions will be sent individually in real time to other banks but settlement will be executed as a net amount at the end of each day, except for payment transactions above a certain limit agreed bilaterally between banks, which are settled directly transaction by transaction in the BOF system. The system is scheduled to be in full operation from the beginning of 1996 (see also Section 3.2.9).

In a different project, the banks are developing their bilateral messaging network, the Batch Transmission Network. The banks have agreed to acquire new transmission software and to start buying network services from Finnish Telecom. These changes should take place during 1996.

In the legal sphere, a task force on legal matters was established by the banks in 1995 to explore the legal validity of netting, payment finality and the responsibilities of banks and their customers in the payment system. A report containing recommendations and proposals for necessary changes in the law and in regulations is expected during the spring of 1996.

## 3.4 Cross-Border Markka Payment Clearing ('Loro Clearing')

### 3.4.1 Functioning rules

The clearing system for cross-border Finnish markka payments, the so-called "Loro Clearing", is part of the domestic banks' correspondent payment system. It is used by domestic banks to clear cross-border markka-denominated payments when a markka payment originating from abroad is first sent to a domestic correspondent bank which is different from the beneficiary's bank, or when a markka payment to be sent abroad is first forwarded from the payer's bank to the intermediary bank which is the Finnish correspondent bank of the foreign beneficiary.<sup>14</sup>

### 3.4.2 Participation in the system

All credit institutions connected to the S.W.I.F.T. messaging system may participate in the system.

### 3.4.3 Types of transactions handled

Markka-denominated payments related to foreign trade, cross-border securities trade and cross-border clean payments are handled in the system.

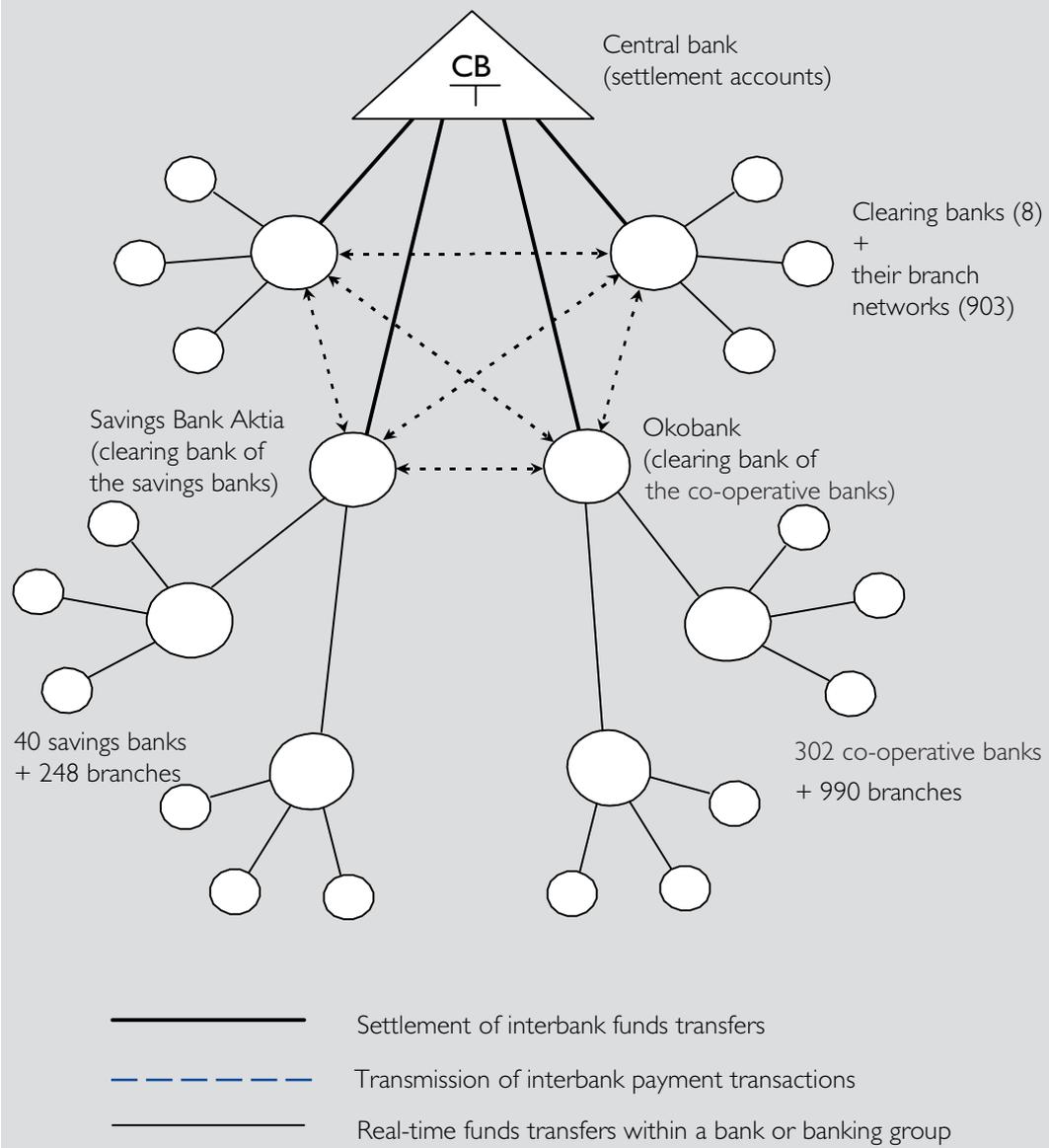
### 3.4.4 Operation of the transfer system

Banks clear cross-border markka transactions bilaterally for the most part. The net amounts are settled daily in the BOF system. Two banks, Merita Bank and Postipankki, provide the loro clearing service by holding clearing accounts for other interested domestic banks and by acting as clearing agents for them.

<sup>14</sup> A markka-denominated payment originating from abroad is considered as a foreign payment in the domestic banking system until it is credited to the final beneficiary. Correspondingly, a markka-denominated payment sent to a foreign beneficiary is considered as a foreign payment as soon as it is debited from the payer's account.

**Chart 3**

**The Finnish Interbank Clearing System**



### **3.4.5 Transaction processing environment**

S.W.I.F.T. is used as a message carrier in the transmission of loro payment messages in the domestic banking system.

### **3.4.6 Settlement procedures**

Each day the agent bank transmits a loro clearing calculation containing the net positions of all participating banks to the BOF system. The net amounts are settled in the settlement run initiated in the BOF system at 2.30 p.m. local time (see Chart 2, and for the finality of payments see Section 3.3.9).

In addition to the original Loro Clearing system, daily bilateral net positions can nowadays be settled independently via real-time transfers in the BOF system. Suomen Pankki also participates in the system and holds markka accounts for some international organisations and central banks.

### **3.4.7 Credit and liquidity risk**

(See Section 3.3.7.)

### **3.4.8 Pricing**

The agent banks have their own tariffs for clearing services offered to other banks. As regards foreign payment services, banks have separate tariffs for personal and corporate customers.

### **3.4.9 Main projects and policies being implemented**

The original Loro Clearing system was established in the 1970s to help to monitor and collect relevant data on markka-denominated capital movements. It enables domestic and cross-border markka-denominated payments to be cleared separately in the domestic banking system

and provides a checking mechanism for the coverage of balance-of-payments reporting.

However, in the context of the overall revision of the Finnish payment system, discussions with the banks aimed at rationalising the procedures for cross-border markka clearing and settlement are under way. The enhancement of risk management principles is also being explored (see Section 3.2.9).

## **3.5 Settlement of banks' postal giro accounts**

Most banks maintain postal giro accounts at Postipankki (the Post Office bank) for payment transfer purposes. Outstanding balances on these accounts at the end of the day are transferred to each bank's current account at Suomen Pankki or the deficit is covered by transferring funds to this account from the bank's current account at the central bank. In this way, the balances on the banks' postal giro accounts are brought back to zero at the end of each day.

Postipankki transmits a clearing calculation containing data on the necessary funds transfers to Suomen Pankki via its workstation. The settlement of these transfers between banks' settlement and postal giro accounts is executed in the BOF system at 3.15 p.m. daily (see Chart 2).

This arrangement has its origins in the formerly separate bank giro and postal giro systems. The two giro systems have been co-operating for two decades, but banks still have postal giro accounts, partly because of outdated legislation that still requires some government payments to be made using the postal giro. The significance of this settlement circuit in terms of value transferred is now only minor.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

There is currently no legislation governing securities settlement systems in Finland, with the exception of the derivatives market. So far, the clearing and settlement of trades in instruments other than derivatives have been based on self-regulation. The activities of market participants are regulated by the Credit Institutions Act (1994), the Securities Brokerage Companies Act (1989) and provisions of the Securities Markets Act (1989). The Act on the Book-Entry Securities System (1991) and the Act on Book-Entry Accounts (1991) contain provisions on the operation of the book-entry securities system, which was introduced in May 1992. The Act on Trading in Standardised Options and Futures (1988) contains provisions on the clearing and settlement of derivatives contracts traded on derivatives exchanges.

A proposal to include provisions on the clearing and settlement of securities trades in the Securities Markets Act is currently under consideration by the Ministry of Finance. Under these provisions, clearing and settlement would in future be subject to authorisation and supervised by the relevant authorities.

#### 4.1.2 The role of the central bank<sup>15</sup>

##### *General responsibilities*

Suomen Pankki has no statutory responsibilities concerning securities settlement systems other than those related to the central bank's aim to maintain a stable and secure monetary system. Suomen Pankki is not legally empowered to issue any binding regulations concerning securities settlement systems.

##### *Provision of settlement facilities*

Suomen Pankki does not provide securities accounts for market participants nor does it engage in securities lending to them.

##### *Provision of operational facilities*

Suomen Pankki does not directly provide operational facilities for securities settlement but is involved as the largest shareholder in the activities of the Helsinki Money Market Centre Ltd (HMMC). The HMMC is an electronic clearing house for money and bond market instruments in book-entry form.

##### *Monetary policy operations and securities settlement systems*

Monetary policy operations on the money market are based on outright deals and repos in Treasury bills and certificates of deposit (CDs) issued by Suomen Pankki. Repo transactions may also involve benchmark bonds, other government-backed paper and CDs issued by banks entitled to central bank financing. Trading on this market is regulated by the money market rules and code of conduct, observance being supervised by Suomen Pankki.

To facilitate effective monetary policy operations, Suomen Pankki is a direct participant in the HMMC clearing and settlement system for money market trades in book-entry form. As the largest shareholder in the HMMC, Suomen Pankki exercises de facto oversight of the clearing and settlement of money market operations.

<sup>15</sup> See also Section 1.3.1.

*Main projects and policies being implemented*

The policies being implemented by Suomen Pankki with respect to securities settlement systems are aimed at minimising systemic risks. Systems for the settlement of the central bank's monetary policy operations need to meet especially stringent criteria.

**4.1.3 The role of other public sector bodies***Financial Supervision Authority*

Under current legislation, the Financial Supervision Authority has few responsibilities with respect to securities settlement systems other than the supervision of licensed book-entry registrars, derivatives clearing houses and market participants. According to the proposed amendments to the Securities Markets Act, securities clearing houses would in the future be subject to supervision by the Financial Supervision Authority.

*Ministry of Finance*

In its capacity as the body responsible for preparing legislation concerning financial activities, the Ministry of Finance is currently considering a proposal to make the clearing and settlement of securities trades subject to authorisation and supervision. According to the proposal, the Ministry of Finance would in future be the body responsible for granting licences for the operation of a securities settlement system.

For the purpose of the issuance and clearing of government securities in book-entry form, the State Treasury, which is subordinate to the Ministry of Finance, is a direct participant in the HMMC clearing and settlement system.

*Securities Association*

The Securities Association acts as the central organisation and co-ordinator of the Finnish book-entry securities system. It is responsible for the development of the system and for ensuring that the system functions in a reliable and proper manner. The Association issues instructions and guidelines to participants in the system and is responsible for ensuring that these are observed. The Central Share Register of Finland Co-operative and all book-entry registrars are members of the Securities Association.

**4.1.4 The role of private sector bodies***Central Share Register of Finland Co-operative*

The Central Share Register of Finland Co-operative maintains shareholder registers for equity instruments and for combinations of equity and debt instruments. It is also required to maintain a non-commercial book-entry register. This register is maintained at the issuers' expense and contains accounts for those shareholders who do not wish to use a commercial register. The members of the Central Share Register of Finland Co-operative are organisations required to keep a shareholder register of book-entry securities that have been issued.

*Helsinki Money Market Centre*

The Helsinki Money Market Centre Ltd (HMMC) offers market participants a safekeeping system for debt securities in book-entry form. It also provides clearing and settlement services for these securities and takes care of redemptions and issues. The HMMC's largest shareholders are Suomen Pankki, the State Treasury and Finland's three largest commercial banks.

*Helsinki Stock Exchange Ltd*

The Helsinki Stock Exchange Ltd is the only operating stock exchange in Finland on which shares are traded. Up to 1984, the Helsinki Stock Exchange operated as an informal association. It was reorganised into a co-operative in 1984 and converted into a limited company in November 1995. The main function of the Helsinki Stock Exchange is to maintain an efficient and reliable secondary market for securities. It also provides centralised clearing and settlement services mainly for equity-based securities transactions.

*Derivatives exchanges*

Trading in standardised options and futures is carried out on two official derivatives exchanges in Finland, the Finnish Options Exchange Ltd (FOEX) and the Finnish Options Market Ltd (SOM). On both exchanges trading and clearing take place within the same organisation and are based on an electronic book-entry system.

*Other private sector bodies*

The Finnish Bankers' Association and the Finnish Association of Securities Dealers function as umbrella organisations co-ordinating the joint activities of their members and representing their members' common interests. The Finnish Association of Securities Dealers, whose members include both banks, bank-owned securities brokers and independent securities brokers, also maintains the OTC and brokers' lists for trading in lesser-known shares.

**4.2 Summary information on securities markets****4.2.1 Main features of different securities markets**

The Finnish securities markets consist of equity, money, bond and derivatives markets. Each has separate clearing and settlement arrangements. There are plans to merge the clearing and settlement arrangements for equity, money and bond market instruments by establishing a central securities depository.

A paperless book-entry system was introduced in the securities markets in the spring of 1992. The Finnish book-entry securities system is decentralised in that book-entry registers may be kept by a number of organisations licensed for this purpose by the Ministry of Finance. However, the State, Suomen Pankki and the Central Share Register of Finland Co-operative are not required to obtain a licence. In the share book-entry system, there are seven legally separate book-entry registers (August 1995). They are located partly in separate computer and communications environments. In the debt book-entry system, which is maintained by the Helsinki Money Market Centre, legally separate book-entry registers (of which there were twelve in August 1995) exist in the same computer environment.

The bulk of equity trading in Finland is executed on the Helsinki Stock Exchange. Trades in lesser-known shares can be executed on the over-the-counter (OTC) and brokers' lists. Equity trades can also be executed outside these markets but they are then subject to stamp duty. Foreign investors are free to buy shares listed on the exchange using a broker as their agent. The clearing and settlement of book-entry equity trades are carried out in the KATI system (Helsinki Stock Exchange clearing and settlement

system for book-entry shares) of the Helsinki Stock Exchange. Trades made in physical shares are cleared in a separate system of the Helsinki Stock Exchange (clearing system for physical shares, APC).

The money market is a wholesale market for short-term instruments issued by the banks, the State, local authorities and large companies. Most money market instruments were shifted to the book-entry system in the spring of 1992. The book-entry system is used for the registration, clearing and settlement of trades in CDs, Treasury bills and local authority paper which have been issued in book-entry form. Trades in physical instruments are cleared and settled bilaterally between counterparties.

The bond market is mainly a wholesale market for long-term paper issued by the government, the banking sector and business enterprises. Bonds are still based on physical instruments but they will gradually be integrated into the debt book-entry system and into the appropriate electronic clearing and settlement arrangements from early 1996 onwards. A primary dealer system for benchmark government bonds was introduced in August 1992.

Trading in exchange-traded equity derivatives is concentrated on the Finnish Options Market (SOM), while the bulk of exchange-traded currency and (short-term) interest rate derivatives are traded on the Finnish Options Exchange (FOEX). Most of the trading in derivative instruments in Finland nevertheless takes place on the OTC market. Trading in markka-denominated bond forwards started in January 1994 following the signing by Suomen Pankki and the primary dealers in the benchmark government bond market of a market-making agreement for bond forwards. OTC trades are normally cleared and settled bilaterally between counterparties. However, most of the trades in markka-denominated OTC bond forwards are currently cleared and settled centrally by the SOM.

#### 4.2.2 Basic quantitative aspects (basic statistics)

At the end of 1994 the market capitalisation of listed companies amounted to FIM 181 billion (ECU 31 billion) (see Table 13). In 1994 the total value of trades cleared and settled in the clearing centre of the Helsinki Stock Exchange was about FIM 143.6 billion (ECU 23.2 billion) and the volume of trades was 339,264. The value of trades executed in the electronic HETI (Helsinki Stock Exchange automated trade and information) system totalled FIM 71.8 billion (ECU 11.6 billion) (see Table 12). Overall, in 1994 some 91% of the trades cleared were in shares in book-entry form; in December 1994 the proportion was already 97%.

The money market continued to be dominated by CDs issued by the banks and by Suomen Pankki. At the end of 1994 the outstanding amount of CDs was FIM 132.9 billion (ECU 22.8 billion), and that of Suomen Pankki CDs amounted to some FIM 35 billion (ECU 5.7 billion). The outstanding amount of Treasury bills also stood in the region of FIM 30 to 35 billion at the end of 1994. In 1994 the value of trades cleared and settled at the Helsinki Money Market Centre was FIM 1,934 billion (ECU 312 billion) and the number of trades stood at 44,465 (see Tables 11 and 12).

In 1994 bonds were traded on the Helsinki Stock Exchange to the value of FIM 2.2 billion (ECU 0.4 billion). Trades outside the stock exchange on the OTC market amounted to FIM 523 billion (ECU 84 billion).

In 1994 the total number of derivatives contracts traded on the Finnish options exchanges was 1,082,071, and the value in terms of notional principal amounted to some FIM 115 billion (ECU 19 billion) (see Tables 11 and 12). Options and futures on stock indices and shares accounted for the largest share of turnover. OTC trades in markka-denominated bond forwards were cleared and settled on the SOM to the value

of some FIM 60 billion (ECU 9.7 billion) in terms of notional principal amounts.

#### **4.2.3 Financial intermediaries operating in the different securities markets**

Trades on the stock exchange must be transacted through one of twenty-one authorised brokerage companies, of which seven are banks or bank-owned companies. Foreign-owned securities brokers operating in Finland may also be accepted as brokers. Eight of the trading members are partly or totally foreign-owned (August 1995).

The main participants in the money market are Suomen Pankki, the authorised money market banks and the State Treasury, all of which have access to the BOF system. Other participants include the largest savings banks and co-operative banks, other commercial banks, insurance companies and special credit institutions.

Banks and securities firms operate as dealers and brokers in the bond market. Foreign banks can also issue bonds and operate as dealers on the Finnish bond market upon receiving authorisation. There are nine primary dealers in the benchmark government bond market, of which seven are banks including two foreign banks that are not domiciled in Finland (August 1995).

Brokers and market-makers on the options exchanges consist of securities brokers and banks. Altogether, there are twenty-seven brokers and market-makers on the options exchanges, of which nine are banks (August 1995). The first foreign broker commenced operations on the SOM on a remote access basis in October 1995. The OTC derivatives market is dominated by banks.

#### **4.2.4 Recent developments**

Efforts are currently being made to establish a Central Securities Depository of Finland which would combine the activities of separate book-entry registers and handle the safekeeping of all securities issued in book-entry form, in addition to the clearing and settlement of all trades in book-entry securities.

### **4.3 The KATI settlement system for equity trades**

#### **4.3.1 Major regulation**

Activities on the Helsinki Stock Exchange are regulated by the Securities Markets Act and the Rules of the Stock Exchange, as confirmed by the Ministry of Finance. In addition, activities of authorised securities brokers are regulated by the Securities Brokerage Companies Act.

#### **4.3.2 Participation in the system**

In principle, all financial institutions which are subject to supervision by the Financial Supervision Authority may become clearing parties of the Stock Exchange. They must also meet certain requirements specified in the Rules of the Stock Exchange, and be approved by the Supervisory Board of the Stock Exchange. Clearing parties total twenty-five, of which twenty-one are also trading members of the Stock Exchange (August 1995). Other clearing parties include the Finnish Options Market and the custodians of foreign investors (see Table 10).

#### **4.3.3 Types of transactions handled**

The KATI settlement system handles book-entry equity trades made in the HETI (Helsinki Stock Exchange Automated Trade and Information) system. Off-exchange trades, deliveries of stock derivatives and stock

lending agreements can also be sent to the KATI system for clearing and settlement.

#### **4.3.4 Operation of the transfer system**

The KATI system is operated by the Helsinki Stock Exchange. Details of the trades approved for settlement and the book-entry trades are transferred from the Stock Exchange to the Central Share Register. Funds transfers related to the settlement of book-entry equity transactions are effected through the BOF system. The Stock Exchange holds an account with Suomen Pankki and each clearing party must either have its own account or agree on its payments being handled by another party which has an account at the central bank.

#### **4.3.5 Transaction processing environment**

Trades made in the HETI system are transferred automatically to the KATI settlement system. Clearing parties are linked to the clearing centre of the Stock Exchange via a private telecommunications network.

#### **4.3.6 Settlement procedures**

The KATI settlement system of the stock exchange operates according to the delivery versus payment (DVP) principle. In achieving DVP, the "model 2" approach as defined in the Parkinson Report<sup>16</sup> is employed, i.e. the book-entry securities are delivered gross but payments associated with deliveries are netted on a multilateral basis. There is one processing cycle per settlement day from 11.30 a.m. to 1.30 p.m. Since 1st January 1996 the settlement period has been three days (T + 3). At the joint request of the counterparties, a trade can be transferred outside the system for bilateral gross settlement between the parties.

<sup>16</sup> "Delivery versus Payment in Securities Settlement Systems", BIS, 1992.

#### **4.3.7 DVP arrangements**

At 10 a.m. on the settlement day, the clearing parties who have a payment obligation place collateral for their payments with the stock exchange on the basis of a preliminary net calculation so that DVP can be ascertained. At 11 a.m. the stock exchange makes a final net calculation for each clearing party on the basis of cleared transactions. A clearing party which, according to this calculation, has a payment obligation is obliged to effect the payment by 11.30 a.m. from its own account to the account of the stock exchange in Bank of Finland Interbank Funds Transfer System (the BOF system).

By 12 noon on the settlement day, the stock exchange provides the book-entry registers with information via the Central Share Register on those trades which were confirmed for settlement. The Central Share Register requests all registers to finalise securities transfer registrations at the same time. Technically, this is achieved by the Central Share Register transmitting to the registers an electronic impulse which initiates a delivery registration run. After this, the registrars inform the stock exchange and the clearing parties by 1 p.m. that the relevant entries have been completed. The stock exchange is obliged to settle the sums due to clearing parties with a net credit position through the BOF system by 1.30 p.m.

#### **4.3.8 Credit and liquidity risk control measures**

The achievement of DVP eliminates principal risk and the use of the BOF system for funds transfers minimises liquidity problems on the part of the settlement bank.

#### **4.3.9 Pricing policies**

The Helsinki Stock Exchange applies full-cost pricing to all services offered to market participants.

#### **4.3.10 Main projects and policies being implemented**

The main project in which the Helsinki Stock Exchange is currently involved is the clearing and settlement of convertible bonds and bonds with warrants in the KATI system.

### **4.4 The HMMC system for money and bond market trades**

#### **4.4.1 Major regulation**

The activities and conduct of market participants in the money and bond markets were initially based on self-regulation. More formal regulation was introduced in April 1991 when Suomen Pankki and the banks operating in the market signed an agreement on "A Code of Conduct for Money Market Dealings". The agreement is a general agreement which can be extended to cover any money market instrument. In 1992 Suomen Pankki and the organisations operating as primary dealers in the government bond market signed an agreement which sets out the code of conduct for market-makers in the secondary market, and specifies technical details related to trading in this market. The clearing and settlement of transactions in book-entry debt securities are carried out in the HMMC system on the basis of agreements and under clearing and settlement rules mutually agreed between the participants.

#### **4.4.2 Participation in the system**

Organisations using the HMMC system can be either members or other users. HMMC membership is not required in order to act as a direct participant (clearing party). Direct participants in the HMMC system include Suomen Pankki, the State Treasury, authorised money market banks, insurance companies and special credit institutions. There are sixteen direct participants in the HMMC settlement

system, of which ten are banks (August 1995).

#### **4.4.3 Types of transactions handled**

The HMMC system handles issues of book-entry securities and book-entry securities transfers between accounts in the system. The instruments currently handled in the system include CDs issued by the banks and Suomen Pankki, Treasury bills and local authority paper. From early 1996 onwards, government bonds will be gradually transferred to the HMMC book-entry system.

#### **4.4.4 Operation of the transfer system**

The book-entry securities transfer system is operated by the HMMC. Funds transfers are executed through the BOF system. Trades are entered for settlement into the HMMC system by the parties to a trade via their workstations or their trading systems.

#### **4.4.5 Transaction processing environment**

The safekeeping of book-entry debt securities as well as the clearing and settlement of transactions in such securities all take place within the HMMC information system. For funds transfers, a ledger for each clearing party is maintained in the HMMC current account at the central bank. Clearing parties are linked to the HMMC via direct lines.

#### **4.4.6 Settlement procedures**

The HMMC system offers a number of settlement procedures. Trades can be settled in guaranteed net settlement, in continuous real-time trade-for-trade settlement, or as internal trades within a book-entry register. The delivery versus payment principle is strictly adhered to in the first two settlement procedures, which involve payments between different clearing parties. Guaranteed net settlement employs the "model 3" approach

(net funds and net securities settlement), while trade-for-trade settlement employs the “model I” approach (gross funds and gross securities settlement), as defined in the Parkinson Report to achieve DVP.

If a trade is settled as an internal trade in the registrar’s own sub-register, it is not included in the normal clearing and settlement process, and the underlying security is not pledged to the HMMC. The collateral and possession checks and the completion of internal trades are carried out at the end of the settlement day. Normally, money market trades are settled two days after the trade date (T+2), and bond trades three days after the trade date (T+3). The HMMC also accepts trades with same-day settlement (T+0), or with settlement on the following day (T+1), or for any future date.

#### **4.4.7 DVP arrangements**

In guaranteed net settlement, the HMMC confirms a trade immediately the system has checked that the terms entered by both parties are identical. For trades executed at least one day prior to their settlement date, the system verifies that the seller holds the instruments or will receive them in time. All trades approved in this way are released for clearing. At the same time, the instruments that have been sold are set aside for delivery and are not available for resale. At the close of the day preceding settlement, the system executes a clearing run, in which net obligations are calculated. Clearing is based on multilateral netting between parties, and the HMMC guarantees delivery and payment in respect of cleared trades. The system requires the parties with a net payment obligation to post collateral. The HMMC accepts as collateral the underlying book-entry securities of the trading parties, other pledged book-entry securities and deposited funds. Trades failing to pass clearing may be transferred to trade-for-trade settlement until all the necessary clearing conditions have been met.

Each clearing party in the HMMC system who is liable to pay (i.e. has a net payment obligation for the day) transfers the relevant sum to the HMMC’s current account in the BOF system not later than 1 p.m. At the same time, after verifying the inflow of payments, the HMMC delivers the book-entry securities from the selling parties’ commission accounts to the buying parties’ commission accounts, and transfers the funds to those clearing parties who have a net claim for the day in question.

In rolling real-time trade-for-trade settlement, payments and deliveries are executed gross immediately the conditions for completion of the trade exist. This means that the buyer has sufficient funds on its account for the settlement of the trade and the seller has a sufficient number of securities on its account for the delivery, or receives such securities in time from a chain of trades which are all settled at the same point in time. The DVP principle is observed and any failed trade must wait until all the conditions are met.

#### **4.4.8 Credit and liquidity risk control measures**

Achievement of DVP eliminates principal risk. Furthermore, the HMMC guarantees the execution of trades entered in net settlement from the moment of clearing on the day prior to delivery. This guarantee is based on collateral pledged to the HMMC by the clearing parties. If one of the parties is unable to meet its net payment obligation, the HMMC takes care of the payment on behalf of this party. The HMMC’s ability to pay is, in turn, ensured by Suomen Pankki, which can lend funds against adequate collateral to the HMMC as a last resort. Any final losses by the HMMC are distributed between the shareholders in proportion to their holdings. The use of the BOF system for funds transfers minimises liquidity problems on the part of the settlement bank.

#### 4.4.9 Pricing policies

The services of the HMMC are primarily used by its members. Membership can be obtained by buying HMMC shares or by paying an annual membership fee. Shareholders and annual members have full rights to use the system. Any other organisation wishing to act as a clearing party has to pay a fee for the online link and for other services required.

#### 4.4.10 Main projects and policies being implemented

The HMMC planned to provide repo and securities lending facilities by the end of 1995.

### 4.5 The SOM and FOEX settlement systems for derivatives trades

#### 4.5.1 Major regulation

The Act on Trading in Standardised Options and Futures (1988) regulates the operations of an exchange serving as a trading and clearing organisation for derivative instruments. The activities of an options exchange are subject to authorisation, which is granted by the Ministry of Finance. The activities of an options exchange are also governed by its own rules, which must be approved by the Ministry of Finance. Furthermore, the activities of brokers and market-makers are regulated by the Securities Brokerage Companies Act and by provisions laid down in the Securities Markets Act.

#### 4.5.2 Participation in the system

In principle, all securities brokers licensed by the Ministry of Finance are permitted to act as intermediaries on an options exchange. They must also meet certain requirements specified in the Rules of the Exchange, and be approved by the Supervisory Board of the Exchange. There are twenty-seven clearing

parties in the Finnish Options Market (SOM) and seventeen clearing parties in the Finnish Options Exchange (FOEX)(August 1995).

#### 4.5.3 Types of transactions handled

The FOEX handles options and futures on interest rates and currencies. The SOM handles mainly options and futures on stock indices and equities, and also on interest rates and currencies. In addition, the SOM provides a centralised clearing and settlement facility for markka-denominated OTC bond forwards and a securities lending facility.

#### 4.5.4 Operation of the transfer system

Derivatives are neither physical securities nor book-entry securities as defined in Finnish legislation on book-entry securities systems. The rights and obligations pertaining to derivatives are based solely on clearing account entries made in the systems operated by the exchanges.

Funds transfers as well as the safekeeping of collateral are arranged in co-operation with custodian banks. The exchanges themselves also act as custodians for the holding of collateral. Deliveries of the underlying securities are effected through the relevant securities settlement systems.

#### 4.5.5 Transaction processing environment

Trades are mostly executed in electronic trading systems and to some extent by telephone. Clearing and settlement take place centrally in the information systems of the exchanges.

#### 4.5.6 Settlement procedures

In its clearing house role, the options exchange acts as the central counterparty to all trades. Funds transfers between the exchange and

the clearing parties are settled on the basis of multilateral netting. By 12 noon (on the SOM) or by 1 p.m. (on the FOEX) on each payment day, clearing parties either receive a payment from the exchange or effect a payment to it. Payments are effected by funds transfers between current accounts of counterparties with different banks.

The settlement of payments and the delivery of underlying securities or the equivalent cash transaction are effected according to the practices of the underlying cash market. Option premiums and fees and charges for trades are paid to the exchange on either the third day (T+3 on the SOM) or the second day (T+2 on the FOEX) following the trade date.

#### **4.5.7 DVP arrangements**

Deliveries related to equity derivatives traded on the SOM are settled through the KATI system of the Helsinki Stock Exchange and thus satisfy the same criteria as spot equity trades settled through this system. In the case of other derivatives, the delivery of the underlying securities is normally replaced by a cash transaction based on the net liability or claim position.

#### **4.5.8 Credit and liquidity risk control measures**

Since the options exchanges act as central counterparties to all trades, credit risks are concentrated in them. The management of risks is carried out at several levels. The capital adequacy regulations and restrictions on activities are laid down in law, and licensing requirements and supervision by the authorities ensure that an options exchange has a certain minimum financial capacity and a reliable clearing system.

The reliability of the clearing house is guaranteed in the first place by the collateral, or margin, required from the clearing account holders. The options exchanges determine

the collateral requirement for each clearing account on a daily basis using their own risk management models. The collateral must have been deposited in the custodian bank by 11 a.m. on the next business day. For some derivatives transactions collateral is required in advance.

As the clearing parties are responsible for both their own and their customers' transactions, the financial soundness of the clearing parties ultimately ensures the reliability of the settlement system. The activities of the clearing parties on an options exchange are regulated by the exchange and are subject to supervision by the authorities.

#### **4.5.9 Pricing policies**

Both options exchanges are limited liability companies and their pricing policies are determined by competition and market demand.

#### **4.5.10 Main projects and policies being implemented**

The SOM has plans to effect payments related to derivatives trades through its current account in the BOF system in future. In 1995 two foreign companies commenced operations as clearing parties on the SOM on a remote access basis. It is expected that the number of foreign clearing parties will increase in future.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	4,986	5,014	5,042	5,066	5,088
Gross domestic product (FIM billions)	515.7	491.1	476.8	482.4	507.8
Exchange rate vis-à-vis ECU <sup>(2)</sup>	4.8515	5.0042	5.8020	6.6973	6.1908

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

(end of year)

	FIM billions				
	1990	1991	1992	1993	1994
Notes and coins	9.0	8.8	9.4	10.4	10.8
Transferable deposits <sup>(1)</sup>	132.5	121.9	125.4	131.4	143.6
Narrow money supply (M1)	141.5	136.6	134.6	141.8	154.4
Transferable deposits in foreign currencies	6.8	13.2	14.7	14.8	12.8

(1) Local currency.

**Table 3**
**Settlement media used by deposit-taking institutions**

(end of year)

	FIM billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	22.8	13.6	10.3	9.9	6.5
Free reserves held at central bank <sup>(1)</sup>	2.7	1.1	2.9	1.4	1.1
Transferable deposits at other institutions <sup>(2)</sup>	10.8	6.3	6.6	5.3	5.5

(1) Average end-of-month figures.

(2) Average end-of-quarter figures.

**Table 4**  
**Banknotes and coins**  
*(total value, end of year)*

	FIM millions				
	1990	1991	1992	1993	1994
Total banknotes issued	13,399	13,306	13,209	13,442	12,382
of which:					
FIM 1,000	3,474	3,241	3,376	4,053	3,829
FIM 500	2,785	2,601	2,547	2,593	2,287
FIM 100	5,600	5,951	5,807	5,490	5,196
FIM 50	951	939	867	721	647
FIM 20	-	-	-	284	364
FIM 10	561	575	583	273	58
FIM 5	21	21	21	21	-
FIM 1	8	8	8	8	-
Coins issued	980	1,026	1,042	1,296	1,284
of which:					
FIM 10	-	-	-	208	326
FIM 5	353	374	385	434	416
FIM 1	374	387	385	387	371
50 penniä	102	113	118	114	85
20 penniä	71	46	36	31	-
10 penniä	46	77	91	96	86
5 penniä	27	22	21	19	-
1 penniä	8	8	8	8	-
Notes and coins held by credit institutions	5,559	5,753	5,104	4,600	3,504
Notes and coins in circulation outside credit institutions	8,996	8,775	9,404	10,394	10,810
Memorandum items:					
Commemorative coins <sup>(1)</sup>	176	197	257	255	262
Notes and coins which ceased to be legal tender on 1st January 1994 <sup>(1)</sup>	-	-	-	-	387

(1) This item is included in "banknotes and coins in circulation" in the balance sheet of Suomen Pankki.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (thousands)	Value of accounts (FIM billions)
Central bank	1	4	0.021 <sup>(2)</sup>	1.4
Commercial banks	11	907	8,582	84.3
Savings banks	40	248	585	8.4
Co-operative and rural banks	302	990	3,737	48.1
Post office <sup>(1)</sup>	-	957	-	-
<b>TOTAL</b>	<b>354</b>	<b>3,106</b>	<b>12,904</b>	<b>142.2</b>
Branches of foreign banks	3			
<i>of which EC-based</i>	<i>1</i>			

(1) Post offices are also used as branches of Postipankki, which is a commercial bank.

(2) Number of current accounts used for payment settlements.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs <sup>(1)</sup></b>					
Number of networks	3	3	3	2	1
Number of machines	2,838	3,606	3,798	4,201	4,255
Volume of transactions (millions)	121.0	157.2	182.4	202.0	231.6
Value of transactions (FIM billions) <sup>(2)</sup>	46.2	58.6	64.9	68.7	72.0
<b>EFTPOS terminals</b>					
Number of networks <sup>(3)</sup>	-	-	-	-	-
Number of points of sale	26,500	33,500	39,000	42,000	48,000
Volume of transactions (millions)	122.2	161.0	173.8	173.3	195.2
Value of transactions (FIM billions)	27.1	34.2	37.9	39.0	44.9

(1) The row "Number of machines" for the years 1991-93 is partly estimated. 1994 includes exact figures.

(2) Only cash withdrawals.

(3) Offline system.

**Table 7**

**Number of payment cards in circulation**  
(end of year)

	thousands				
	1990	1991	1992	1993	1994
Cards with a cash function	1,689	1,880	1,944	2,112	2,269
Cards with a debit/credit function	2,758	2,583	2,542	2,515	2,516
<i>of which:</i>					
<i>cards with a debit function</i>	1,386	1,355	1,303	1,288	1,319
<i>delayed debit cards</i>	852	832	852	835	824
<i>cards with a credit function</i>	520	456	387	392	373
Cards with a cheque guarantee function	12	11	9	9	7
Multi-purpose prepaid cards	-	-	-	-	7
Retailer cards	1,600	1,562	1,642	1,707	1,726

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
Banks' payment clearing	266,476	336,899	352,889	356,800	373,982
Giro transfers	158,302	223,640	240,885	249,475	275,034
Debit cards	96,021	104,416	105,555	102,011	94,733
Cheques	11,331	8,194	6,138	5,124	4,159
Banks' bills	822	649	311	190	56
BOF system <sup>(1)</sup>	299	139	152	115	105
Credit transfers between banks	n.a.	72	81	66	63
Credit transfers between Suomen Pankki and the banks	n.a.	68	71	49	42

(1) Bank of Finland Interbank Funds Transfer System. The current system for collecting statistical data was introduced in March 1991, so the figures for 1990 cannot be compared with those for 1991-94.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	FIM billions				
	1990	1991	1992	1993	1994
Banks' payment clearing	818.6	1,436.7	1,559.9	1,672.2	1,865.4
Giro transfers	143.0	642.6	744.1	667.0	845.5
Debit cards	20.8	23.5	23.8	22.2	22.1
Cheques	614.1	735.4	775.2	972.7	993.5
Banks' bills	40.7	35.2	16.8	10.3	4.3
BOF system <sup>(1)</sup>	7,677.0	5,365.8	6,349.8	6,653.8	6,356.8
Credit transfers between banks	n.a.	4,753.2	5,466.0	5,941.7	5,880.6
Credit transfers between Suomen Pankki and the banks	n.a.	612.6	883.8	712.1	476.2

(1) Bank of Finland Interbank Funds Transfer System. The current system for collecting statistical data was introduced in March 1991, so the figures for 1990 cannot be compared with those for 1991-94.

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>Helsinki Money Market Centre</b>			
Banks	10	10	10
Stockbrokers	0	0	0
Securities houses	0	0	0
Insurance companies	1	1	0
Foreign central banks	0	0	0
Cedel / Euroclear	0	0	0
Others	5	5	4
<b>Helsinki Stock Exchange</b>			
Banks	4	4	4
Stockbrokers	16	16	3
Securities houses	0	0	0
Insurance companies	0	0	0
Foreign central banks	0	0	0
Cedel / Euroclear	0	0	0
Others	4	4	0
<b>Finnish Options Market</b>			
Banks	9	9	0
Stockbrokers	18	18	0
Securities houses	0	0	0
Insurance companies	0	0	0
Foreign central banks	0	0	0
Cedel / Euroclear	0	0	0
Others	0	0	0
<b>Finnish Options Exchange</b>			
Banks	6	6	0
Stockbrokers	10	10	0
Securities houses	0	0	0
Insurance companies	0	0	0
Foreign central banks	0	0	0
Cedel / Euroclear	0	0	0
Others	0	0	0

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	1990	1991	1992	1993	1994
Helsinki Money Market Centre <sup>(1)</sup>					
Government securities	-	-	208	5,387	7,479
CDs	-	-	14,161	37,681	36,986
Helsinki Stock Exchange <sup>(2)</sup>					
Shares	-	42,300	91,200	240,214	339,264
Finnish Options Market					
Futures	43,152	61,588	38,441	76,838	358,160
Options	746,533	635,909	397,919	414,867	676,473
Finnish Options Exchange					
Futures	3,420	6,976	6,041	3,374	22,357
Options	41,455	6,149	6,277	6,209	25,081

(1) The electronic clearing and settlement system was launched in April 1992.

(2) Physical shares cleared and settled since 1991. KATI system since 1992.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	1990	1991	1992	1993	1994
FIM millions					
Helsinki Money Market Centre <sup>(1)</sup>					
Government securities	-	-	11,607	230,844	333,286
CDs	-	-	425,098	1,172,469	1,600,505
Helsinki Stock Exchange <sup>(2)</sup>					
Shares	-	6,600	11,269	49,077	71,782
Finnish Options Market					
Futures	1,568	1,027	774	1,735	63,659
Options	53,524	20,036	9,812	14,327	27,854
Finnish Options Exchange					
Futures	435	756	1,052	2,993	11,164
Options	42	667	1,094	2,107	12,636

(1) The electronic clearing and settlement system was launched in April 1992.

(2) Only includes trades made in the HETI system.

**Table 13**

**Nominal values registered by securities settlement systems**  
(end of December)

	FIM millions				
	1990	1991	1992	1993	1994
Helsinki Money Market Centre <sup>(1)</sup>					
Government securities	-	-	4,945	24,328	34,288
CDs	-	-	60,723	106,950	129,221
Helsinki Stock Exchange					
Shares <sup>(2)</sup>	82,831	58,982	63,999	136,292	181,559
Finnish Options Market					
Futures and options <sup>(3)</sup>	139	103	578	1,173	2,420
Finnish Options Exchange					
Futures and options <sup>(3)</sup>	6	8	12	620	1,116

(1) The electronic clearing and settlement system was launched in April 1992.

(2) Market value of listed shares. The new book-entry system has been introduced gradually since 1992.

(3) Open interest.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	13.9	9.9	7.4	6.7	5.7
Payments by debit and credit cards	196.3	212.4	218.1	211.5	229.4
Paper-based credit transfers <sup>(1)</sup>	210.0	206.7	198.5	182.7	172.0
Paperless credit transfers <sup>(1)</sup>	132.2	162.5	186.9	220.0	261.6
Direct debits	4.1	8.1	10.3	14.8	17.9
<b>TOTAL</b>	<b>556.5</b>	<b>599.6</b>	<b>621.2</b>	<b>635.7</b>	<b>686.6</b>
Cross-border payments	n.a.	n.a.	1.8	1.8	1.6
<i>of which payments to EU countries</i>	<i>n.a.</i>	<i>n.a.</i>	<i>0.7</i>	<i>0.9</i>	<i>0.7</i>

(1) From customer to bank.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	FIM billions				
	1990	1991	1992	1993	1994
Cheques issued	702.0	820.0	847.0	1,080.0	1,058.0
Payments by debit and credit cards	47.4	49.1	50.3	49.6	53.9
Paper-based credit transfers <sup>(1) (2)</sup>	3,388.0	3,149.0	2,985.0	2,956.0	2,599.0
Paperless credit transfers <sup>(1) (2)</sup>	2,633.0	3,382.0	3,857.0	4,625.0	5,110.0
Direct debits <sup>(2)</sup>	8.0	15.0	20.0	28.0	34.0
<b>TOTAL</b>	<b>6,778.4</b>	<b>7,415.1</b>	<b>7,759.3</b>	<b>8,738.6</b>	<b>8,854.9</b>
Cross-border payments	n.a.	n.a.	168.6	672.0	289.7
<i>of which payments to EU countries</i>	<i>n.a.</i>	<i>n.a.</i>	<i>87.6</i>	<i>126.7</i>	<i>163.9</i>

(1) From customer to bank.

(2) Figures are partly estimated.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	15	15	15	13	14
<i>of which:</i>					
<i>members</i>	11	10	11	10	10
<i>sub-members</i>	4	5	4	3	4
<i>participants</i>	0	0	0	0	0
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,256	4,623
<i>of which:</i>					
<i>members</i>	1,812	1,963	2,074	2,244	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,887	2,023
<i>participants</i>	63	78	91	125	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	3,133,550	3,342,026	3,200,249	3,309,647	3,951,479
<i>of which:</i>					
<i>category I</i>	1,607,221	1,611,184	1,618,821	1,666,967	1,883,044
<i>category II</i>	734,244	835,948	810,403	850,441	1,014,105
<i>sent/received to/from domestic users</i>	399,272	486,577	404,805	430,137	522,748
Total messages received	1,901,214	2,281,199	2,206,952	2,396,183	2,805,753
<i>of which:</i>					
<i>category I</i>	<i>n.a.</i>	644,674	735,419	862,653	1,054,813
<i>category II</i>	<i>n.a.</i>	534,757	451,241	476,648	608,804
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,962	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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## List of abbreviations

<b>BGC</b>	Bank Giro Centre - <i>Bankgirocentralen AB</i>
<b>OM</b>	Exchange and Clearing House for Derivatives - <i>OM Stockholm AB</i>
<b>Pml</b>	Money Market Information - <i>Penningmarknadsinformation Pml AB</i>
<b>RIX</b>	The Riksbank's Interbank and Clearing System - <i>RIX-systemet</i>
<b>SAX</b>	Stockholm Automated Exchange for Equities and other Securities
<b>SFSA</b>	The Swedish Financial Supervisory Authority - <i>Finansinspektionen</i>
<b>VPC</b>	The Swedish Central Securities Depository - <i>Värdepapperscentralen AB</i>

## I. Institutional aspects

### 1.1 General legal aspects

In Sweden there is no law that deals solely and explicitly with payments and payment systems. Instead, different aspects of these activities and their institutional arrangements are dealt with in different laws. The more important of these are described below.

The main instrument by which the activities of Sveriges Riksbank are governed is the Sveriges Riksbank Act (*Riksbankslagen, 1988:1385*), which is an Act of Parliament. The first provision of the Act states that the Riksbank may only conduct - or participate in - activities for which it has been authorised in accordance with Swedish law; i.e. authorisation may be granted by laws other than the Sveriges Riksbank Act.

The law regulating banks and banking activities, The Banking Business Act (*Bankrörelselagen, 1987:617*), does not contain any specific or explicit regulations concerning payments. It does, however, state that banks are allowed to conduct activities that are compatible with deposit-taking. Handling payments is obviously an activity in that category. Also worth mentioning is the Cheque Act (*Checklagen 1932:131*) and the law dealing with credit to consumers (*Konsumentkreditlagen, 1992:830*). Among other things, questions concerning responsibilities that may arise in the event of loss of debit or credit cards are regulated in this context. The law dealing with debt securities (*Lagen om skuldebrev, 1936:81*), contains general regulations concerning payments in this area. The Share Accounts Act (*Aktiekontolagen 1989:827*) regulates the handling of dematerialised securities (see Section 4.1.1).

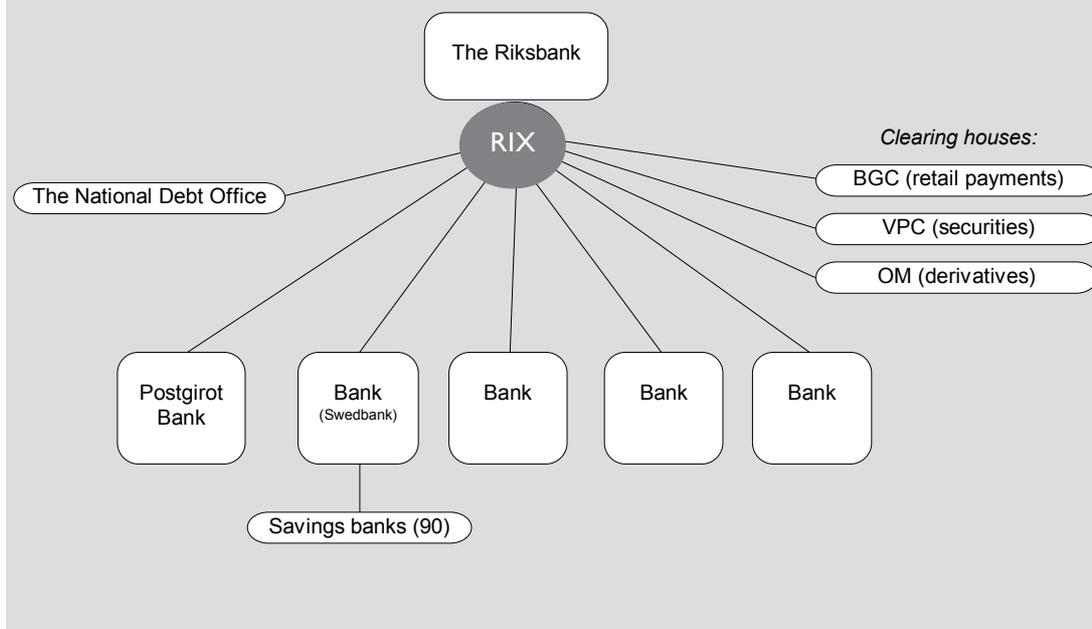
There are also a number of laws concerning various aspects of payments under extreme circumstances, e.g. in time of war.

In 1993 a government commission (the Clearing Commission) published a number of proposals with a view to creating a modernised and more complete legal framework for the clearing and settlement of payments generated in the securities market. One important proposal was to provide a firm legal basis for bilateral netting. This was incorporated in the Financial Instrument Trading Act, which came into force in April 1995.

The Payment Service Inquiry has proposed a new legislative act, the Payment Services Act, by which payment intermediation should be defined as a financial activity that should be subject to supervision. Payment intermediaries will therefore be obliged, for example, to submit information to the Financial Supervisory Authority and the Riksbank. Work is also going on to codify, in the first place in the Riksbank's statutes, the responsibility of the Riksbank as overseer of the payment system and the obligations of the agents regarding information and risk management.

### 1.2 Financial intermediaries that provide payment services

The Swedish payment system's institutional framework consists of the Riksbank and the banks and the system is based on the banks' customer accounts and on the banks' settlement accounts at the Riksbank. The Riksbank can be seen as the hub of this network: direct interbank transfers are effected via the banks' accounts, as is the settlement of payment orders from bank customers that involve interbank transactions. This constitutes the Riksbank's so-called RIX system (see Chart 1). Besides the Riksbank and the banks, important specific functions in the payment system are performed by other agents and institutions, primarily various kinds of clearing houses; the Bank Giro Centre

**Chart I****The Swedish Payment System –an outline**

(BGC), the Swedish Central Securities Depository (VPC) and OM Stockholm AB.

### 1.2.1 Banks

The Swedish banking sector has long consisted of three groups of banks: commercial banks, savings banks and co-operative banks. The Banking Business Act contains general provisions that apply to banks in the form of limited companies as well as to traditional savings banks and co-operative banks. For each category there is a separate law regulating the establishment of a bank, its organisation, supply of capital, management and so on.

The heavy losses that occurred in all parts of the banking industry in the early 1990s, triggered a rapid process of structural adjustment. Commercial banks are now even more dominant in the banking sector as most of the larger savings banks and all co-operative banks have merged and been

transformed into commercial banks. Commercial banks accounted in 1994 for 95% of the aggregate balance sheet of the banking sector as a whole, compared to roughly 78% at the end of the 1980s. In addition some smaller, specialised banks have been established. The banking structure has thus changed considerably in the last few years. The remaining part consists of about ninety independent savings banks, most of them very small and locally oriented. Consequently these banks play a very marginal role in the Swedish banking and payment system.

At the end of 1994 there were 111 banks in existence in Sweden. The four largest traditional commercial banks (*Skandinaviska Enskilda Banken, Svenska Handelsbanken, Nordbanken* and *Sparbanken Sverige*) accounted for more than 80% of the aggregate balance sheet of all banks.

Foreign banks are allowed to operate in Sweden through branches as well as

subsidiaries. At the end of 1994 there were eight foreign banks represented on the Swedish market, one through a branch and the others through subsidiaries. Their aggregate balance sheet amounted to just over 3% of the total for all banks. This share has been more or less constant since the Swedish market was opened to foreign establishments in 1985.

In recent years there has been intense and sometimes indignant public debate about the banks' pricing policy, which is clearly aimed at introducing specific charges for various services in place of float-financing. Pricing of services that have traditionally been free of charge has often provoked fierce opposition from consumers. Although this has made the banks move slowly, they have nevertheless taken concrete steps in that direction, introducing charges, for example, for low-value cheque payments and recently also for card payments.

### ***1.2.2 The Postal Giro***

The bulk of non-cash payment transactions by companies and households are made through the two giro systems, the Postal Giro and the Bank Giro.

The Postal Giro is essentially a system for credit transfers between deposit accounts held with what is now the Postgirot Bank. Like the banks, although for different reasons, the Post Office organisation and the Postal Giro system have also gone through a period of radical structural adjustment, with the consequence that the Post Office has established a separate subsidiary with the status of a bank, Postgirot Bank AB. Before the Postal Giro was turned into an ordinary limited company, the Post Office had been transformed from a public sector entity into a limited company, Posten AB, representing the parent company of the Postgirot Bank.

Aside from its former general status as a public sector entity, the Postal Giro had long

had a monopoly in transferring government payments to households and companies. On the other hand, strict constraints were placed on its ability to provide, for example, overdraft or other lending facilities to its customers. These conditions have now been changed, and the Postal Giro has to compete with other providers of payment services, e.g. the banks, on a more equal basis. Having the legal status of a bank has made it possible for the Postal Giro to expand and broaden its range of payment and banking services.

### ***1.2.3 The Bank Giro***

The Bank Giro is managed by the Bank Giro Centre. The company is an Automated Clearing House (ACH), owned by the banks. The Bank Giro is used for payment transfers between bank accounts (other than those held with the Postgirot Bank). Through its giro system it passes mainly retail payments but also certain large-value payments. The Bank Giro Centre also handles the clearing process between the banks for cheque payments and card payments. This collection and clearing of different kinds of retail payments is called the Data Clearing.

Such payments are settled via the individual bank's account with the Riksbank. Unlike in the Postal Giro system, there are no separate Bank Giro accounts; instead, ordinary bank accounts are given a Bank Giro number. In other words, the Bank Giro system is an "open" payment system in which the customers can transfer payments from an account with one bank to an account with another bank.

Interbank settlement of Bank Giro payments occurs on a multilateral net basis whereby each bank's payment orders vis-à-vis the other banks are calculated to a multilateral net debit or credit position. Later the same day these net balances are registered on the Bank Giro's account with the Riksbank for settlement.

### 1.2.4 Finance companies

Finance companies are joint stock companies that arrange financing for enterprises as well as for households, and also provide administrative services. Around one-third of the finance companies are owned by banks; many of the others are owned by industrial or commercial enterprises. They play a rather marginal role in the Swedish payment system, where their main function is to act as issuers or administrators for various debit and credit cards. For example, a large number of the cards issued by retailers are administered by finance companies. In some cases, retailers have formed finance companies of their own to manage their cards.

### 1.2.5 Clearing houses

As mentioned in Section 1.2.3, the Bank Giro Centre serves as a clearing house for certain interbank payments through its Data Clearing procedure. The Data Clearing was originally created for clearing cheques but has since been expanded to include a number of other retail payments as well. Retail payments and certain large-value payments are also cleared through the Bank Giro's own giro system.

In Sweden there are two clearing houses operating in the securities market, the VPC (Swedish Central Securities Depository, *Värdepapperscentralen AB*), and OM (*OM Stockholm AB*). Up to mid-1993 the VPC served as the central depository and clearing house mainly for equities, but also for a number of private bond issues traded on the Stockholm Stock Exchange. In the second half of 1993 it also began handling money market instruments in a separate but basically similar system. The OM is an exchange and a clearing house for the derivatives market which was established in the mid-1980s. Neither of these institutions provides payment services in the strict sense, but since their activities have important and close links with the payment system they should nevertheless be mentioned here. Both VPC and OM are

directly linked to the RIX system, e.g. they have their own accounts with the Riksbank for settlement of transactions. OM was allowed to open such an account with the Riksbank in March 1994. Like the other clearing houses, OM is not allowed to borrow intraday or overnight from the Riksbank. The VPC and OM systems are described further in Section 4.

The vast majority of credit and debit card transactions - except for those relating to retailer cards - are channelled through specialised data-processing companies. The commercial banks' card transactions are cleared mainly by SERVO, while more than half of the savings banks' card transactions are cleared by VISA's clearing house in London and the rest by the savings banks' data-processing company (*Sparbankernas Datacentraler AB*).

## 1.3 The role of the central bank

### 1.3.1 General responsibilities

#### *Statutory responsibility*

Except for its explicit and exclusive mandate to issue notes and coin, the Riksbank's responsibilities in respect of the payment system and its various components are formulated only in general terms. For example, the Riksbank's role as an overseer of the payment system does not include any formal obligation to provide clearing and settlement services to the banks. Nevertheless, the Riksbank does provide interbank clearing and settlement facilities for banks and a few other financial institutions, in the form of the Clearing and Interbank System (the RIX system). Other facilities that the Riksbank also provides to the banks are deposit accounts and credits. Via their accounts in the RIX system the banks can extend their borrowing against collateral both intraday and overnight; intraday to ensure a smooth flow of payments, overnight in the context of monetary policy.

As a vital component of the economic infrastructure, the payment system is associated with externalities, of which the most crucial is systemic risk. The primary objective of the Riksbank with respect to the payment system - as overseer as well as operator - is therefore to clarify, manage and limit systemic risks. These risks arise primarily in connection with the intermediation of large financial payments between banks and other financial institutions. The interest and activities of the Riksbank are therefore being concentrated on this aspect of the payment system.

#### *Establishment of common rules*

Rules and regulations that participants have to follow are formulated in the Riksbank's statutes and in agreements that they conclude with the Riksbank in its capacity as bookkeeper and owner of the system. In April 1994 general rules for participating in the RIX system were incorporated in the Riksbank's ordinances. A participant enters into three different agreements with the Riksbank: one governing participation in the system, another one governing borrowing from and having a deposit account with the Riksbank, and a third governing collateral. The participants also enter into agreements with each other about different cut-off times for different categories of payments in the RIX system.

#### *Supervision and audit*

The Riksbank Act states that the Bank shall promote a payment system that is "safe and efficient" and that it may participate in the clearing and settlement of payments between banks and certain other financial institutions. Even though the legal framework concerning the Riksbank's role as an overseer of the payment system has not been thoroughly elaborated, the Bank has long been operationally active in a number of strategic functions concerning the payment system.

For example, the Riksbank provides interbank clearing and settlement facilities for the banks and a few other financial institutions through its RIX system.

With the current Riksbank Act of 1988, the intention of the legislature was to allow the Bank to act in a more flexible way than before. Therefore the Act imposes relatively few restrictions and stipulates only that all activities must be authorised by law.

The construction of the RIX system and the quality of the participating agents and systems are highly important for the efficiency and reliability of the national payment system. As a real-time system, RIX also provides unique possibilities for monitoring payment flows in the banking system and obtaining rapid indications of imminent disturbances. The participants in the system can be regarded as the principal players in the payment market, which, together with the contractual and other relationships which the Riksbank has developed with them, has made the RIX system a natural platform also for oversight. This means, for instance, that the regular discussions which the Riksbank has held with participants are now being broadened from system technicalities to wider issues such as risk management and the implementation of necessary measures. A reference group has been set up by the Riksbank, with representatives of the banks and the Swedish Bankers' Association, and this also ought to be seen as a platform for this activity. The Riksbank also has regular contact with other participants in the RIX system, on a bilateral basis.

As regards payment intermediaries and systems for retail payments *not* directly linked to RIX (e.g. some of the smaller banks, payment card issuers, certain clearing houses, etc.), oversight by the Riksbank is confined to monitoring developments in general.

Day-to-day supervision of the payment system is performed by the Riksbank on the basis of daily statistics on turnover and volume of transactions processed in the RIX system.

### **1.3.2 Provision of processing and settlement facilities**

#### *Provision of settlement accounts*

Criteria for institutional access to the RIX system were decided by the Governing Board of the Riksbank in the spring of 1994. Admission is granted to basically two categories: credit institutions, as defined under the Second Banking Co-ordination Directive, including branches of foreign banks, and institutions of specific importance for the payment system. This concerns primarily various kinds of clearing houses.

Besides the banks and institutions that participate directly in the RIX system, participation for settlement of transactions can be arranged indirectly. Usually smaller banks (e.g. savings banks) use this type of arrangement and, as they are only indirectly connected to the RIX system, they do not pay any annual fee to the Riksbank, but instead pay a certain fee to the direct member.

Each participant is given an account (a RIX account), via which the settlement of payments is executed. As all transactions are settled within the Riksbank, the system is highly transparent and the settlement procedure is executed without any credit risk. Only large-value payments can be entered into the system.<sup>1</sup> In order for settlement to occur, the receiving party must confirm a registered transaction. Confirmation can only occur if there are sufficient funds on the account.

#### *Provision of credit facilities*

Under agreements with the Riksbank the banks have credit facilities for borrowing both intraday and overnight. Intraday credit is intended to ensure the smooth flow of

payments in the RIX system. All borrowing requires collateral. Accepted forms for pledging are government and mortgage securities. The banks pledge their securities in the VP system according to certain agreed routines. In order to avoid a lack of liquidity during the day which would delay the settlement process, they can make prompt use of their unused capacity of overdraft facilities. So far, the banks have managed their payment activities in the RIX system without any serious gridlock.

#### *Pricing policies*

Like all policy decisions the pricing policies concerning cashless payments to the banks are determined by the Governing Board of the Riksbank. The policy is essentially based on the principle that the fees should cover the full costs of managing the RIX system. No transaction fees are charged.

### **1.3.3 Monetary policy and payment systems**

Liquidity in the banking sector is regulated by the Riksbank through different monetary policy instruments such as repos, reverse repos and certificates issued by the Riksbank. Banks' normal need for overdrafts during the day is accommodated through daylight lending against collateral, primarily government or mortgage securities. The banks also borrow or make deposits overnight, reflecting monetary policy actions. Since 1st January 1995 all borrowing from the Riksbank, both intraday and overnight, has required collateral. At the end of the day the banks adjust their liquidity through interbank lending so that each individual bank's account balance corresponds to the same overnight interest rate, i.e. the interest rate chosen by the Riksbank.

<sup>1</sup> Retail payments are settled only in aggregate form.

### 1.3.4 Main projects and policies being implemented

Some very important changes in the system have been made recently, including the gradual abolition of uncollateralised credit (overnight as well as intraday), the adoption of explicit access criteria and the abolition of the statutory noon deadline for entering settlement instructions for banks' customers' payments. The aim of these modifications was to provide participants with the incentive to improve their risk management, render the system more transparent and of adapt it to changes in the rest of the world.

## 1.4 The role of other private and public sector bodies

In the public sector, apart from the Riksbank, there are a number of authorities involved in various aspects of the payment system.

The general supervision of banks, insurance companies and other financial institutions is the task of the Swedish Financial Supervisory Authority (*Finansinspektionen*), which is a government agency responsible to the Ministry of Finance. Although payments and payment systems are obviously a central part of banking activity, the supervision of the payment system and payment-related activities is not explicitly identified as a separate function of the Financial Supervisory Authority.

The Payment Service Inquiry has proposed that the intermediation of payments should be defined as a financial activity that requires protection and should accordingly be subject to supervision. This implies that agents in the payment market in the future will have a statutory obligation to submit information to the Financial Supervisory Authority and to the Riksbank, if this proposal is accepted.

The Swedish Competition Authority (*Konkurrensverket*) was founded in 1992. Since a new Competition Act came into force on 1st July 1993, the Authority has been active in the establishment of procedures necessary for its implementation. The Act is based on the competition rules of the European Community. The law has two prohibitions, one against anti-competitive price co-operation, the other against the abuse of a dominant position. It also contains provisions regarding merger control. The prohibition against anti-competitive price co-operation has in some cases led to changes in the pricing of different retail payment services.

The National Board for Consumer Policies (*Konsumentverket*) is the government agency responsible for consumer protection in this and other areas. In practice, the Board's role in the payment system field is mainly concerned with the debit and credit card sector, where guidelines have been formulated and negotiated with the card-issuing companies.

The National Debt Office (*Riksgäldskontoret*) is an agency responsible to the Ministry of Finance with the task of financing the national debt. It participates in the RIX system and has the right to borrow and place deposits during the day. At the end of the day the balance on its account should be zero.

In the private sector, the Swedish Bankers' Association (*Svenska Bankföreningen*) has a standing committee to discuss and co-ordinate the banks' approach to issues concerning the technical aspects of payment systems. As mentioned in Section 1.3, a reference group has also been set up recently by the Riksbank, with representatives from the banks and the Swedish Bankers' Association, to discuss issues of strategy and policy connected with payment systems.

## 2. Payment media used by non-banks

### 2.1 Cash payments

Although firm empirical evidence is lacking, it is quite evident that cash payments still account for a very large share of total payment transactions in the Swedish economy. An estimate made some years ago indicated that cash payments accounted for about 95% of the total number of transactions, while, at the same time, their share of the total value amounted to only around 10%. Although it seems probable that the figures are somewhat lower today, cash still undoubtedly retains its dominant position as a payment medium in volume terms.

The availability of cash has also increased over the last decade, thanks to the growing number of ATMs. Individuals can make cash withdrawals at any branch of any bank, irrespective of the bank at which the account is held. Cash withdrawals are executed through two networks, Bankomat and Minuten. In mid-1994 the banks, with the exception of one major bank, came to an agreement to connect the two networks. The interlinking between these two networks was completed in the autumn of 1995.

### 2.2 Non-cash payments

#### 2.2.1 Credit transfers

The two Giro systems, the Postal Giro and the Bank Giro, play a dominant role in the Swedish payment system, covering a wide range of transactions for both households and companies; the vast majority of Swedish enterprises and organisations hold accounts with both systems. In 1994 these two systems for credit transfers together accounted for 80% of all non-cash transactions. About 70%, in value terms, was generated electronically, while the remainder was paper-based. Although it would be technically possible to establish full interoperability between the

systems, this has not been done, mainly for competitive reasons.

The Postal Giro system is a system for credit transfers between accounts held at the Postgirot Bank. It handles all kinds of transactions, both low-value payments to and from households and large-value government payments. Concerning the latter, the Postal Giro formerly had a monopoly in providing payment services to government bodies. This was abolished on 1st July 1994. At the end of 1994 the total number of Postal Giro accounts was 2,039,000. The number of transactions in 1994 was approximately 413 million. The intermediary activity in value terms amounted to SEK 4,320 billion (ECU 472 billion).

Postal Giro is also extensively used by households, partly owing to the fact that *Nordbanken*, one of the largest commercial banks, uses the system for handling salary payments to government employees. In addition, the savings banks have a large number of salary accounts linked to the Postal Giro system. The fact that transactions can be handled by all post office branches throughout the country, and that these have longer business hours than the banks, has of course also contributed to the attractiveness of the system.

Since 1986 the Postal Giro has been a member of the S.W.I.F.T. network for international transactions. In recent years, the Postal Giro has been integrated in an European network for postal giro systems, "Euro-giro", for handling cross-border payments.

The Bank Giro system is a network for credit transfers between accounts held at the commercial banks, and is collectively owned by these banks. In 1994, the Bank Giro system comprised links to 911,000 bank accounts and handled around 231 million

transactions. In value terms, the corresponding figure was SEK 2,049 billion (ECU 224 billion).

A growing proportion of the transactions in both systems are initiated electronically; as might be expected, this tendency is more pronounced for large-value transactions, so that enterprises and organisations nowadays usually submit their payment orders by electronic media, while households still send their written payment orders by mail.

### 2.2.2 Cheques

In recent years the number of cheque transactions has decreased substantially. There are a number of possible explanations for this development. One is the growing number of ATMs, which have made cash more easily available at any time of the day, thereby reducing the need for cheques as a payment instrument. A second reason is the growing importance of various EFTPOS systems, which, from a practical point of view, should make payment by card more attractive. A third factor is that the Swedish banks have had a clear policy of reducing the number of cheque payments, owing to the high costs involved. To this end, various charges have been levied to make cheque payments less attractive to the consumer; for example, most banks have imposed a special charge on cheques written for small amounts (i.e. less than SEK 300/ECU 32). A few years ago one of the major banks introduced a rather high charge (SEK 15/ECU 2) on all cheques, which has drastically reduced the use of cheques drawn on that bank. Since then, some other banks have also increased their fees for payment by cheque.

In Sweden, all cheques can be cashed at any bank branch (or post office), irrespective of the bank on which they are drawn. For smaller amounts (less than SEK 2 000/ECU 218), the issuing bank provides a guarantee, that is, bears the credit risk. For larger amounts, the receiving bank has to obtain confirmation that the amount is covered by

telephoning the drawee bank. These rules also apply to cheques used to pay for retail goods and services. It should also be noted that in Sweden all cheques are truncated, that is, the physical document is retained by the bank at which the cheque is cashed and the information is transmitted by electronic media to the drawee bank.

### 2.2.3 Direct debits

Direct debits, called auto giro in Sweden, still account for a rather limited share - around 6% - of the total number of non-cash transactions, although their importance is growing. Both the Postal Giro and the Bank Giro systems administer direct debits.

### 2.2.4 Credit and debit cards

The use of cards as payment media has grown gradually over time. From the available statistics - which, however, do not give a completely reliable picture of the situation - it is fairly evident that traditional credit cards have never played an important role in the Swedish payment system, and, moreover, that their significance has diminished over the last few years.

Instead, debit cards have gained in importance, most notably debit cards linked to bank accounts and known as bank cards in Sweden. They usually combine several functions: those of a debit card for paper-based as well as EFTPOS transactions, an ATM card for cash withdrawals, and a credit card, to the extent that the bank account (usually a chequing account) to which the card is linked has an overdraft facility attached to it. In addition, these cards can be provided with a linkage to international card systems such as VISA or MasterCard, which also makes them useful for international travel. Around 75% of these cards offer such a linkage.

A rapid structural transformation is taking place in the area of retail payments, with

increasing automation as the main driving force. One important indicator of this is the fast-growing number of EFTPOS terminals in shops and other at points of sale; the number of terminals operated by the banks has risen from 6,100 in 1990 to over 25,500 in 1994. At the end of 1994 the number of terminals managed by petrol stations and retailers was 8,010 and 8,120 respectively.

Another development in this field that has been evident over the last few years is the growing importance of various retailer cards. The number of issuers as well as the volume and value of transactions using these cards have risen considerably. A survey carried out by the Payment Service Inquiry indicates that retailer cards accounted for about 13% of the total number of card transactions in 1994. In value terms the corresponding figure was around 8%.

The growing importance of retailer cards in recent years can be partly explained by the technical development mentioned above; it has made payment by card cost-effective from the retailer's point of view and eliminates the risk of theft and robbery associated with the handling of large volumes of cash. It also opens up new channels for marketing vis-à-vis customers.

#### **2.2.5 Prepaid cards**

Another area in which there have been technical innovations which could, potentially, trigger structural change is that of smart cards and prepaid cards. So far, the use of prepaid or smart cards has been limited, with the exception of public telephones. However, the market interest in prepaid cards is growing, and various system designs have been discussed by the banks and other institutions. As regards home banking, most Swedish banks have established

telephone-based systems. These allow customers to monitor and make transfers between their own accounts using more or less sophisticated systems based on telephone or terminal connections.

### **2.3 Recent developments**

An issue under discussion in Sweden has been whether card-based payment systems established by retailers, for example, should be made subject to authorisation or supervision. However, the proposal made by the Payment Service Inquiry implies that only systems involving payment intermediation, i.e. involving more than two parties, should be subject to financial supervision. Another issue being debated is whether the demarcation line between banks and non-banks has become blurred by the fact that some retailers offer their cardholders the possibility of "prepaying" for their purchases by opening interest-bearing deposit accounts linked to their cards. Although these are subject to some restrictions (e.g. the size of the amounts which may be deposited, possibilities for withdrawing cash), they do provide favourable rates of interest compared with most bank accounts. As a consequence, these cards, and the attached deposit possibilities, are now quite widely used by a large number of households.

Since June 1995 two of the larger Swedish banks have been debiting shops with a specific fee for each payment made by the cardholder using a bank card. The banks base this fee on the fact that they incur a certain cost in acquiring each card payment. However, many shops in the retail industry have passed this fee on to the consumers, a move which has started an intensive media debate about who is going to pay the administrative costs of the card systems.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

The Clearing and Interbank System (the RIX system), operated by the Riksbank, is the hub of the Swedish payment system. All interbank transactions are settled via this system. The system operates on a real-time gross settlement basis (RTGS). The RIX system was developed during 1988-90 and implemented in 1990.

A number of clearing houses function as “sub-systems” of the RIX system. One is the VPC, for securities transactions, another is the Bank Giro Centre, which, in addition to settling giro transactions on a net basis through its account with the Riksbank, also manages the interbank Data Clearing for mainly retail payments such as cheque and card transactions. The results of the Data Clearing are reported back to the banks. The resulting bilateral net positions are settled between the banks within the RIX system.

#### 3.2 Structure, operation and administration of the RIX system

##### 3.2.1 Functioning rules

The functioning rules that the participants in the RIX system have to apply are formulated in the Riksbank's ordinances and in specific agreements between the participants. Rules of a more general nature are incorporated in the ordinances, while more technical and agent-specific conditions, for example cut-off times for clearing transactions, are regulated in collective agreements between the participants. Guidelines for information about disturbances in the flow of payments, for example, are also contained in the ordinances.

##### 3.2.2 Participation in the system

The Riksbank owns and administers the RIX system. Participants must be authorised by the Riksbank. Apart from the Riksbank, nineteen institutions participated in the RIX system at the end of 1994. They consist of fifteen banks, of which seven are foreign-owned, the Bank Giro Centre (BGC), the Swedish Central Securities Depository (VPC), OM Stockholm AB (a derivatives clearing house) and the National Debt Office. The corresponding number of participants at the end of 1995 was twenty-four.

Besides the banks and institutions that participate directly in the RIX system, participation can also be arranged indirectly. Some smaller banks use this type of arrangement. For instance, the ninety independent savings banks participate indirectly in the RIX system via *Sparbanken Sverige*, which acts as their clearing bank.

The introduction of more transparent access conditions to the RIX system has been motivated by a number of reasons. First, there has been a growing interest in establishing new banks. Several applications have been made to the government, asking for authorisation. Second, in 1992 the EU central banks stated the need for transparent and non-discriminatory access criteria in interbank systems. In the spring of 1994 criteria for institutional access to the RIX system were decided by the Governing Board of the Riksbank. Admission would be granted to various types of institution: Swedish-owned banking companies, foreign-owned banking subsidiaries, branches of foreign-banking companies and institutions of importance for the payment system. However, only banks have access to credit facilities. As mentioned earlier, indirect participation is also a form of access to the RIX system.

Participation in the RIX system for foreign banks that do not have a physical establishment in Sweden is also under discussion. However, the terms for this participation have not yet been decided. At present, problems connected with this issue are being discussed with other central banks.

### **3.2.3 Types of transactions handled**

The system basically processes two kinds of transactions, interbank transactions and third-party transactions. Interbank transactions and third-party transactions exceeding SEK 50 million (approximately ECU 5 million) are the only types of transactions that can be settled at any time during the operating hours of the system, i.e. between 8.15 a.m. and 4.30 p.m.

Other types of third-party transactions, or clearing transactions as they have traditionally been called, are registered and confirmed during a limited period of the day (see Chart 2). In the spring of 1995 the banks participating in the RIX system agreed on certain schedules for the registration and settlement of different categories of customer payments. The clearing transactions were divided into S.W.I.F.T. Clearing (foreign exchange transactions), Data Clearing (retail transactions) and Document Clearing (paper-based transactions). All these transactions are bilaterally settled. For each type of payment routine a specified time period was accepted by the participants. During this period the transactions are registered and settled once the receiver has accepted the payment order (confirmation). This agreement means that there are now three different cut-off times for entering third-party payment orders, instead of a single cut-off time at noon as was formerly the case. Also entered into the RIX system are the multilaterally netted balances stemming from

securities and derivatives transactions and from retail transactions processed within the Bank Giro system. The netting procedures are managed by the clearing houses linked to the RIX system.

In 1994 the number of transactions averaged around 500 a day and the daily turnover about SEK 150 billion (ECU 16 billion). The corresponding figures for 1995 were around 1,100 transactions a day and the daily turnover averaged about SEK 300 billion (ECU 33 billion). In recent years the ratio of annual turnover to GNP has been between 25 and 30. The system opens at 8.15 a.m. every banking day. Closing time for the input of transactions is 4.15 p.m. However, transactions which have already been reported can be confirmed, and thereby settled, until 4.30 p.m.

### **3.2.4 Operation of the transfer system**

As mentioned above, the system operates on a real-time gross basis. However, some transactions are subject to various forms of netting before being entered into the system, for example payments generated from securities transactions.

Payments can be made as a deposit or as a withdrawal to or from the other party's account. Participants can monitor their positions on a real-time basis. In order for settlement to occur, the other party must confirm a registered transaction. Confirmation can only occur if there are sufficient funds on the account or if after the withdrawal the balance is within the limit. Multilaterally netted balances are also settled in the RIX system. These kinds of payments stem from securities and derivatives transactions and from retail transactions. The netting procedures are managed by the clearing houses VPC, OM and the Bank Giro centre respectively.

**Chart 2**

The RIX system –overview

as at 4th December 1995



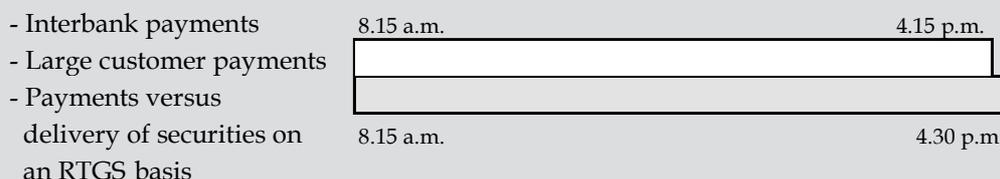
Input time for payment orders



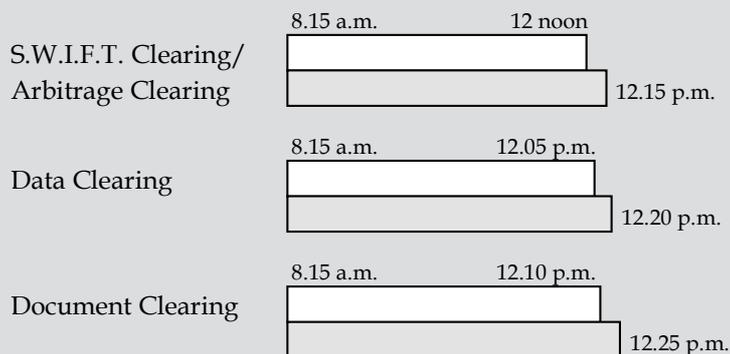
Confirmation of payment orders, i.e. settlement

8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00
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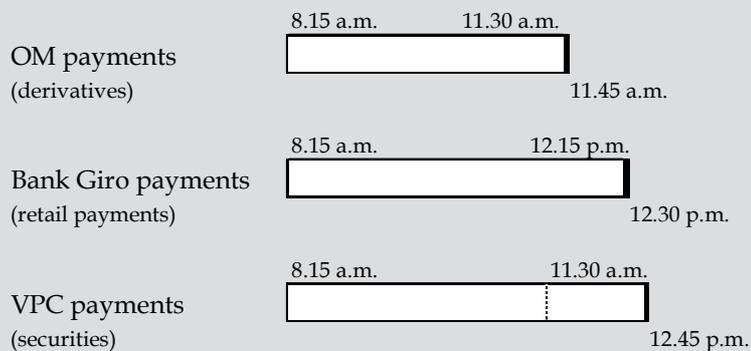
**RTGS PAYMENTS**



**BILATERAL PAYMENTS**



**MULTILATERAL PAYMENTS**



8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00
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### 3.2.5 Transaction processing environment

Transactions are manually entered in the RIX system via encrypted lines provided by the local telephone company. Payment messages have a standard layout designed by the Swedish Bankers' Association. The Riksbank is planning to process these payments via an automatic interface in the near future and to transfer payments in the S.W.I.F.T. format.

Transactions are continually transferred to a backup system (Mini-RIX) based on a personal computer. The Mini-RIX system is designed to process transactions and balances for a short period of time until the RIX system starts running on a standby computer site. During 1996 the Riksbank is planning to implement a comprehensive backup system with restart within one to two hours.

### 3.2.6 Settlement procedures

The system's transactions are registered and settled in a uniformed manner, i.e. the net of a bank's credits and debits has to be registered in the RIX system before a certain point in time. After checking that sufficient funds are available on each bank's RIX account, the transactions are confirmed and thereby settled. Interbank transactions and third-party transactions exceeding SEK 50 million (approximately ECU 5 million) can be settled at any time between 8.15 a.m. and 4.30 p.m. The routine for the real-time gross settlement of large third-party payments was introduced in April 1995. Other types of third-party transactions are registered and confirmed in batch mode during a limited period of the day. In the spring of 1995 the banks participating in the RIX system agreed on a new schedule for the registration and settlement of different categories of customer payments. This new schedule was introduced in December 1995. In addition, since December 1995, the VP system has offered the settlement of single securities transactions on a real-time basis as an option.

S.W.I.F.T. transactions are reported from 8.15 a.m. to 12 noon and settled at 12.15 p.m. at the latest. Transactions passing through the Data Clearing are reported between 8.15 a.m. and 12.05 p.m. and settled not later than 12.20 p.m. A very small fraction of manually handled clearing transactions pass through the Document Clearing routine. These transactions are reported between 8.15 a.m. and 12.10 p.m. and settled before 12.25 p.m.

OM - the clearing house for derivatives - reports its net clearing amounts in the RIX system before 11.30 a.m. and the settlement of these transactions takes place at 11.45 a.m. The Bank Giro reports each participant's net clearing amount not later than 12.15 p.m. and the transactions are settled at 12.30 p.m. Concerning payments stemming from the debt securities and equity markets, the VPC reports its net amounts to the RIX system between 8.15 a.m. and 11.30 a.m. Participants' funds are settled in the books of the Riksbank at 12.45 p.m. Immediately after settlement, the funds are fully available for the banks. With the implementation of these new clearing routines, it will be even more important for the banks to look at their liquidity situation and be well prepared to borrow intraday against collateral in order to execute their payments.

### 3.2.7 Credit and liquidity risk

Prior to September 1992 the banks were allowed to borrow from the Riksbank by overdrawing their accounts, both intraday and overnight. In September 1992 collateral requirements were introduced for borrowing in excess of certain limits, which were set individually for each bank in relation to its capital base. These limits have been reduced gradually, and from 1st January 1995 collateral is required for borrowing both intraday and overnight. The Riksbank's lending rate is related to the amount borrowed and the individual bank's capital base. Normally, at the end of the banking day and as a result of

interbank borrowing and lending during the day, liquidity between the banks is almost equalised. As all borrowing from the Riksbank is against collateral, no credit risk can occur. Liquidity risk may occur if, for example, a bank cannot pledge securities corresponding to its liquidity needs.

### **3.2.8 Pricing**

The participants in the RIX system have to pay a fixed annual fee to the Riksbank amounting to SEK 350,000 (ECU 38,210). By this means the Riksbank recovers the total costs of operating the system. There are no transaction fees for the participants.

### **3.2.9 Main projects and policies being implemented**

Some highly important changes have been made to the system recently: the gradual abolition of uncollateralised credit (overnight as well as intraday), the adoption of explicit access criteria and the abolition of the statutory noon deadline for entering settlement instructions for bank's customer payments. These modifications have been aimed at providing participants with the incentive to improve their risk management,

rendering the system more transparent, and adapting it to changes in the rest of the world.

As mentioned above, third-party payment orders exceeding SEK 50 million (approximately ECU 5 million) have been settled on a real-time basis since April 1995. This limit will be lowered successively. This will mean that an increasing proportion of third-party payments will be handled individually and in real time.

In order to meet the future requirements for harmonisation and linkage to the TARGET system, the RIX system must be supplemented both with an interface to the Interlinking system and with a new transaction type for the transfer of payments in the S.W.I.F.T. format. Furthermore, the system must be modified to replace the existing transfer confirmation procedure with a queuing mechanism. In addition to these changes, certain modifications have been planned for 1996, e.g. the implementation of a comprehensive back-up system with restart within 1-2 hours, and an interface that makes it possible to transfer transactions automatically from a participant's internal system to the RIX system. The above changes are scheduled to take place before 1997.

## 4. Securities settlement systems

### 4.1 Institutional aspects

#### 4.1.1 General legal aspects

The Share Account Act (1989) forms the legislative basis for the deposit of dematerialised securities, shares and money market instruments. Legislation on securities clearing and settlement systems, the Exchange and Clearing House Act (1992), has so far concerned only derivatives markets. In late 1995 the Government submitted a bill to Parliament proposing an amendment to the Act to extend it to cover financial instruments in general. In addition, the bill comprised adjustments to be enacted in order to make the legislation on securities comply with the EU Investment Services Directive. The new regulations came into effect in April 1996.

Other legislation important to the proper handling of securities are the Financial Instruments Trading Act (1991), the Securities Business Act (1991) and the Swedish Companies Act (1975).

#### 4.1.2 The role of the central bank

##### *General responsibilities*

The Riksbank has no statutory obligations with respect to domestic securities settlement systems. VPC, the Swedish Central Securities Depository, operates under the supervision of the Swedish Financial Supervisory Authority, which is itself based on the aforementioned legislation. Indirectly and informally, the Riksbank has, however, an important position as overseer of the system, which is based on its responsibilities for the payment system. The Riksbank Act states that the Bank shall promote a payment system which is "safe and efficient". As payments of securities transactions form a substantial and sensitive part of large-value

payments, the proper functioning of the securities system is important for the stability of the payments system as a whole. The Swedish large-value system, the RIX system, in which securities transactions are settled, is owned and run by the Riksbank. An efficiently working securities settlement system is also important for the smooth and speedy conduct of monetary policy operations, responsibility for which rests with the Riksbank.

##### *Provision of settlement and operational facilities*

The Riksbank provides no facilities other than allowing VPC, the Swedish Central Securities Depository, and OM, the derivatives exchange and clearing house, to operate an account with the RIX system for the cash settlement of securities transactions. These accounts are not allowed to be in deficit.

Only those banks which have an account with the RIX system can conduct their cash settlements directly. Other securities account operators in VPC and members of OM have to arrange their cash settlements through these banks.

##### *Monetary policy operations and securities settlement systems*

Repos and reverse repos are the instruments used for regular open market operations. For fine-tuning operations, currency swaps and bank deposits can also be used. Eligible assets for repos and reverse repos are securities issued or fully guaranteed by the Riksbank, the Swedish government, local governments or mortgage institutions.

In the prevailing situation which has seen excess liquidity present in the market for some time, the current practice has been to issue Riksbank certificates once a week with

a maturity of two weeks. These loans have been considered as reverse repos although they are, in fact, ordinary loans.

The Riksbank certificates are registered in the VP system. The Riksbank is also an account operator in this system for the handling of repos and pledges as well as outright transactions.

#### **4.1.3 The role of other public sector bodies**

The Swedish Financial Supervisory Authority (SFSA) is a public authority responsible for the authorisation and supervision of financial institutions, including exchange and clearing organisations. Its general objective is to promote the stability, efficiency and soundness of the Swedish financial system.

#### **4.1.4 The role of private sector bodies**

##### *Central Securities Depository*

There is one central securities depository in Sweden, *Värdepapperscentralen AB*, or the Swedish Central Securities Depository (VPC). It was established in 1971 in order to rationalise and centralise services related to trade in stocks at the Stockholm Stock Exchange, including matching, clearing and settlement. Transfers of actual shares were replaced by changes in registration with the VPC and confirmed by issuance of certificates. In 1990 the VPC became purely account-based. The use of physical paper was replaced by a dematerialised system (the VPC system). In 1993 the VPC also started to offer dematerialisation and the same trade-related services for securities other than stocks or stock-related instruments, such as discount notes and interest-bearing securities. Practically all types of securities traded on the Swedish market can be handled in the VP system.

The VPC AB is a limited company owned by the Swedish Government (50%), securities dealers including banks (25%), and the Stockholm Chamber of Commerce and the Federation of Swedish Industries (25%).

##### *Clearing house*

OM Stockholm is a limited company and a subsidiary of the OM group, established in 1985. It serves as an exchange for derivatives and operates the only existing clearing and settlement system for derivative instruments in Sweden, primarily offering futures and options on individual stocks and on the Swedish OMX equity index, as well as clearing services for interbank trading in futures on Swedish government securities and mortgage bonds.

A second market has been established in London - OMLX, the London Securities and Derivatives Exchange. Both exchanges are electronically linked and form a single market-place but have separate clearing houses.

*OM gruppen AB*, the holding company, is an independent profit-making company, listed on the Stockholm Stock Exchange. Shareholders include insurance companies, investment companies, its founder and staff members.

##### *Others*

Others, such as the Stockholm Stock Exchange and Pml, *Penningmarknads-information AB* (Money Market Information), offer a computerised market-place primarily for stocks and money market instruments. They have, however, no clearing or settlement facilities.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

The Swedish securities markets can be grouped into the equity market, the money and bond market, and the derivatives market. As described in the preceding section, equities, bonds and money market instruments are all dematerialised in the VPC, which also handles the clearing and settlement of these instruments, while OM clears and settles derivatives.

The changeover to the VP book-entry system for equities was accomplished in 1991, and in 1993 the functions for money market instruments, including bonds, were implemented. New issues of money market instruments and instruments issued earlier were gradually registered in the system during 1993 and 1994 and the vast majority of these instruments, all of which are frequently traded, now appear as book entries. Although drastically reduced, there is still, however, a centralised clearing and settlement activity for securities in paper-based form, such as securities issued by local authorities and company certificates. Manual clearing and settlement take place bilaterally on a daily basis.

Computerised market-places are offered by the Stockholm Stock Exchange and Pml, *Penningmarknadsinformation AB*. The Stockholm Stock Exchange has one exchange system for trading in equities and one for trading in bonds, while Pml has one for money market instruments including bonds. OM operates an exchange for derivative instruments.

### 4.2.2 Basic quantitative aspects (basic statistics)

The market value of shares listed on the Stockholm Stock Exchange amounted to SEK 977 billion (ECU 106 billion) at the end of 1994. The value of all transactions in 1994 was SEK 659 billion (ECU 72 billion), 6% of

which was off-exchange trading (outside the Stockholm Automated Exchange, SAX). The average per trading day was SEK 2,604 million (ECU 284 million). The number of transactions amounted to 2,628,000.

The turnover is much higher for dematerialised securities in the money and bond market than in the equity market, amounting in 1994 to nearly thirty times the outstanding stock as opposed to only two-thirds for the equity market. The outstanding nominal value of dematerialised government securities and bonds other than government bonds amounted to SEK 1,623 billion (ECU 177 billion) while the transaction value amounted to SEK 45,600 billion (ECU 4,978 billion). The number of transactions was, however, only about 500,000, indicating an average transaction value of just below SEK 100 million (ECU 10.9 million), compared to only SEK 250,000 (ECU 27,300) in the equity market.

### 4.2.3 Financial intermediaries operating in the different securities markets

Authorisation by the Swedish Financial Supervisory Authority is a basic requirement for domestic entities to be allowed to conduct securities trading business. Banks and securities firms may apply for membership of exchanges or to become a primary dealer.

Trading on the Stockholm Stock Exchange is reserved for members. The conditions for membership include a share capital of at least SEK 10 million (ECU 1.1 million), and a recognised knowledge of the SAX system, securities legislation and corporate analysis. Organisation, ownership, business areas and strategies, etc. are examined. Foreign companies which are authorised by the corresponding authority in their home country also have the right to apply for membership.

By November 1995 members included nineteen banks and twenty securities firms, six of which were foreign remote members, i.e. without a presence in Sweden.

In the money and bond market the Riksbank authorises primary dealers. Primary dealers have the exclusive right to be counterparties in the monetary operations of the Riksbank but are at the same time obliged to be market makers in those securities in which the Riksbank trades. A prerequisite for being accepted as a primary dealer is authorisation of the applicant as a market maker in government securities by the National Debt Office. A basic requirement is authorisation by the Swedish Financial Supervisory Authority to act as a dealer or, for foreign companies, authorisation by a corresponding authority in their home country.

In late 1995 seven banks and six securities firms were authorised as primary dealers. In addition, two foreign banks were authorised by the National Debt Office.

Applications for membership of the OM exchange and clearing system are approved by OM subject to conditions similar to those for membership of the Stockholm Stock Exchange, including a minimum shareholders' equity of SEK 5 million (ECU 0.5 million). In late 1995 fourteen banks and twenty-two securities firms were members, three of which were remote access members.

### **4.3 Structure, operation and administration of the Swedish Central Securities Depository, VPC**

The Swedish Central Securities Depository, VPC, operates the VP system for all kinds of dematerialised securities, handling their matching, clearing and settlement. Trade in securities is registered in real time and settled on a DVP basis.

#### **4.3.1 Major regulations**

The legal framework for the dematerialisation of securities is found in the Share Account Act. The Act contains the fundamental rules required to provide a book-entry system replacing the handling

of securities in the form of physical documents. The ownership of any kinds of securities which have been dematerialised within the VP system is evidenced solely by registration on a VP account.

The Share Account Act stipulates the types of instruments that have to or may be entered in the VP system, the information which must be registered, the rights and duties of an account operator (KI) and the legal implications of registration. Supplementing the Act, the Share Account Decree contains regulations on authorisation, supervision and information.

The VPC operates under the supervision of the Swedish Financial Supervisory Authority (SFSA). Authorisation as an account operator is granted by the SFSA and restricted to entities which are supervised by the SFSA, which also decides on the requirements and conditions for their operations in the system.

In the bill mentioned in Section 4.1.1, it is proposed that the VPC should be responsible for authorisation, subject to certain minimum requirements. The new rules came into effect in April 1996.

#### **4.3.2 Participation in the system**

The entities in the VP system are issuers, account operators (KI) and investors.

*Issuers* on the equity market affiliated to the VPC are listed limited liability companies. On the money market, the central government (the National Debt Office) is the largest borrower, and the vast majority of its domestic loans are registered with the VPC. Among the other affiliated issuers on the money and bond market, the mortgage institutions form a major part.

*Account operators* represent their clients and themselves and are those responsible for the registration of completed bargains. Account operators alone can act as direct participants in the system. At present there are about

fifty operators, primarily banks and securities firms, but also a few issuers and large investors. Among the issuers is the National Debt Office, which handles the government debt.

Account operators (with the exception of the Riksbank and the National Debt Office) are authorised by, and under the supervision of, the SFSA. From 1st April 1996, however, the VPC will be allowed to decide who to accept as an account operator, such acceptance being based on requirements regarding capital adequacy, technical and legal expert knowledge, etc. The extension will primarily allow comparable foreign financial institutions, particularly those from EU countries, to be accepted as account operators.

*Investors* are private individuals and all types of legal entities trading in securities in the VP system. All transactions are handled by the account operators.

The Riksbank maintains all three functions in the VP system. Issues of Riksbank certificates are registered there and the bank acts as its own account operator for purchases and sales (including repos) mainly in government securities.

#### 4.3.3 Types of transactions handled

Practically all types of transactions traded on the Swedish securities market can be handled by the VP system.

The VPC performs the matching, clearing, settlement and registration of Swedish-issued securities. This includes shares for some 500 companies, including all those quoted on the Stockholm Stock Exchange. The VPC has the same registration responsibility for more than 800 bond issues, discount notes, commercial papers, options, warrants and Swedish Depository Receipts.

From a technical point of view, the VPC administers the money and equity market in separate sections; the money market section for the institutional trading of money market

instruments, and the equity market section for all other trades.

#### 4.3.4 Transaction processing environment

The settlement system is fully computerised and most of the data exchanges between the participants and the VP system are messages transmitted computer to computer.

The communication network linking the VPC to the account operators utilises dedicated telephone lines in order to prevent unauthorised access. In addition, all data transmissions are encrypted to protect them from unauthorised interception or alteration. The VPC uses a sophisticated authorisation control system to control access to stored information, ensuring that information can only be obtained or altered by persons authorised to do so.

In the event of a major disaster leaving the entire computer system out of action, the VPC has a backup system which could be in operation within one hour.

#### 4.3.5 Settlement procedures

From late 1995 the VP system has offered real-time gross settlement as an option in addition to net settlement, both on a DVP basis.

When *real-time gross settlement* is being processed, securities are moved directly from the seller's account to the buyer's account when sufficient cash has been registered on the buyer's cash account at the Riksbank.

Real-time gross settlement can be processed at any time during the day. Deliveries free of payment can be processed as long as the VP system is open for registrations (7.30 a.m. - 6 p.m.), and deliveries against payment can be processed as long as the central bank is also open for registrations (8.15 a.m. - 4.15 p.m.).

In the *net settlement* procedure, securities are currently registered and delivered gross, while

payments are netted on a multilateral basis with net amounts being reported before 11.30 a.m. Immediately preceding settlement, banks with a net payment to be made as a result of their clearing balance of securities, will transfer the corresponding amount from their own accounts to the VPC's account at the Riksbank. Securities and payments are then settled simultaneously and irrevocably at 12.45 p.m.

In the ordinary net settlement schedule, long-term bonds and stocks settle three days, and short-term notes two days after the trading day. However, money market instruments can in fact be traded on the settlement day on condition that the seller has the securities to be sold on its VP account and makes the registration before 10.15 a.m. The settlement schedules for the

money and equity market are summarised in the following two sub-sections.

#### *Net settlement procedures for the money market*

Chart 3 summarises the settlement schedule for the money market. At present, a three-day settlement plan is used for long-term bonds and a two-day settlement plan is used for short-term notes. The letter S in the chart indicates settlement day.

#### *Net settlement procedures for the equity market*

Chart 4 summarises the settlement schedule for the equity market. At present, a three-day settlement plan is used.

**Chart 3**

Deal S-3	S-2	S-1	Settlement S
Ordinary trade day for long-term bonds. Registration of bargains on own account and for customers.	Ordinary trade day for short-term bonds.	1 p.m. Checking status of holdings on all matched transactions except on provisional transactions. 5 p.m. Ordinary commercial entries with settlement day S are stopped. 6 p.m. The VP system closes.	Commercial entries which do not create or worsen short positions can still be made for settlement on this day. 8.15 a.m. Final time for approving provisional entries made on foreign investors' accounts. If there is a short position for a non-p-player,* the system excludes withdrawals and corresponding deposits to counterparties until the short position has been eliminated. 10.15 a.m. Final time for commercial registrations against payment. Around 10.30 a.m. Payment information is established. 12.45 p.m. Settlement.
* P-players are participants who have made specific undertakings to the VPC to cover short positions on settlement day.			

**Chart 4**

Day S-3	Day S-2	Day S-1	Day S
Deal completed on the stock exchange. The account operators enter information. Delivery capacity is checked immediately by the system.	The account operators can supplement entry and incorrect information.	5.00 p.m. Commercial entries with settlement day S are stopped. Short positions are excluded together with entries for which there is no counterparty.	7.30 a.m. Information for exchange payments. 12.45 p.m. Settlement.

#### 4.3.6 DVP arrangements

Every non-bank account operator must be affiliated to a payment bank registered in the VP system. A net amount is settled per payment bank. The net amount consists of the total amount for the payment bank and for the account operators affiliated to that particular payment bank.

When the payment banks have entered all their instructions in the central bank's payment system, the RIX system, the VPC checks that the instructions are all included, and that the payment bank's limit in RIX is sufficient. The VPC confirms the amounts that the payment banks have entered. Settlement of payment in the RIX system at 12.45 p.m. is simultaneous with settlement of securities in the VP system.

#### 4.3.7 Credit and liquidity risk control measures

The VP system can, as a real-time system, continuously provide participants with information about the provisional net balance of cash and any insufficiency of securities to avoid problems when settlement is due.

The VPC does not grant any credits to its participants. It has no credit facilities with the Riksbank, and its Riksbank account should be at zero after settlement has been completed.

The way in which the money market and the equity market are administered in the VP system differs. The money market is handled within its contract section and the equity market within its guarantee section. A non-bank account operator which operates in the guarantee section should have a basic guarantee from a payment bank and provide the VPC with a supplementary guarantee if the basic guarantee does not cover the settlement amount for a specific settlement day. The contract section is based on contracts between the payment bank and the account operators and, in addition, between the account operator and its investors.

In the event of insufficient securities, corresponding sales transactions are cancelled. In this context, p-players (primary dealers) have been assigned special responsibilities to prevent further disturbances in the settlement process by covering their emerging shortages.

In the event of insufficient funds (in the contract section) or a lack of supplementary guarantee (in the guarantee section) all operations by the defaulting account operator are unwound. In the contract section, a delayed settlement routine will be activated, whereby the surviving participants will substitute the failed trades. The securities account operators have an obligation to participate actively in this process by repos or securities lending transactions. The issuers also have an obligation to issue new securities, should this prove necessary. The routine is tested two or three times a year on a full-scale basis.

#### 4.3.8 Pricing policies

The VPC adheres to the following principles:

- in addition to its own costs, every service area shall carry its share of the VPC's overall costs;
- in its pricing structure, the VPC shall charge fixed and published fees for all its services.

#### 4.3.9 Major projects and policies being implemented

Changes will be implemented which will make it possible for a direct participant to choose to be either an account operator or a clearing member of the system, or both. A clearing member will only have access to the matching, clearing and settlement functions. An account operator will only have access to functions to maintain the registers.

In addition, a system of collateralising margins is likely to be introduced.

## 4.4 OM Stockholm AB

### 4.4.1 Major regulations

OM Stockholm AB is an authorised exchange/clearing house operating under the Exchange and Clearing House Act. It is supervised by the Swedish Financial Supervisory Authority, which has established a regulatory framework for the OM trading, clearing and settlement systems.

### 4.4.2 Participation in the system

Applications for membership are approved by OM for brokers and market makers authorised by the SFSA or by a corresponding agency in their home country, and having a minimum equity capital of SEK 5 million (ECU 0.5 million). Brokers may trade for their own account or on behalf of their customers. Market makers can only trade for their own account.

The number of members amounted to thirty-nine in late 1995, covering banks, stockbrokers and specialist futures broking and clearing companies.

### 4.4.3 Types of transactions handled

The following transactions are handled:

1. Options and futures traded on OM exchanges and cleared by OM:
  - futures and options on Swedish stocks;
  - futures and options on the OMX Index;
  - stocklending contracts;
  - Swedish government bond options.
2. Interbank trading cleared by OM:
  - futures on Swedish government securities and mortgage bonds;

- futures on 90-day FRAs;
- standardised interest rate swaps;
- futures on interest rate contracts;
- futures on swap contracts;
- tailor-made clearing contracts for fixed income and equity products.

### 4.4.4 Operation of the transfer system and transaction processing environment

Trades on the OM exchange lead to an automatic and simultaneous feeding of matched trade reports from the electronic trading system. Three types of trading for contracts are cleared:

- trading in a fully automated electronic trading system linking members;
- trading in a telephone-based, computer-supported system for large and complex orders;
- OTC trading between clearing members.

The clearing house and the back-office system are integrated. Contracts are held at an individual client level. Each individual customer of a broker or a bank is identified in a separate numbered sub-account of the clearing member. A legal relationship is established with the end-client, although his/her identity remains confidential.

Disaster backup procedures have been established. Computer and communications facilities are duplicated on a real time basis.

### 4.4.5 Settlement procedures

All funds settlements (including option premiums, variation settlement, fees, and maturing contracts) are made via the OM account in the RIX system on a multilateral

net basis. Settlements take place on a daily basis. All clearing members having an account with the RIX system (banks) register their net debit or credit transactions there not later than 11.30 a.m. OM confirms these transactions at 11.45 a.m., at which time they are settled simultaneously and finally. Clearing members not having a RIX account settle through banks with such an account.

OM guarantees settlement and will replace defaulting members in the settlement process.

#### **4.4.6 DVP arrangements**

DVP concerns only those contracts which provide for delivery of underlying securities when the contract matures. Deliveries of securities take place through the OM securities account in the VPC and the payments are made simultaneously through the RIX system.

#### **4.4.7 Credit and liquidity risk control measures**

OM is the counterparty in all contracts: the seller to every buyer and the buyer to every seller. This responsibility is backed by its margin system, the OM group's own capital resources and a credit insurance policy.

OM systems operate on a real-time basis and OM monitors compliance with financial and operational requirements for clearing members, as well as their clients, throughout the trading day. Margin requirements are applied on a daily basis. Intraday margins may, however, be applied if deemed necessary. OM uses its in-house developed portfolio-based risk analysis system to calculate daily margins.

#### **4.4.8 Pricing policies**

OM is a profit-making company listed on the Stock Exchange. Pricing is on a commercial basis.

## 5. Statistical data

**Table 1**

### Basic statistical data <sup>(1)</sup>

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	8,559	8,617	8,668	8,719	8,781
Gross domestic product (billions)	1,359.9	1,447.3	1,441.7	1,442.2	1,571.0
Exchange rate vis-à-vis ECU <sup>(2)</sup>	7.520	7.480	7.530	9.115	9.158

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**

### Settlement media used by non-banks

(end of year)

	SEK billions				
	1990	1991	1992	1993	1994
Notes and coins	61.7	64.6	64.1	66.8	68.6
Transferable deposits <sup>(1)</sup>	520.0	543.3	563.5	586.4	617.3
Narrow money supply (M1)	-	-	-	-	-
Transferable deposits in foreign currencies	17.6	19.7	25.7	26.1	21.6

(1) Local currency.

**Table 3**

### Settlement media used by deposit-taking institutions

(end of year)

	SEK billions				
	1990	1991	1992	1993	1994
Required reserves held at central bank <sup>(1)</sup>	12.6	5.4	2.7	4.3	5.0
Free reserves held at central bank	-17.6	19.7	-28.7	-8.3	7.2
Transferable deposits at other institutions <sup>(2)</sup>	167.9	138.5	100.9	31.0	62.3

(1) Average end-of-month figures.

(2) Average end-of-quarter figures.

**Table 4****Banknotes and coins***(total value, end of year)*

	SEK billions				
	1990	1991	1992	1993	1994
Total banknotes issued	69,620	73,108	70,740	72,413	72,992
of which:					
SEK 10,000	665	170	19	0	0
SEK 1,000	38,594	41,091	39,299	39,803	39,569
SEK 500	12,182	14,733	15,711	18,384	19,903
SEK 100	15,497	14,669	13,354	12,000	11,298
SEK 50	1,010	1,035	818	261	205
SEK 20	-	-	1,011	1,525	1,608
SEK 10	1,573	1,313	433	345	315
SEK 5	99	97	96	95	94
Total coins issued	2,359	2,990	3,205	3,308	3,450
Notes and coins held by credit institutions	10,266	11,543	9,894	8,919	7,848
Notes and coins in circulation outside credit institutions	61,713	64,555	64,051	66,802	68,594

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (millions)	Value of accounts (SEK billions)
Central bank	1	16	-	-
Commercial banks <sup>(1)</sup>	15	3,679	24.37	682.7
Savings banks	90	352	3.12	59.1
<b>TOTAL</b>	<b>106</b>	<b>4,053</b>	<b>27.49</b>	<b>743.9</b>
Branches of foreign banks	6	6	0.00	2.1
of which EC-based	6	6	0.00	2.1

(1) The Postgirot Bank is included from March 1994. The total number of branches includes 1,341 branches of the Post Office since they provide financial services on account of the Postgirot Bank.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals***(end of year)*

	1990	1991	1992	1993	1994
Cash dispensers and ATMs					
Number of networks	2	2	2	2	2
Number of machines	2,102	2,221	2,203	2,226	2,281
Volume of transactions (millions)	170	208	218	247	270
Value of transactions (SEK billions)	107	152	163	195	218
EFTPOS terminals <sup>(1)</sup>					
Number of networks	2	2	2	2	2
Number of points of sale	6,090	8,916	14,276	26,630	25,536
Volume of transactions (millions)	16	33	46	63	77
Value of transactions (SEK billions)	8	17	27	33	48

(1) Terminals administrated by the two data processing companies BABS and SERVO.

**Table 7****Number of payment cards in circulation <sup>(1)</sup>***(end of year)*

	1990	1991	1992	1993	1994
					thousands
Cards with a cash function <sup>(2)</sup>	n.a.	n.a.	5,072	5,162	6,037
Cards with a debit/credit function	3,110	3,769	10,463	11,412	12,076
<i>of which:</i>					
<i>cards with a debit function</i>	1,280	2,352	8,946	9,937	10,379
<i>cards with a credit function</i>	1,830	1,417	1,517	1,475	1,697
Cards with a cheque guarantee function	-	-	-	-	-
Retailer cards	4,100	4,984	7,245	7,961	9,121

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

(2) There was a new source of statistics from 1992.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions <sup>(1)</sup>

	thousands				
	1990	1991	1992	1993	1994
RIX system	98	91	79	78	84

(1) Clearing and settlement were made on a bilateral net basis until end-1989. Since 1990 RIX has been operating on a gross basis.

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions <sup>(1)</sup>

	SEK billions				
	1990	1991	1992	1993	1994
RIX system	34,949	37,634	44,520	40,898	39,920

(1) Clearing and settlement were made on a bilateral net basis until end-1989. Since 1990 RIX has been operating on a gross basis.

**Table 10****Participants in securities settlement systems**

	Settling securities <sup>(1)</sup>	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
VPC			
Banks	15	12	12
Stockbrokers	19	19	-
Insurance companies	5	-	-
Foreign central banks	-	-	-
Cedel / Euroclear	-	-	-
Others <sup>(2)</sup>	9	-	2
<b>TOTAL</b>	<b>48</b>	<b>31</b>	<b>14</b>

(1) Defined as account operators in the system.

(2) Sveriges Riksbank, the National Debt Office and the National Pension Fund (three funds), mortgage institutions (two), and the OM Group (two).

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
VPC					
Government securities and bonds <sup>(1)</sup>	-	-	-	-	500
Shares <sup>(2)</sup>	n.a.	n.a.	n.a.	n.a.	2,500

(1) Includes Sveriges Riksbank certificates.

(2) Includes private bonds.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	SEK billions				
	1990	1991	1992	1993	1994
VPC					
Government securities and bonds <sup>(1)</sup>	-	-	-	-	46,000
Shares <sup>(2)</sup>	n.a.	n.a.	n.a.	n.a.	1,055

(1) Includes Sveriges Riksbank certificates.

(2) Includes private bonds.

**Table 13**

Nominal values registered by securities settlement systems  
(end of year)

	SEK billions				
	1990	1991	1992	1993	1994
VPC					
Government securities	-	-	-	-	921 <sup>(1)</sup>
Bonds	-	-	-	-	702 <sup>(2)</sup>
Shares	n.a.	n.a.	n.a.	n.a.	1,025 <sup>(3)</sup>
CDs	-	-	-	-	20

(1) Includes Sveriges Riksbank certificates.

(2) Excludes Government bonds.

(3) Market values. Includes private bonds.

**Table 14**

Indicators of use of various cashless payment instruments:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Cheques issued	120	77	71	51	n.a.
Payments by debit and credit cards	55	68	62	68	85
Paper-based credit transfers	276	210	165	161	170
Paperless credit transfers	326	388	425	428	435
Direct debits	30	34	37	40	45
Others	-	-	-	-	-
<b>TOTAL</b>	<b>807</b>	<b>777</b>	<b>760</b>	<b>748</b>	<b>735</b>

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	SEK billions				
	1990	1991	1992	1993	1994
Cheques issued	698	757	675	487	n.a.
Payments by debit and credit cards	34	43	44	53	64
Paper-based credit transfers <sup>(1)</sup>	1,871	1,980	2,115	2,230	1,933
Paperless credit transfers <sup>(1)</sup>	3,474	3,674	3,380	3,587	4,282
Direct debits	188	203	152	205	183
Others	-	-	-	-	-
<b>TOTAL</b>	<b>6,265</b>	<b>6,657</b>	<b>6,366</b>	<b>6,562</b>	<b>6,462</b>

(1) From customer to bank.

**Table 16****Participation in S.W.I.F.T. by domestic institutions**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	23	20	20	19	17
of which:					
<i>members</i>	13	11	11	10	8
<i>sub-members</i>	10	9	9	9	9
<i>participants</i>	0	0	0	0	0
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
of which:					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

**Table 17****S.W.I.F.T. message flows to/from domestic users**

	1990	1991	1992	1993	1994
Total messages sent	6,248,239	6,701,761	7,088,941	7,447,346	8,701,454
of which:					
<i>category I</i>	2,458,434	2,653,863	2,810,225	2,915,188	3,335,280
<i>category II</i>	1,672,378	1,788,521	1,797,251	1,863,230	2,029,226
<i>sent/received to/from domestic users</i>	980,546	1,055,822	994,931	984,831	1,213,723
Total messages received	5,417,561	5,766,385	5,879,573	6,040,394	7,021,354
of which:					
<i>category I</i>	<i>n.a.</i>	<i>n.a.</i>	1,980,723	2,136,086	2,427,632
<i>category II</i>	<i>n.a.</i>	<i>n.a.</i>	1,482,130	1,566,639	1,925,165
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants: users which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

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**List of abbreviations**

<b>APACS</b>	Association for Payment Clearing Services
<b>APT</b>	Automated Pit Trading
<b>CD</b>	Certificate of Deposit
<b>CGO</b>	Central Gilts Office
<b>CHAPS</b>	Clearing House Automated Payment System
<b>CMO</b>	Central Moneymarkets Office
<b>CRD</b>	Cash Ratio Deposit
<b>DSL</b>	Dematerialised Stock Lending
<b>DVP</b>	Delivery Versus Payment
<b>ECHO</b>	Exchange Clearing House
<b>ESO</b>	European Settlements Office
<b>FSA</b>	Financial Services Act 1986
<b>FTSE</b>	Financial Times Stock Exchange [share index]
<b>IBT</b>	Intra-branch Transfer
<b>ICSD</b>	International Central Securities Depository
<b>INS</b>	Institutional Net Settlement
<b>IPE</b>	International Petroleum Exchange
<b>ISMA</b>	International Securities Markets Association
<b>LCE</b>	London Commodity Exchange
<b>LCH</b>	London Clearing House
<b>LIFFE</b>	London International Financial Futures Exchange
<b>LME</b>	London Metal Exchange
<b>NBRL</b>	Net Bilateral Receiver Limit
<b>NSL</b>	Net Sender Limit
<b>OMLX</b>	OM London Securities and Derivatives Exchange
<b>OTC</b>	Over-the-counter
<b>PPS</b>	Protected Payment System
<b>RCH</b>	Recognised Clearing House
<b>RIE</b>	Recognised Investment Exchange
<b>RTGS</b>	Real Time Gross Settlement
<b>SEAQ</b>	Stock Exchange Automated Quotation system
<b>SFA</b>	Securities and Futures Association
<b>SIB</b>	Securities and Investments Board
<b>SRO</b>	Self Regulating Organisation

## Introduction

Payment and settlement systems in the United Kingdom have experienced considerable change in recent years. Banks and other institutions engaged in money transmission activities have sought to enhance their services in response to competitive pressures in the market for payment and related services. New developments have also been stimulated by a desire to engage in product innovation and to capture the opportunities offered by new technology. Against the background of a competitive and open market, it is also possible to point to changes to payment and settlement system infrastructure as a result of collaborative ventures between banks. Such moves have been prompted in part by the need to promote the efficiency of

collectively provided payment networks, but there has also been an increasing emphasis on the need to reduce the credit and liquidity risks which can emerge in payment and settlement arrangements, particularly in respect of large-value payment networks. The most prominent example of this latter concern has been the work undertaken jointly by the members of CHAPS<sup>1</sup> (the main high-value payment network) and the Bank of England to establish a real-time gross settlement (RTGS) system in the United Kingdom. In addition, a number of trends which were apparent earlier in the decade, such as the gradual move from paper to electronic methods of data transmission, have continued.

---

<sup>1</sup> CHAPS stands for Clearing House Automated Payment System.

## I. Institutional aspects

### 1.1 General legal aspects

The UK payment clearing systems described below have evolved over time through the actions of commercial institutions and are not in the main the subject of specific legislation or regulatory provisions. The most widely used clearings are owned and controlled by their members through clearing companies under the umbrella of the Association for Payment Clearing Services (APACS), an unincorporated association which was set up in 1985 (see Section 1.4.1). The Bank of England does, however, have a statutory role in respect of the supervision of certain clearing house arrangements which are granted protection, under Part VII of the Companies Act 1989, from some of the usual provisions of UK insolvency law. Since August 1995, the Bank has exercised these regulatory powers only in respect of the Exchange Clearing House (ECHO), a foreign exchange clearing house (see Chapter 16).

The remaining statute law relating to payment system services in the United Kingdom is limited. The three statutes which comprise the main body of this law deal with the technical usage of paper-based cheques and other bills of exchange. The Bills of Exchange Act 1882 is a comprehensive codification of the previous law on bills of exchange, while the Cheques Acts, 1957 and 1992, modify the general principles of the 1882 Act as applied to cheques.

UK competition law relevant to APACS is largely embodied in the Restrictive Trade Practices Acts, 1976 and 1977. The clearing systems which operate under the APACS framework and the membership criteria of APACS fall within the scope of this legislation and require registration with and are subject to scrutiny by the Director General of Fair Trading. In addition to domestic competition law, there are a number of European Union laws and quasi-judicial constraints which may

also be relevant to the provision of payment and settlement services in the United Kingdom, starting with Articles 85 and 86 of the Treaty of Rome.

The legal framework for securities settlement is described in Section 4.1.1.

### 1.2 Financial intermediaries that provide payment services

#### 1.2.1 The banks

In mid-1995 there were 485 institutions carrying on banking business in the United Kingdom; 329 were branches or subsidiaries of foreign banks and, of these, 124 were branches or subsidiaries of banks established in other EU countries.

The formation of APACS in 1985 led to the reorganisation of the sterling clearings, and allowed membership to be open to appropriately regulated financial institutions meeting explicit and objective criteria for entry (see Section 1.4.1). There are eighteen commercial banks which are direct settlement members of at least one of the APACS clearings. The Bank of England is also a member of each of these clearings. The open approach to membership, together with competition from other financial institutions, has resulted in a high level of competitive pressure insofar as the provision of payment services by the main settlement banks is concerned. Many banks, both foreign and domestic, prefer therefore not to incur the costs of direct membership, and participate indirectly in the clearings via arrangements with one of the members.

### 1.2.2 Building societies

By mid-1995 there were eighty-two building societies<sup>2</sup> authorised by the Building Societies Commission. The enactment of the Building Societies Act 1986 gave societies some scope to expand their provision of financial services. The larger societies now offer a range of payment system services, including money transmission, cheque guarantee cards and credit and debit cards. Two building societies are members of APACS, although they do not operate as settlement members in all the APACS clearings. The remainder can participate in the clearings via agency arrangements. The 1986 Act also allows a society to change its mutual status by incorporation as a public limited company. Abbey National plc, for example, incorporated in July 1989 and was granted authorisation as a bank, while the Leeds Permanent and Halifax building societies merged in August 1995 with a view to becoming authorised as a bank in due course under the Banking Act 1987.

### 1.2.3 Credit card companies

Credit cards continue to play a major role in the payment sector. Banks and building societies issue credit cards which are affiliated to either the VISA or MasterCard schemes. Until 1988, all MasterCards in the United Kingdom were branded as Access cards. In addition, a number of retailers offer proprietary card-based credit facilities to their customers. American Express and Diners Club also issue travel and entertainment cards in the United Kingdom.

### 1.2.4 Other institutions

Certain other institutions have an involvement with money transmission. These include National Savings, a government agency, which operates through post offices. The Post Office itself also provides payment services through its responsibilities for issuing

and redeeming postal orders and handling the cash payment of various state benefits to the public. Girobank, formerly owned by the Post Office, is a private sector institution but it still conducts business across Post Office counters.

## 1.3 The role of the central bank

### 1.3.1 General responsibilities

#### *Statutory and oversight responsibilities*

The Bank of England has no specific statutory powers in connection with payment clearing systems other than those derived from the Companies Act 1989, which are of limited application (see Section 1.1). Other than the Central Gilts Office (CGO), the Central Moneymarkets Office (CMO) and the European Settlements Office (ESO) (see Sections 4.3 to 4.5), the Bank does not own or manage any payment clearing or securities settlement systems. The Bank has, however, a clear interest in the quality of the main interbank payment systems arising from its various responsibilities as a central bank with banking supervisory powers. First, the discharge of its responsibilities for the implementation of monetary policy, and for the stability of markets in the United Kingdom, presupposes reliable and efficient clearing and settlement procedures. Second, the Bank has a direct operational interest in the main clearings in its capacity as banker to the settlement banks, as well as being a member of APACS and the clearing companies. Third, the nature and extent of risks incurred by participants in payment and settlement systems, arising from their own and their customers' transactions, are of interest to the Bank in its capacity as a banking supervisor.

<sup>2</sup> *Building societies are mutually owned credit institutions which were set up to provide savings accounts and mortgages for house purchases.*

Responsibility for the supervision of banks authorised under the Banking Act 1987 is vested in the Bank of England. A majority of the settlement members of the APACS clearings are authorised institutions and they account for a very large proportion of the flows through these systems. In addition, banks incorporated and authorised in other EEA Member States are entitled to carry out activities listed in the Second Banking Coordination Directive in the United Kingdom and are not required to be authorised under the Banking Act. Such banks are supervised by their home state supervisory authority and the Bank of England retains only a limited role as a host supervisor. The Banking Act requires an institution to have prior authorisation before carrying on a deposit-taking business in the United Kingdom. Certain institutions, the activities of which are regulated by other legislation, such as building societies supervised by the Building Societies Commission (under the Building Societies Act 1986), are exempted from the provisions of the 1987 Act.

In its capacity as a banking supervisor, the Bank does not impose any explicit liquidity requirements on intraday exposures. Banks are, however, required to maintain adequate liquidity at all times and are subject to monitoring of their mismatch positions and of their available stocks of liquid assets.

The only payment medium in respect of which the Bank has a statutory role is the currency. Under the Bank Charter Act 1844 the Bank possesses the sole right of note issue in England and Wales. This Act also has the effect of separating, solely for accounting purposes, the note-issuing function of the Bank from its other activities, by dividing the Bank into two departments: the Issue Department and the Banking Department. The accounts of the Issue Department relate to the production, issue and payment of banknotes and to the portfolio of securities which is the asset counterpart to these note liabilities. Under

the terms of the 1844 Act, the Banking Department embraces all other banking activities undertaken by the Bank.

### *The establishment of common rules*

The rules governing the operations of each of the United Kingdom's main interbank clearing systems, other than the payment arrangements associated with the CGO and the CMO, are laid down by their members through the relevant clearing company and APACS (see Section 1.4.1). The Bank of England is a member of APACS and of the individual clearing companies as of right, as well as by virtue of the business it conducts, and is entitled to appoint a director to the boards of each of the clearing companies and to participate in all APACS's policy-making committees. While the legal powers the Bank enjoys from this representation are no greater than those of other members, it is recognised as having a special interest in questions relating to public policy and issues arising from the final settlement of interbank obligations across the accounts it maintains.

Explicit and published criteria are laid down by APACS for admission to settlement membership of each clearing which operates within this framework (see Section 1.4.1). APACS also plays a leading role in setting message standards for payments; the Bank is involved with this work through its membership of various committees.

The operations of the CGO, CMO and ESO are subject to rules embodied in standard contractual agreements between the Bank as operator of these services, the members respectively of the CGO, CMO and ESO and the relevant settlement banks (see Sections 4.3 to 4.5).

*Supervision and audit*

As noted above, there is no statutory framework for the supervision or regulation of UK payment systems either by the Bank of England or by any other public body.

As a member of APACS, the Bank has participated in audits of the central functions of CHAPS and has also been represented on the audit committee of BACS Ltd. The operations of the CGO were subject to oversight by its Joint Management Committee, which consisted of senior representatives of the Bank and the London Stock Exchange until September 1994. Subsequently, the Bank has been solely responsible for the operation of this service. The CGO, CMO and ESO are subject to regular audit.

*Banking activities*

The Bank of England's banking business is closely related to the work undertaken on behalf of government customers and the note issue. The Bank is not in the business of commercial risk lending.

Government departments are not, in general, obliged to hold their accounts with the Bank of England. A number of major departments, however, do so in order to facilitate the efficient operation of central government banking operations. The Bank also acts as the clearing agent for the large number of government payable orders<sup>3</sup> issued through the Paymaster (a government department with close links to HM Treasury), the Inland Revenue, the Board of Customs and Excise and National Savings.

The Bank also provides a wide range of other banking services, including accounts and foreign currency payments, to a number of public sector bodies, UK and international financial institutions (such as building societies and other central banks) and also to its own staff. It also holds the settlement accounts of all the members of APACS but there is no

general requirement for other banks to hold operational accounts with the Bank.

**1.3.2 Provision of settlement facilities***Use of central bank accounts for payment purposes*

Members of each of the APACS clearings must have a settlement account at the Bank of England in order to participate in the clearing process. This is also a requirement for CGO and CMO settlement banks. Banks wishing to become members of these clearing arrangements must apply formally to the Bank for a settlement account; such facilities are not available as of right to any bank or building society operating in the United Kingdom. The Bank does not pay interest on balances held on these accounts. A positive balance must be maintained on all settlement accounts provided by the Bank and a penalty is applied where banks incur an overdraft. Institutions which belong to more than one clearing maintain a single account through which their clearing obligations are settled. The Bank also provides accounts to facilitate certain settlement arrangements external to the APACS clearings, such as those relating to the settlement of obligations arising from banks and building societies participating in ATM-sharing agreements.

The basis on which the main settlement accounts held at the Bank of England operate will change during 1996. Previously, all items posted to these accounts were settled in batch format at the end of the business day. It is planned, however, that during the second quarter of 1996, the settlement accounts belonging to members of the APACS clearings will begin to operate on the basis of real-time postings. This will mean that each credit

<sup>3</sup> These instruments are orders informing the payee that the public sector body issuing the order will pay the sum shown on its presentation through a bank or building society; they are therefore similar to cheques.

and debit applied to a settlement account will be final and irrevocable from the time it is posted.

Under this new arrangement, all CHAPS payments will be settled individually in real time across the settlement accounts of the CHAPS banks at the Bank of England. To facilitate this, the CHAPS system will be linked directly to the Bank of England's internal accounting system. While the bulk of individual postings to the real-time settlement accounts of the CHAPS banks will take the form of CHAPS transfers, a variety of other entries to these accounts will continue to be posted by the Bank. Interbank obligations in respect of the other APACS clearings, for example, will also be settled through entries to the settlement accounts of the relevant clearing members, but, in contrast to CHAPS transfers, these items will continue to be posted on a multilateral net basis (see Section 3.2 for a description of CHAPS under RTGS).

### *Provision of credit facilities*

The Bank of England has never given any explicit or implicit undertaking to underwrite the settlement operations of the UK clearings. Banks and building societies holding settlement accounts are expected to keep them in credit. Once real-time gross settlement (RTGS) is operational, the Bank of England will, however, provide intraday funds to the members of CHAPS through a same-day sale and repurchase (repo) facility of selected eligible assets (see Section 3.2). The provision of daylight funds to these banks through repos is regarded as necessary for the efficient operation of the CHAPS system, and for the management of settlement accounts generally, as the funds the clearing banks typically hold on their settlement accounts on an overnight basis only represent a very small proportion of the total values that pass through CHAPS and the other clearings each day. These banks will still be required to maintain a positive balance on their settlement accounts both

during and at the end of the day. At the end of the day, banks which sold assets to the Bank earlier the same day will unwind their positions by repurchasing equivalent assets of the same value.

Banks in the United Kingdom are not subject to reserve requirements for monetary policy purposes. They are obliged to hold cash ratio deposits (CRDs) with the Bank of England but these are a means of financing the Bank's operations. CRDs are non-interest-bearing deposits which are calculated as a percentage (currently 0.35%) of each bank's eligible liabilities. The amounts are adjusted twice a year. Prior to the introduction of RTGS, these sums have not been available for use in the settlement process; once the new settlement arrangements are in place, the CHAPS banks will be allowed to draw on these deposits during the day but will be required to reinstate them by the time the RTGS system closes.

### *Pricing policies*

The Bank's charging policy in respect of its general banking operations is based on the principle of fully recovering the costs of the banking services it provides.

### **1.3.3 Monetary policy**

The Bank of England conducts open market operations in the sterling money market as the primary tool of monetary policy. In its gilt repo facility, the Bank provides liquidity twice a month through the purchase and resale of UK government securities. This facility is offered to all banks in the United Kingdom, to building societies and to market makers in government stock. The Bank's daily operations take the form of dealing in eligible bills (i.e. Treasury bills, certain bills issued by UK local authorities and bank bills accepted by banks whose acceptances are eligible for discount at the Bank) with a list of counterparties, currently consisting of seven discount houses,

which are authorised as banks under the Banking Act 1987. Institutions admitted to this list undertake to offer continuously, against security, deposit facilities at call to banks which are members of CHAPS, to make a continuous market with these counterparties in sterling money market instruments, especially eligible bills, and to participate actively in the Bank's money market operations. The Bank's dealing counterparties in its daily operations have secured borrowing facilities at the Bank, of a size related to their capital.

When there is a shortage in the market, the Bank's daily operations take the form of invitations at specified times of the day to its dealing counterparties to offer eligible bills either for outright sale or for sale and subsequent repurchase. The latest time at which the Bank may invite offers is 2 p.m. If, after this round of operations, a dealing counterparty finds itself short of funds, it may ask at 2.45 p.m. to make use of its borrowing facilities. It is also possible for a dealing counterparty to make a request to borrow later in the day, but such lending is at the Bank's discretion and usually carries progressively higher rates of interest. If an insignificant shortage or surplus is forecast, the Bank need not invite business. If a significant surplus is forecast, the Bank will invite bids for Treasury bills at 2 p.m.; unless a very large surplus is forecast, the Bank will not usually invite bids before 2 p.m.

#### ***1.3.4 Main projects and policies being implemented***

The Bank of England has been working within a formal project framework with APACS and the CHAPS Clearing Company Ltd since 1993 to develop a real-time gross settlement system. A key component of this project is the creation of a real-time link between the CHAPS system and a new accounting system at the Bank of England for managing the settlement accounts of APACS members (see Section 3.2). The project has

required close co-operation between the interested parties to ensure that all interface issues are adequately addressed and to ensure that systems intended to support the operation of RTGS meet user requirements. While it is expected that the basis of settlement in CHAPS will become real-time settlement in April 1996, the technical components of RTGS have been developed well ahead of this date to allow for a reasonable period of testing.

Once RTGS is in place, it will create an opportunity to provide new enhanced settlement services in other areas. One such opportunity will be the provision of true delivery versus payment facilities for the settlement of various securities (see Section 4).

### **1.4 The role of other private and public sector bodies**

#### ***1.4.1 APACS***

APACS (the Association for Payment Clearing Services) and three clearing companies operating under the umbrella of APACS are responsible for the provision of the main interbank payment clearing mechanisms in the United Kingdom, and for overseeing developments in these systems. This means running clearings for cheques and paper credits as well as for bulk electronic debits and credits (BACS) together with the main system for handling large-value automated transfers (CHAPS).

APACS was established in 1985 following a review of the organisation, membership and control of the UK clearing systems by the Child Committee, set up in 1984 by the banks then participating in the Bankers' Clearing House. The results of the review were set out in the "Payment Clearing Systems" report published in December 1984 (the Child Report). The report's two main recommendations advocated a new structure for the organisation of payment clearing

systems and new rules regarding membership of such systems.

Following this report, three separate companies were set up beneath the APACS “umbrella” to own and manage the clearings. The shareholders of these companies were the settlement members of the relevant clearings. By separating the clearings into three distinct companies, it became possible for an institution to be a member of one without having to be a member of another. Membership of a clearing company carries with it membership of APACS and of its ruling body, the APACS Council. There are currently twenty-one members of APACS.

The Cheque and Credit Clearing Company Ltd is responsible for the bulk paper clearing of cheques and credits in England and Wales; the paper clearings in Scotland and Northern Ireland were not included in the APACS structure. It has twelve members: eleven banks and one building society (see Section 3.4).

CHAPS Clearing Company Ltd is responsible for the large-value, electronic same-day settlement clearing. It has sixteen members, all of which are banks (see Section 3.2).

BACS Ltd (known as Bankers’ Automated Clearing Services Ltd until 1986) is an automated clearing house, which provides an electronic bulk clearing for direct debits, standing orders and other non-urgent, automated credit transfers. It has seventeen members: fifteen banks and two building societies (see Section 3.3).

These clearings are subject to rules set by members through the clearing companies and APACS. Any institution applying for membership of these systems must be appropriately supervised. This has been

interpreted as meaning a bank supervised under the Banking Act 1987, a building society supervised under the Building Societies Act 1986, or an EEA credit institution authorised by a competent home state authority and permitted by it to provide money transmission services under the EU’s Second Banking Coordination Directive. An applicant must agree to pay an entry fee and a share of the relevant system’s operating costs. It must also meet the technical and operational requirements of the clearing. Minimum volume criteria are also set; in the case of CHAPS and the Cheque and Credit Clearings, for example, an applicant is required to meet a minimum volume criterion of 0.5% of the total number of items handled in the clearing.<sup>4</sup> The applicant must also obtain the explicit agreement of the Bank of England to provide settlement account facilities for the purpose of settling obligations that arise in these clearings.

Recent advances in technology have allowed banks and other financial institutions further outlets for providing other payment system services within an increasingly competitive, if still essentially co-operative, environment. Debit card schemes operate independently of APACS and there are also separate arrangements in respect of credit cards (see Sections 1.2 and 2.2). In addition, various ATM-sharing networks have been established outside the APACS umbrella. Nonetheless, APACS remains the main body responsible for the organisation and control of the payment clearing systems in the United Kingdom.

#### **1.4.2 Bank and building society ombudsmen**

Ombudsmen (i.e. officials employed to investigate public complaints) for both banks and building societies have been appointed in the United Kingdom. The Banking Ombudsman is able to deal with complaints which have arisen since January 1986, while the Building Society Ombudsman’s remit extends back to July 1987. Membership of

<sup>4</sup> *Alternatively, an applicant may demonstrate that it will be able to achieve the required volume of business within twelve months of going live.*

the Banking Ombudsman scheme is voluntary, whereas membership of the Building Society Ombudsman scheme is compulsory. Both ombudsmen deal with unresolved complaints from private customers concerning the provision of financial services, including money transmission services; in addition, since January 1993, the Banking Ombudsman has dealt with complaints from small businesses. Complaints are resolved either by agreement or by the ombudsmen making recommendations or awards.

The Banking Ombudsman is able to impose binding awards of up to £100,000 on participating banks. The Building Society Ombudsman's awards are not binding, and building societies have the option of publishing reasons for not complying with their Ombudsman's awards.

### 1.4.3 Code of Banking Practice

A committee to review banking services law (the Jack Committee) was appointed in 1987 by the Treasury in association with the Bank of England. Its 1989 report on "Banking Services: Law and Practice" recommended that banks and building societies in the United Kingdom should draw up a Code of Banking Practice, which would set out standards of good banking practice to be observed in dealings with personal customers in the United Kingdom. The Code was brought into force in March 1992 and a second edition was published in March 1994. The vast majority of banks and building societies providing a retail service have agreed to adopt the provisions of the Code. The Code is concerned with a wide range of banking activities but includes references to certain payment system services, including electronic funds transfers.

## 2. Payment media used by non-banks<sup>5</sup>

### 2.1 Cash payments

The Bank of England has the sole right to issue banknotes in England and Wales, under the Bank Charter Act 1844. The Bank currently prints and issues notes in four denominations - £5, £10, £20 and £50 - and these notes circulate freely throughout the United Kingdom. Three banks in Scotland and four banks in Northern Ireland retain the right to issue their own sterling notes, but, apart from a very small fiduciary issue, these must be fully covered by holdings of Bank of England notes, or of approved coin.<sup>6</sup> New notes are drawn by commercial banks from the Bank of England for distribution through their own cash centres. Surplus notes can be removed from circulation either by returning them to the Bank or by holding them to the

order of the Bank at specified cash centres prior to reissue.

The Royal Mint (a government agency) is responsible for the production and issue of coin throughout the United Kingdom. Coins are currently in general issue in seven denominations: 1 penny, 2, 5, 10, 20 and

<sup>5</sup> The statistics used in this section and Section 3, other than those for notes and coin, are largely derived from APACS publications.

<sup>6</sup> Bank of England notes may be regarded as legal tender in England and Wales and coins are legal tender throughout the United Kingdom subject to certain limits as specified in the Currency Act 1983. Notes issued by banks in Scotland and Northern Ireland are not legal tender.

50 pence and £1. The Royal Mint meets demand by delivering coin to bank cash centres against payment by the banks.

Discussions between the wholesalers of cash (the commercial banks and the Post Office) and the Bank of England and the Royal Mint are held under the auspices of APACS.

At end-1994, the value of notes and coin in circulation with the public totalled £18.8 billion (ECU 24.2 billion). In 1994, figures produced by APACS showed that personal sector cash payments over £1 accounted for 75% of all transactions by volume, down from 86% a decade earlier.

## 2.2 Non-cash payments

### 2.2.1 Credit transfers

The usage of paper-based credit transfers has tended to fall in recent years. The total volume of interbank paper credits cleared in the United Kingdom, for example, declined from 191 million items in 1990 to 173 million in 1994, while the values processed declined from £118 billion (ECU 152 billion) to £101 billion (ECU 130 billion). Paper-based credits are often used for making consumer payments to large organisations, such as public utilities and mail-order companies, but they can also be used for payments to individuals.

The great majority of interbank electronic credits (including standing orders) are processed by BACS Ltd, although these are mainly small and medium-value items (see Section 3.3). Standing orders are used largely by individuals for the payment of regular fixed sums. There has been a decline in the total volume of such orders processed by BACS since 1990 as companies and other institutions have encouraged customers to make greater use of direct debits; the number of items processed fell from 242 million in 1990 to 223 million in 1994. In contrast there has been a general rise in the number

(and value) of credits other than standing orders handled by BACS, which rose from 514 million items in 1990 to 686 million in 1994. In the past, such credits tended to be used mainly for the disbursement of regular bulk payments such as salaries and wages; increasingly, however, they are being used for other transactions, such as corporations' purchase ledger payments.

CHAPS is the main vehicle for transferring high-value automated credits which need to be settled on a same-day basis (see Section 3.2). A general rise in the number of transfers and values processed by this system has continued in recent years; average daily traffic rose from 31,000 items, valued at £74 billion (ECU 95 billion), in 1990 to 46,000 items, valued at £99 billion (ECU 128 billion), in 1994.

### 2.2.2 Cheques

As with paper-based bank giro credits, the volume of payments cleared by means of cheques has fallen both in absolute and in relative terms since 1990. The number of interbank items processed in the United Kingdom fell from 2,517 million cheques in 1990 to 2,278 million in 1994. Cheques nevertheless still accounted for almost 40% (by volume) of non-cash payments in 1994 and the values processed annually between 1990 and 1994 were fairly steady, remaining at about £1,200 billion (ECU 1,545 billion) over this period.

Payment by cheque to retailers is generally acceptable at the point of sale only if the drawer presents a cheque guarantee card issued by the institution on which the cheque is drawn. At the end of 1994, almost 44 million cards with a domestic cheque guarantee function had been issued in the United Kingdom by sixty-four institutions co-operating in the Cheque Guarantee Card Scheme. The standard maximum guarantee limit on these cards was £50 (ECU 64) until 1989, when two higher limits of £100

(ECU 129) and £250 (ECU 322) were introduced (the amount is printed on the card); individual institutions are free to decide whether and how to offer these higher limits to their customers. The same card may function as a cheque guarantee card, a debit card or an ATM card. To guarantee the encashment of cheques in continental Europe and some other countries, banks also issue eurocheques and eurocheque guarantee cards to their customers under the Uniform Eurocheque Scheme.

Many building societies now offer chequebook facilities to their customers, combining interest-bearing transaction accounts with automatic transfer facilities and additional features including direct debits, standing orders, ATM and EFTPOS access and automatic overdrafts.

Town cheques, which had previously been used within the City of London to settle large-value same-day transactions, ceased to be available as a separate payment type in February 1995 (see Section 3.1).

### 2.2.3 Direct debits

Direct debits allow recipients of large numbers of payments, such as insurance companies and service utilities, to collect these payments automatically from bank or building society accounts after the account holder has signed a mandate authorising the bank or building society to pay specified direct debits for either a regular fixed sum or a variable amount. Interbank transfers originating from the direct debit process are cleared through BACS (see Section 3.3).

The use of direct debits grew rapidly in the late 1980s, with the increase in the number of items processed by BACS amounting to almost 20% per annum. The annual growth in volumes has slowed since 1990 but has still averaged about 8%. In 1994, direct debits accounted for 1,148 million items worth £284 billion (ECU 366 billion), up

from 846 million items with a total value of £250 billion (ECU 322 billion) in 1990. In order to have greater control over their receipts and to reduce administrative costs, many companies are encouraging their customers to switch from standing orders to direct debits.

### 2.2.4 Payment cards

There has been major growth in EFTPOS in the United Kingdom in recent years. After the termination of the EftPos UK Ltd pilot scheme in early 1990, a number of competitive ventures expanded rapidly. At the end of 1994, there were around 350,000 EFTPOS terminals in the United Kingdom, which accepted, variously, credit cards, debit cards and travel and entertainment cards, and further growth is expected.

#### *Debit cards*

Separate debit card products were first introduced in the late 1980s and a number of UK banks and building societies now provide their customers with debit card facilities. UK debit cards enable cardholders to make payments which are usually debited to their current accounts one or two days after the transaction has taken place.

In the United Kingdom there are three debit card schemes. The SWITCH electronic debit card was launched in October 1988, and enables cardholders to effect payments through EFTPOS terminals located in retail outlets such as petrol stations, supermarkets and high street stores. By the end of 1994, 13.8 million SWITCH cards had been issued by UK banks and building societies, up from 11.4 million in 1990. In addition, VISA Delta was launched in February 1991, though UK-issued VISA debit cards had existed under different brand names since late 1987. VISA Delta debit cards can be used at most EFTPOS terminals in the United Kingdom, as well as in conjunction with paper vouchers.

At the end of 1994, there were 12.2 million VISA debit cards in circulation, up from 7.5 million in 1990. MasterCard edc/Maestro debit cards were introduced into the United Kingdom in 1993; so far these cards have been primarily targeted at UK residents wishing to make payments overseas.

A number of retailers offer "cash back" facilities operated through the electronic point-of-sale systems in their stores. These facilities enable debit cardholders to obtain cash as well as goods. It is estimated that there were 75 million cash back transactions in 1994.

The total volume of debit card transactions has risen markedly in recent years and reached 808 million payments in 1994, up from 192 million in 1990. The number of debit card transactions now matches credit card usage and exceeds the number of guaranteed cheques drawn at the point of sale. The average size of debit card transactions (£28 or ECU 36 in 1994) tends, however, to be lower than those where payment is effected by credit cards.

*Credit cards, travel and entertainment cards*

Credit cards issued by banks and building societies generally have a credit facility with a preset limit ranging from £200 (ECU 258) upwards. A customer's credit card account is separate from his/her bank account, which may well be with another bank or building society, and cardholders receive a statement of the outstanding balance on their credit card account on a monthly basis. Cardholders may either pay off the full amount of the balance, or they may choose to pay a portion (usually a minimum of 3-5%) of the total amount outstanding. When the full balance is not settled each month, interest is generally charged on the outstanding balance from the date the transaction appears on the cardholder's statement. From February 1990, a number of banks also started to charge their credit cardholding customers a flat rate annual fee.

Until 1988, individual banks issued either VISA or MasterCard credit cards. In that year, four banks (Barclays, Lloyds, Midland and National Westminster) took up direct membership of both VISA and MasterCard, sometimes offering customers a choice of different terms for repayment.

Following a report in 1989 by the Monopolies and Mergers Commission on credit card schemes, retailers were permitted, from early 1991, to charge differential prices according to the customer's method of payment; differential pricing has not, however, been widely adopted.

By the end of 1994, there were some 26 million credit cards in issue. During that year there were almost 800 million credit card transactions, valued at £37 billion (giving an average transaction value of £46 or ECU 59). There were also 1.4 million travel and entertainment cards in issue to UK residents at the end of 1994; 1.1 million were issued by American Express and 0.3 million by Diners Club.

*Retailer cards*

Many retailers issue their own "in-store" cards. These typically only serve one store group and many operate on the basis of a monthly subscription and a revolving credit facility which is a significant multiple of this amount. Other retailer cards operate in the same way as travel and entertainment cards or bank credit cards.

*Prepaid cards*

The majority of prepaid cards that exist in the United Kingdom are single-purpose cards, for example phonecards. The use of multi-purpose prepaid cards (i.e. those that can be used to purchase a range of goods and services) is limited, at present. One of the main developments in the area of multi-purpose cards is the Mondex project. Mondex

is an electronic purse scheme being developed by the National Westminster and Midland banks in association with British Telecommunications plc, which is intended to provide a replacement medium for notes and coin and small to medium-value cheque and card transactions. Mondex introduced a pilot scheme for its prepaid card in Swindon, in the west of England, in July 1995. Cardholders will be able to load (and re-load) their card with value against notes and coin, or with money from their bank accounts. Value loaded onto the card can be spent at any retail outlet with the necessary card-reading equipment. Value is transferred from the cardholder's to the retailer's card, and the latter accumulates the total value of all transactions made with Mondex cards (see also Chapter 16).

#### *Automated teller machines*

At the end of 1994, over 19,000 ATMs were in service in the United Kingdom. Almost all of these belong to three reciprocal agreements (LINK, MINT and FOUR BANKS) which allow customers of participating banks and building societies access to their accounts through the ATMs of any member institution. During 1994, there were over 1.1 billion ATM withdrawals, totalling about £54 billion (ECU 70 billion). Withdrawals from ATMs can be made using debit cards, credit cards or ATM cards. Customers are not generally charged for ATM withdrawals from their accounts, although charges are levied on individuals who use a credit card to obtain a cash advance through an ATM.

In addition to cash withdrawals, some ATMs enable their users to order new chequebooks or statements and make balance inquiries and

deposits. More advanced ATMs allow customers to make bill payments, funds transfers, standing order inquiries and order eurocheques and mini statements.

The large majority of ATMs are located within banking halls or in the external fabric of banks' and building societies' branches. There is, however, a trend towards the remote siting of ATMs in locations such as motorway service areas, railway stations and supermarkets.

#### **2.2.5 Postal instruments**

Cashless payments can also be made through the Post Office. Small-value payments can be made using postal orders, which are particularly convenient for those who do not have a bank account. Use of postal orders has been declining in recent years, and in 1994 just under 40 million were issued.

### **2.3 Recent developments**

Home banking systems, allowing bank customers to examine the details of their accounts from their homes/offices, have been available for some time. Existing schemes rely on telephone calls or a direct computer link and proprietary software. There have recently been moves by some banks to explore the possibility of providing some services via the Internet. So far, the "pages" which they provide are generally for advertising and public information only. Privileged information such as bank statements is not typically transferred by this medium, although this development is being explored.

### 3. Interbank exchange and settlement systems

#### 3.1 General overview

This section provides a detailed description of the main interbank payment networks operating within the APACS framework: CHAPS, BACS and the Cheque and Credit Clearings (see Sections 1.4.1, 3.2, 3.3 and 3.4).

CHAPS started operating in 1984 as a nationwide, electronic interbank system for sending irrevocable, guaranteed and unconditional sterling credit transfers from one settlement member to another for same-day value. The system experienced a steady increase in traffic during the second half of the 1980s, which was stimulated by a switch in payments away from the Town Clearing<sup>7</sup> and by the growth in wholesale financial markets. By 1988, CHAPS had overtaken the Town Clearing as the main mechanism for transferring large-value sterling payments in the United Kingdom. The relative importance of CHAPS was further reinforced in the early 1990s by a reduction in its minimum value threshold from £5,000 to £1,000 in January 1992, the removal of any value constraint in January 1993 and by banks actively encouraging a migration of Town Clearing traffic to CHAPS ahead of the implementation of RTGS. In contrast, the minimum value floor for Town Clearing items was raised from £100,000 to £500,000 in July 1991. The Town Clearing nevertheless continued to play a significant role in assisting banks and other money market institutions to manage their end-of-day positions until its closure in February 1995. Subsequently,

CHAPS has handled nearly all large-value same-day sterling payments between banks other than those which are specifically related to the settlement of purchases of UK government securities or money market instruments.

The average value of payments passing through the CHAPS system was close to £120 billion (ECU 155 billion) per day by mid-1995; the network is therefore responsible in normal conditions for clearing values equivalent to UK GDP in less than six days. On a peak day, CHAPS has been responsible for processing transfers with a total value close to £175 billion (ECU 226 billion).

In addition to CHAPS, there are two large-value sterling payment systems of more limited application; these are the payment arrangements supporting the Central Gilts Office and the Central Moneymarkets Office (see Sections 4.3 and 4.4).

Three other major interbank payment systems deal with high volumes of relatively small-value payments, although they are able to accommodate non-urgent large-value transfers if required. The Cheque Clearing and the Credit Clearing systems handle paper debit items (i.e. cheques) and credit items (i.e. bank giro transfers) respectively, and operate within rules set by the Cheque and Credit Clearing Company Ltd. BACS Ltd provides a batch clearing system for both electronic debit and credit transfers. All three clearings work on a three-day processing cycle, and are not suited for use by those wholesale financial markets (e.g. foreign exchange and money markets) which are geared to shorter settlement cycles. As a result, the average value of transactions in these clearings is much smaller than those processed through CHAPS and they are often referred to collectively as the retail clearings. The average value of individual

<sup>7</sup> *Until its closure in February 1995, the Town Clearing provided a mechanism for the same-day clearing and settlement of large-value sterling paper debit instruments within the limited geographical area of the City of London. The Town Clearing was the successor of clearing arrangements which had been in existence in the City of London for over 200 years.*

payments passing through these clearings in 1994 ranged from £457 (ECU 589) for BACS to £585 (ECU 754) for the Credit Clearing. This contrasts with an average value for CHAPS items of about £2.2 million (ECU 2.8 million) in 1994. The average daily values processed by the Cheque and Credit Clearings (combined) and BACS in 1994 were £4.6 billion (ECU 5.9 billion) and £3.7 billion (ECU 4.8 billion) respectively.

To facilitate the operational side of making payments, a nationwide system of unique codes is employed to identify clearing members and, at each clearing member's discretion, their branches and major customers. These sort codes are printed, together with a code identifying the customer's account, on such instruments as cheques and giro credits in machine-readable form.

## 3.2 CHAPS

The settlement process for CHAPS transactions will change during the second quarter of 1996, when RTGS is introduced. Prior to this, the CHAPS rules have required sending banks to give irrevocable undertakings to settle once their CHAPS payment messages had been received and automatically acknowledged by the relevant recipient bank, with the settlement of the resultant interbank obligations taking place across accounts at the Bank of England on a multilateral net basis at the end of the day. It is planned that the creation of an interface between the CHAPS network and the Bank's new real-time settlement system will allow settlement on a transaction-by-transaction basis from the second quarter of 1996.

### 3.2.1 Functioning rules

The CHAPS Clearing Company Ltd sets operational rules for the CHAPS Clearing and is responsible for the development of the network. The settlement members (or settlement banks) of CHAPS are involved in

setting these rules through their membership of the Board of the CHAPS Clearing Company and its committees.

### 3.2.2 Participants in the system

There are sixteen banks, including the Bank of England, which are direct members of the CHAPS Clearing. These institutions are responsible for settling all transfers, and consequently all interbank obligations which arise through this system. There are also around 400 institutions with CHAPS participant status, which by virtue of agency agreements with settlement members can have CHAPS payments addressed directly to themselves through their agency account. They can also, subject to intraday limits imposed by their settlement members, initiate outgoing CHAPS payments, either by a direct terminal link to their settlement bank's payment system, or by a request to a branch of the bank to make the payment, or by using S.W.I.F.T. to pass payment instructions to a CHAPS settlement bank. Their settlement members are responsible for these activities and settle on their behalf. In addition, a large number of major corporate customers can, by virtue of account arrangements with one of the settlement members, or with a participant, be advised online of the receipt of CHAPS payments for their account and can initiate outgoing CHAPS payments.

### 3.2.3 Types of transactions handled

There is no restriction on the type (or value) of transaction handled provided it is an unconditional sterling payment. A significant proportion of CHAPS payments, by value, originate in the foreign exchange market and other wholesale markets due to their requirement for a prompt settlement service. It is, however, used to facilitate same-day transfers arising from a range of other activities (e.g. general commercial transactions and the purchase of domestic property) and some transfers can be quite small.

### **3.2.4 Operation of the transfer system and the transaction processing environment**

The CHAPS system was established as a distributed network in which electronic payment messages were passed directly from the sending settlement member to the receiving settlement member without being routed via a central processing unit or clearing house. All incoming and outgoing transfers for a particular member pass through its gateway, the special-purpose software which acts as the interface between each member's internal payment system and the CHAPS network. All payment messages passing through the system are subject to authentication and encryption procedures. Messages are transferred between members of the system across British Telecommunications' PSS Network.

The CHAPS system currently opens for normal service at 8.30 a.m. CHAPS banks can initiate transfers on behalf of themselves and their customers until 3.10 p.m.; most settlement members will, however, negotiate cut-off points with their customers so that any requests to make CHAPS transfers received after a set deadline will be handled on a "best efforts" basis. From 3.10 p.m. to 3.45 p.m., settlement members can make transfers on their own behalf or on behalf of other credit institutions and certain money market participants for the purpose of settling their end-of-day positions; they cannot process normal customer payments during this period.

To allow CHAPS payments to be settled in real-time, the arrangements for routing messages across the CHAPS network have required modification. Under the new system, each CHAPS payment will be settled at the Bank of England before details are sent to the receiving bank. The gateway software will be altered so that for each payment instruction generated by a sending bank, a settlement request (a subset of the information contained in the main message) will first be sent to the Bank, while the main

message is retained in the sending bank's gateway. Only if the sending bank has sufficient funds on its account will the Bank settle the transaction by debiting the account and crediting the receiving bank. It will then return a confirmation message to the sending bank. As soon as this confirmation is received, the main message containing the full payment details will be released automatically to the receiving bank, which will have the assurance that it has received final and irrevocable funds on its account at the central bank.

As a rule in RTGS, banks will only forward settlement requests to the Bank of England when they have sufficient funds on their settlement account to allow the transaction to be processed immediately. The CHAPS banks will therefore need to schedule their payment streams within their own systems during the business day. The form of queue management adopted will be a matter for each settlement member to decide. Additional facilities, however, have been developed to assist them in meeting this requirement. Each CHAPS bank, for example, will be able to obtain details of its account balance, a summary of its CHAPS payments settled and a listing of various non-CHAPS items it has paid or received by making use of an Enquiry Link terminal connected to the Bank's RTGS accounting system. A circles processing (or optimisation) facility will also be provided by the Bank as a form of contingency. This will allow queued payments held at two or more banks to be forwarded to the central RTGS accounting system at the Bank and settled together (although still in gross form); it will be useful in addressing situations where there may be insufficient liquidity to allow each payment in a given set to settle sequentially but where the available funds would permit these to be settled collectively. While this facility will assist in preventing blockages from arising, it is not envisaged that it will be used routinely during the course of each day given that the CHAPS banks will have access to additional intraday liquidity to ensure all payments can be made (see Section 3.2.8).

There are no provisions in the CHAPS rules for revocability, but where a payment has been made in error, the receiving settlement member is required to send an offsetting transfer back to the original sender by no later than 12 noon the next day. Such arrangements have held while CHAPS has operated on a net basis and this approach will continue once RTGS is in place. The only modification to the previous arrangements will be the addition of a facility, within the central systems at the Bank which support RTGS, to allow settlement requests which have been forwarded in error (but which have not yet settled) to be cancelled; these cancellation procedures will be undertaken by the Bank of England at the request of the sending bank.

To guard against contingency situations, the Bank of England's real-time accounting system will be duplicated at a remote standby site. All entries to accounts held at the main site will be copied to this second location, and the standby site will be able to take over the functions of the main site if its ability to operate is impaired. As a final resort, the CHAPS system will retain the ability to revert back to being a net end-of-day system in the unlikely event that both the primary and secondary sites are rendered inoperable.

The existing link used to route CHAPS messages between banks has proved to be a highly robust connection and appropriate elements of contingency have been built into this delivery mechanism.

Each settlement member has its own contingency arrangements to address the possibility of an internal systems failure during the day. These may take a variety of forms and are the responsibility of the settlement member.

### 3.2.5 Settlement procedures

Since the system's inauguration, the CHAPS rules have required that each payment which has been sent and acknowledged by the receiving bank should be irrevocable and unconditional. In addition, it has been a requirement that each transfer delivered is guaranteed by both the sending and the receiving bank. This has meant that once a CHAPS settlement member has put its name to a message, by allowing it to pass through its gateway, that institution is committed to the transfer, even if at the end of the day the originating customer does not have a sufficient balance available to fund that payment. During the period in which CHAPS has settled on a net basis, the system has automatically calculated multilateral net figures in respect of each settlement member's obligations and entitlements and has sent these to the Bank of England for settlement at the end of the CHAPS day. These figures were subsequently posted to the settlement accounts of the relevant banks along with various other banking transactions later the same day. Under RTGS, interbank settlement, as well as the transfer of payment messages between banks, will occur in real time; moreover, the CHAPS system will only permit a transfer to be passed to a receiving settlement member if it has already been irrevocably settled across accounts maintained at the Bank of England.

In CHAPS, the receiving settlement bank is obliged to give the ultimate beneficiary, whether a participant or other customer, value by the end of that day. The operational procedures of the system do not make it possible to ensure that a payment will reach the receiving settlement bank, or its customer, by a specified time within the working day. A settlement bank receiving a CHAPS payment during the day for the credit of a customer will usually give that customer good value at that point, and will be prepared to make an outward CHAPS payment for the customer on the strength of that intraday receipt. This has been common practice while CHAPS

has been based on net settlement but it has, however, meant that the receiving bank is exposed to the sending bank for the period between a customer being credited and final interbank settlement occurring. RTGS will eliminate this type of exposure.

### **3.2.6 Credit and liquidity risks and their management**

The settlement of CHAPS obligations on a net basis at the end of the day, together with the tendency to offer customers intraday value, meant that settlement banks explicitly accepted daylight exposures to each other. A growing perception of the exposures generated by such practices - along with an increase in CHAPS flows - resulted in a decision by the CHAPS banks to introduce a system of limits to control interbank risk until such time as RTGS was operational. Net bilateral receiver limits (NBRLs) were introduced in stages from the first half of 1992. NBRLs allowed each member of CHAPS for the first time to limit the extent to which the value of incoming CHAPS instructions from any other member could exceed the value of its own outward instructions to that bank. In this way, it was able to control the net inflow of funds from any single source for which it was obliged to give same-day value to its customers. Following an introductory period, the NBRLs that each bank set on its counterparties were placed fully under its own control and could be altered at any time during the CHAPS day. To reinforce the discipline imposed by bilateral limits and to gain experience of the payment scheduling procedures required ahead of RTGS, net sender limits (NSLs) were adopted in 1993. These limits have been used to restrict the extent to which the value of payments made by any one bank to all other members can exceed the value of incoming transfers to it. To allow for maximum flexibility, the CHAPS settlement members have set NSLs on a self-assessed basis and members have been able to raise these during the day. NBRLs and NSLs have

provided the CHAPS banks with valuable experience of operating in an environment in which intraday liquidity is constrained. This has allowed them to reduce very considerably the scale of interbank exposures arising in CHAPS in the period prior to RTGS implementation.

When RTGS becomes operational there will no longer be a requirement for banks to set either NBRLs or NSLs, given that interbank exposures will no longer arise as a result of participating in CHAPS. The ability of banks to process payments will only be constrained by the availability of funds on their settlement accounts. To allow for the smooth flow of payments through the CHAPS system when RTGS is operational, the Bank of England will provide the CHAPS banks with additional intraday funds. A CHAPS bank will be able to obtain daylight funds by selling eligible assets to the Bank under same-day sale and repurchase agreements (repos) (see Section 1.3.2). Most of the relevant assets will be held in book-entry form in the CGO, CMO and ESO services, which are operated by the Bank (see Section 4.3). The CHAPS banks, in addition, will be able to draw on their cash ratio deposits on an intraday basis once the RTGS system is operational but they will be required to reinstate these by the close of business each day (see Section 1.3.2).

The ability to obtain liquidity from the Bank through intraday repos will only be available to settlement members of the CHAPS system. These institutions will be able to sell assets to the Bank at any point during the business day. They will also be able to reverse existing repos at any time during the day, provided they have sufficient funds on their settlement accounts, and substitute new assets if they wish to do so. The Bank will not impose any interest charge or fee in respect of funds extended as part of normal RTGS repo operations. Shortly before the RTGS system closes at the end of each day, each bank must first reinstate its cash ratio deposits and thereafter repurchase all assets sold under RTGS repo agreements.

### 3.2.7 Pricing policies

The fee a settlement member charges its participants or customers in respect of a CHAPS transfer is a matter for commercial negotiation between the parties concerned. These charges may be on a per item basis or as part of a package negotiated by the bank with its customer.

Settlement banks which are members of the CHAPS system have to pay an entry fee to the CHAPS Clearing Company Ltd on joining the system and also an annual charge to CHAPS to cover their share of the system's operating costs (this charge is normally set in proportion to each bank's share of the total volumes processed through the system). Settlement members do not have to pay any per item fees for the use of the CHAPS system.

Once RTGS is operational, the Bank will charge a per item tariff in respect of each CHAPS transfer settled and an annual fee in respect of settlement accounts in order to cover the costs of running its real-time accounting system; the costs of the Enquiry Link will be recovered by an annual charge levied on each terminal connection.

## 3.3 BACS

BACS is an automated clearing house responsible for clearing bulk electronic transfers in both debit and credit form. The clearing is managed by BACS Ltd. The BACS service (which began operating in 1968 as the Inter-bank Computer Bureau) was established to provide a more efficient method of handling interbank transfers by means of magnetic tape rather than paper instruments. BACS processes the great majority of electronic interbank funds transfers in the United Kingdom.

### 3.3.1 Functioning rules

BACS Ltd sets operational rules for users and for the banks and building societies which act as settlement members of BACS. Settlement members are involved in setting these rules through their membership of the Board of BACS Ltd and its committees. BACS also operates under the umbrella of the APACS (see Section 1.4.1).

### 3.3.2 Participation in the system

The membership of BACS consists of fifteen banks, including the Bank of England, and two building societies. These institutions are shareholders of BACS and are responsible for settling all settlement obligations arising from the BACS clearing process. Settlement members of BACS are able to sponsor other organisations as users of the BACS service. There are in the region of 50,000 users and these include a wide range of commercial and public sector bodies. Users are allocated a BACS user number by their sponsor but are able to submit payment instructions directly to BACS. Settlement members must meet the membership criteria set by BACS Ltd and APACS (see Section 1.4.1).

### 3.3.3 Types of transactions handled

BACS processes direct debits and is also used for direct crediting of payments. A high proportion of the transfers handled tend to represent regular disbursements such as the payment of wages, salaries and pensions or the payment of utility bills, insurance premiums or subscriptions. Various types of payment can be accommodated and there is no general restriction on the purpose of the underlying transaction. Similarly, there are no restrictions on the size of transactions handled but most transfers are retail payments and average per item values tend to be small compared with CHAPS.

### 3.3.4 Transaction processing environment

Users can submit payment data to the BACS clearing house through various magnetic media or through BACSTEL, a telecommunications service which offers a direct connection to the BACS computer centre. BACS sets common standards in respect of the format in which payment information is supplied. Users may submit payment instructions to BACS from between two and seventy-one days ahead of the date for payment.

### 3.3.5 Operation of the system

Payments submitted to BACS are subject to a three-day clearing and settlement cycle. The deadline for receipt of payment information from users is 9.00 p.m. on day 1 of the cycle. These data are then sorted into bank order at BACS and transferred onto new tapes (shortly to be available through high-speed transmission links) for onward transmission to destination banks and building societies; a destination bank may be either a receiving bank or a paying bank depending on whether the transaction under consideration is a credit or a debit. This process should be complete by 6.00 a.m. the following day (i.e. day 2). The payer receives a report confirming each submission on day 2. On day 3, transfers are debited/credited to respective payer/payee accounts.

### 3.3.6 Settlement procedures

The interbank obligations which arise in BACS are settled at the Bank of England on a multilateral net basis on day 3 of the clearing cycle. The Bank will continue to post multilateral net amounts direct to settlement accounts once RTGS is operational, although

settlement is scheduled to occur in real time during the early part of the day rather than at the end of the day.

### 3.3.7 Credit and liquidity risks

Each settlement member is responsible for settling the payments generated by the users it sponsors. There is no system of limits or other controls within BACS itself to inhibit the numbers or value of payments for which a particular settlement member is responsible. The extent to which a user can initiate BACS transfers and its arrangements for funding the resultant outflow are a matter to be decided bilaterally with its settlement bank.

### 3.3.8 Pricing

BACS Ltd applies tariffs to the sponsoring banks of users in respect of both incoming and outgoing messages. The sponsoring banks negotiate independently with users and other customers the charges which they will incur as a result of generating BACS transfers or receiving credits through this medium.

## 3.4 Cheque and Credit Clearings<sup>8</sup>

### 3.4.1 Functioning rules

The Cheque and Credit Clearing Company Ltd, which operates under the umbrella of APACS, is responsible for the Cheque and Credit Clearings for England and Wales (see Section 1.4.1). While both payment systems are managed by the same body and have the same set of settlement members, these are distinct clearings subject to their own rules. Scotland and Northern Ireland have their own local paper clearing arrangements, with their own rules and membership criteria which fall outside the APACS structure.

The usage and clearing of cheques in the United Kingdom is somewhat different from other forms of payment instrument insofar

<sup>8</sup> This section refers primarily to the cheque and credit clearing arrangements operated by the Cheque and Credit Clearing Company Ltd.

as it is governed to a degree by statute; the key legislation in this area consists of the Bills of Exchange Act 1882 and the Cheques Acts, 1957 and 1992.

### **3.4.2 Participation in the system**

The Cheque and Credit Clearing Company Ltd has twelve direct settlement members<sup>9</sup> which settle all interbank items passing across the two clearing arrangements for which it is responsible. The settlement members comprise eleven banks and one building society. Other banks and building societies can have access to both clearings through agency arrangements with the direct members. Settlement members must meet the membership criteria set by the Company and APACS (see Sections 1.4.1 and 3.1).

### **3.4.3 Types of transactions handled**

Cheques processed through the Cheque Clearing and paper credits passed through the Credit Clearing must meet the physical specifications (relating to layout and paper specifications) laid out in the relevant clearing rules. There are, however, no restrictions on the value of individual transfers or on the nature of the original transaction.

### **3.4.4 Operation of the system and transaction processing environment**

The Cheque and Credit Clearings both operate on a three-day payment and settlement cycle. In the case of the Cheque Clearing, a cheque presented to a branch of a member bank during banking hours will usually be processed by the collecting bank that day. This will involve the magnetic encoding of the value of the cheque in the pre-existing codeline at the bottom of the cheque. The following day, cheques are sent to the collecting bank's clearing centre. At the clearing centre, the cheques are automatically "read" by machines which

evaluate the codeline and sort the cheques by drawing bank. Cheques are then sent by the collecting bank to the Clearing Exchange Centre where they are passed to the paying bank. The paying bank's clearing centre then processes the cheques to ascertain the value of settlement between itself and other settlement members and to sort the cheques between its own branches. The cheques are then packaged ready for delivery to the individual branches on which they are drawn. These should arrive at the relevant branch by the third day of the clearing cycle, and branch staff will review them to see whether the instruments in question should be accepted or returned (e.g. due to insufficient funds being available to meet the value of the cheque). The point at which the collecting bank credits funds to the payee's account and allows him/her to draw against these is a commercial decision.

Paper credits follow a reverse process to cheques, in which the collecting bank is generally the payer's bank. The processing procedures for the Credit Clearing are very similar to those employed in the Cheque Clearing. The pre-printed codeline details on credits are, however, more comprehensive than on cheques.

### **3.4.5 Settlement procedures**

The interbank settlement of items processed through the Cheque and Credit Clearings occurs on the third day of the cycle. In respect of each clearing, multilateral net amounts for each member are posted to settlement accounts at the Bank of England. Settlement will continue to be effected by multilateral net entries to settlement accounts at the Bank once RTGS is operational; postings

<sup>9</sup> *Members of the Company operate as settlement members of both the Cheque Clearing and the Credit Clearing; they do not have the option of being a member of only one of these two payment systems.*

will, however, take place in real time during the day rather than at the end of the day.

#### **3.4.6 Credit and liquidity risks**

There is no system of limits to control the interbank settlement obligations which arise in the Cheque and Credit Clearings. In contrast to CHAPS, settlement members of these clearings are considered to be acting as agents of their customers rather than as principals and the value of interbank settlement obligations is typically much smaller.

#### **3.4.7 Pricing**

The Cheque and Credit Clearing Company Ltd does not impose a per item charge on cheques or credits handled; its costs are met through direct contributions by shareholders (the settlement members). Banks will negotiate charges with their business customers in respect of processing debits and credits arising from paper instruments; most banks do not impose such direct fees on their personal customers.

#### **3.4.8 Future developments**

During the first half of 1996 it is intended that all members of the Cheque Clearing will exchange codeline data electronically under an initiative known as Inter Bank Data Exchange. Another development which could perhaps affect the Cheque Clearing in the future is the possibility of cheque truncation. This would remove the requirement set out in the Bills of Exchange Act 1882 to transport physically cheques to the branch on which they are drawn.

### **3.5 Currency Clearings**

The domestic clearings described in this section all relate to payments in sterling, but under the APACS umbrella there are also foreign currency clearings for ten major currencies in London, through which it is possible to transfer value between foreign-currency accounts with banks in the United Kingdom. They do not handle items drawn on banks outside the United Kingdom - those items have to be sent for collection or negotiation to the countries concerned. There are seven members of the Currency Clearings which each handle all currencies and which act as settlement agents.

The Currency Clearings handle cheques, drafts, banker's payments and mandated currency debits drawn on, or payable at, UK branches of members and participants. Bank-to-bank wholesale payments are excluded. The main currency handled is the US dollar, for which a same-day payment service is available. The other currencies handled are the French franc, Deutsche Mark, Canadian dollar, Italian lira, Dutch guilder, Australian dollar, Japanese yen, Swiss franc and Spanish peseta. Instruments denominated in these currencies follow a three-day clearing cycle.

The volumes handled in the Currency Clearings are quite small compared to the other APACS clearings, and in 1994 totalled around 558,000 items, of which over 50% were US dollar transactions. The total value of all items cleared was £15.5 billion, of which almost 90% represented dollar-denominated items.

For each of these clearing arrangements, one member acts as the system's settlement agent, with net settlement between it and the other banks being effected across accounts held in the country of issue of the currency concerned. In the case of the US dollar clearing, each member bank acts as overall settlement agent for a two-month period.

## 4. Securities settlement systems

### 4.1 Institutional aspects

The United Kingdom has major securities markets in UK government stock, domestic and international equities, debt securities (including eurobonds) and money market instruments. There is also a highly developed market in derivatives based on these instruments and foreign government stock. The main participants in these markets are the members of the London Stock Exchange (the Stock Exchange) and/or the London International Financial Futures and Options Exchange (LIFFE), as well as banks and institutional investors, such as pension funds and insurance companies.

#### 4.1.1 General legal aspects

There is no specific legislative framework governing the operations of the UK securities settlement systems. Incorporated institutions are subject to the Companies Acts, while the Financial Services Act 1986 establishes the framework for the regulation of participants in most financial markets (with the exceptions of banking and insurance). The Financial Services Act (FSA) is based on the principle of self regulation. It provides for a number of Self Regulating Organisations (SROs) which confer authorisation to undertake certain activities by admitting members, and supervising them in accordance with agreed rules which have been approved by the Securities and Investments Board (SIB), the body on which most high-level regulatory powers under the FSA have been conferred. Most wholesale market participants in the securities business are members of, and supervised by, the Securities and Futures Authority (SFA).

The FSA also provides for the recognition and supervision by the SIB of investment exchanges and clearing houses. The London Stock Exchange, Tradepoint, LIFFE, the

International Petroleum Exchange, the London Commodity Exchange, the London Metal Exchange and OMLX are Recognised Investment Exchanges (RIEs). The London Clearing House is (and CREST will be from its inauguration in July 1996) a Recognised Clearing House. Both RIEs and RCHs must have adequate rules for the protection of investors and adequate arrangements and resources for the effective monitoring and enforcement of those rules. Under Part VII of the Companies Act 1989, special protection is available to RIEs and RCHs and transactions carried out on them. Market contracts, the provision of margin, market charges given in favour of an RIE or RCH and action taken under the default rules of an RIE or RCH are protected from certain provisions of insolvency law.

Under the Companies Act 1985, all companies must maintain a register of members (i.e. shareholders). Some listed bonds are also registered. The task of recording ownership is generally undertaken by commercial registrars, the three largest of which are clearing bank subsidiaries. The Bank of England acts as registrar for UK government stock and some other government guaranteed and overseas government stocks.

The Stock Transfer Act 1982 provided for specified securities to be transferred through the Central Gilts Office (CGO) - operated by the Bank of England - in dematerialised form (i.e. without the need for an instrument in writing or a certificate following registration). Such transfers were referred to as exempt transfers and were incorporated in the Companies Act 1985, which otherwise precluded the operation of paperless electronic share transfer systems. Regulations made under the Companies Act 1989 provide for the dematerialisation of UK equities to enable the introduction of a new book-entry transfer system, CREST, during 1996 (see

Section 4.7). Dematerialised sterling CDs have been acceptable in the CMO since September 1994.

#### 4.1.2 The role of the central bank

##### *General responsibilities*

The Bank of England has no general statutory responsibility for the establishment or operation of settlement or clearing systems. It does, however, own and manage the clearing and settlement systems of the Central Gilts Office (CGO), the Central Moneymarkets Office (CMO) and the European Settlements Office (ESO). Additionally, it was responsible for the design and establishment of CREST, although the ownership and operation of this system is vested in a private sector company, CRESTCo. The Bank is also the registrar for government stock.

The Bank has (since August 1995) the power under Section 171 of Part VII of the Companies Act 1989 to list and supervise certain clearing organisations. Such approval has the effect of extending the protection of Part VII to certain contracts not traded on an RIE or cleared by an RCH. The Bank has the power to revoke any such approval. One such institution, ECHO, has been authorised.

The operations of the CGO, CMO and ESO are subject to rules embodied in standard contractual agreements between the Bank of England as operator of these services, the members of these services and the relevant settlement banks.

The operations of the CGO, CMO and ESO are subject to regular review as part of the Bank of England's own audit processes.

##### *Provision of settlement facilities*

These are provided by the CGO, CMO and ESO for government stock, money market instruments and ECU-denominated instruments respectively. See Sections 4.3, 4.4 and 4.5 for descriptions of these systems.

The Bank of England itself does not lend securities as part of its relationships with UK securities settlement systems. The CGO, CMO and ESO allow for transfers to be designated as loans or repos but do not allow for automatic borrowing to cover short positions; stock overdrafts are not allowed.

##### *Provision of operational facilities*

The Bank of England provides settlement facilities for government stock, money market instruments and ECU securities (see Sections 4.3, 4.4 and 4.5).

The Bank does not own or operate any clearing house facilities for equities, foreign exchange or derivative products.

##### *Monetary policy operations and securities settlement systems*

(See Section 1.3.2.)

##### *Main projects and policies being implemented*

The Bank has provided the staff resources to design, specify and build the new paperless system for corporate securities clearance and settlement, CREST (see Section 4.7). It is intended that once CREST is operational (from 15th July 1996) it will be fully independent of the Bank. Funding for the project has already been provided by the private sector.

The Bank, after discussion with the market, the Stock Exchange and the Inland Revenue, introduced a general market in gilt sale and

repurchase agreements from the beginning of 1996, and a gilt coupon-stripping and reconstitution facility is being developed. Euroclear and Cedel have been admitted to the CGO so that gilts can be held, and gilts transactions settled, in their systems. An upgrade of the CGO, using CREST software, is planned to enable the service to handle all these developments efficiently.

It is planned that the CGO, CMO and CREST should be linked to the RTGS central systems in due course to enable real-time DVP settlement of the cash leg of securities transactions.

#### 4.1.3 The role of other public sector bodies

##### *Stock exchange authorities*

The London Stock Exchange is a private sector body except to the extent that it has regulatory responsibilities and functions as a Recognised Investment Exchange under the Financial Services Act (see Section 4.1.1). It also regulates listed companies as the UK's Competent Authority for Listing.

#### 4.1.4 The role of other private sector bodies

##### *Clearing houses*

The Stock Exchange operates a system called Talisman which settles equities listed on the Stock Exchange (both the Official List and the Alternative Investment Market), as well as some domestic corporate bonds and small trades in UK government bonds. CREST is likely to settle the same deals as Talisman, although small gilt deals might be settled by the CGO. Some UK securities, such as small company equities and some corporate debt, are settled using the relevant company registrar.

The London Clearing House (LCH) provides central facilities for clearing, guaranteeing and settling contracts for its members on the London Metal Exchange (LME), the London

Commodity Exchange (LCE), the International Petroleum Exchange (IPE), Tradepoint - an electronic order-matching system - and the London International Financial Futures and Options Exchange (LIFFE) (see Section 4.8). The LCH also operates the LME's matching system. Trades on the other exchanges are matched by the Trade Registration System, developed by LIFFE. OM London Securities and Derivatives Exchange (OMLX), the London subsidiary of the Swedish exchange, OM, clears and guarantees transactions undertaken on its market, acting as an integrated exchange and clearing house (see Section 4.9).

##### *Guarantee funds*

Retail customers of institutions authorised under the Financial Services Act are entitled to limited protection from the Investors' Compensation Fund in the event of their failure. The exchanges and clearing houses offer varying degrees of protection to their members but there is no central or government-funded guarantee scheme.

## 4.2 Summary information on securities markets

### 4.2.1 Main features of different securities markets

*Equities, debentures,<sup>10</sup> loan stocks and other securities listed in the United Kingdom* are traded mainly through Stock Exchange market makers. Off-exchange trading does take place but is believed to be very small in relation to the size of the organised market. Trading is carried out over the telephone using a screen-based quotation system called SEAQ, which displays firm two-way prices of competing market-makers.

<sup>10</sup> *Debenture: company borrowing formalised in an agreement, secured on the assets of the company and tradable if listed.*

A new order-driven electronic exchange called Tradepoint opened in September 1995. It enables anonymous trading of certain equities listed on the London Stock Exchange via instant or periodic auctions.

*UK government stock* is also traded mainly through Stock Exchange market-makers. Indicative quotations are displayed to investors by market makers in government stock using a variety of wire services, with trading conducted over the telephone.

There is a significant level of *over-the-counter (OTC) derivative* activity in London. Additionally, *standardised derivatives* contracts are traded on five exchanges. Commodity derivatives are traded on the LME, IPE and LCE. Financial and equity derivatives are traded on LIFFE and on OMLX.

LIFFE's contracts comprise futures and options on futures on UK and foreign government bonds, short-term interest rates, equity indices and options on individual equities. The majority of trade is conducted by open outcry on the exchange floor. Contracts are also traded after hours on the exchange's screen-based trading system, APT (Automated Pit Trading), on which one contract (the Japanese Government Bond contract) is also traded all day. OMLX primarily trades Swedish equity contracts on an automated trading system linked to that of its parent.

Of the *international securities*, equities may be traded via a screen-based quotation system run by the Stock Exchange. Named SEAQ International, it is similar to the domestic SEAQ system and functions by telephone inquiry and trading. Unlike SEAQ, quotes on SEAQI may, however, be either binding, indicative or "price on inquiry". SEAQI is increasingly bypassed, with clients going straight to a market-maker for a price. However, a significant percentage of trading in European and other foreign equities is intermediated by London Stock Exchange member firms. *Eurobonds (including sterling*

*eurobonds) and short-term eurocurrency paper* are generally listed on either the Stock Exchange or the Luxembourg Stock Exchange, but are traded over-the-counter under the rules of the International Securities Markets Association (ISMA). A large proportion (perhaps 70%) of all eurobond trading takes place in London.

*Sterling and ECU-denominated money market instruments* are traded over the counter.

#### **4.2.2 Basic statistics for securities markets**

Of the cash markets, the London Stock Exchange settles, through Talisman, the largest number of deals (over 4.8 million in 1994). The second most active market, the CGO, settled 384,200 deals in 1994, a 31% increase since 1991, whereas Talisman has grown little over the last few years. In terms of value, the CGO's average deal size is £20 million, and Talisman's £65,000, reflecting the fact that it handles retail as well as wholesale business. The CMO handled 142,700 deals in 1994, with an average size of £9 million. The LCH, which settles most exchange traded derivatives, handles over 186 million contracts a year.

#### **4.2.3 Financial intermediaries operating in the different securities markets**

Organised markets may only be accessed by their members, who have to comply with the exchange and clearing house rules relevant to them. Members of London's exchanges include securities firms, banks, brokers, some end-users (especially in commodities) and custodians. Other major market participants operating in the markets via exchange members include pension funds, insurance companies, investment trusts and unit trusts.

#### 4.2.4 *Recent developments*

A merger of LIFFE and LCE has been agreed. LIFFE and the Chicago Board of Trade (CBOT) have agreed to develop an open outcry linkage for the major bond futures and options contracts traded on each exchange. Open interest - and thus settlement - will remain on the home exchange. Similarly, LIFFE and Tokyo International Financial Futures Exchange (TIFFE) have agreed that LIFFE will trade the Euroyen contract by open outcry while TIFFE is closed. Early in 1995 IPE and SIMEX, the Singapore futures exchange, signed a mutual offset agreement for the trading of IPE's Brent Crude contract in Singapore. Gilt repos were introduced in 1996 (see Section 4.3).

### 4.3 **The Central Gilts Office (CGO)**

#### 4.3.1 *Major legislation and regulation governing the system*

The significant legislation in respect of the dematerialised transfer of gilts through the CGO is contained in the Stock Transfer Act 1982 (see Section 4.1.1).

#### 4.3.2 *Participation in the system*

All participants in the gilt-edged market are eligible to join the CGO. Before joining, each prospective member must enter into contractual agreements with its settlement bank in respect of the CGO's Assured Payment System (Section 4.3.6), and with the Bank of England (CGO). There are also two sets of agreements between the CGO and the settlement banks - the duties of the banks to one another are laid down in a single global agreement (the Assured Payment Agreement), while the banks' direct relationships with the Bank (CGO) are governed by separate bilateral agreements (Settlement Bank Agreements).

CGO member firms include market-makers in government stock, Stock Exchange Money Brokers, inter-dealer brokers, discount houses, banks, broker-dealers and institutional investors. In addition, there are many more indirect CGO participants, which are able to access the CGO service through agency arrangements with a direct member. These indirect participants include both institutional investors, such as pension funds, investment trusts and insurance companies, and private companies.

#### 4.3.3 *Types of transactions handled*

Instruments eligible for transfer are UK government sterling-denominated securities, known as gilts, and certain other stock for which the Bank of England acts as registrar. The CGO provides computerised book-entry transfer, either in settlement of bargains or for stock lending. Gilt repo trading began in January 1996.

#### 4.3.4 *Operation of the transfer system*

Processing is continuous between 8.30 a.m. and 2.50 p.m. Instructions can only be input on the day of settlement; most trades are for next-day settlement. Delivery of stock is effected in real time once the giver has input the appropriate details into his terminal and the taker has positively accepted the offer of stock from the giver, and so long as the giver has sufficient stock on his account. The CGO creates equitable title at the point of settlement which is replaced by legal title upon registration (two days later).

#### 4.3.5 *Transaction processing environment*

All communication between the CGO and members' terminals is via the Stock Exchange's Integrated Data Network.

#### 4.3.6 Settlement procedures

At the moment when the CGO transfers stock from the account of the seller to that of the buyer, an unconditional and irrevocable obligation by the buyer's settlement bank to pay the seller's settlement bank (an "assured payment") is created. Settlement banks undertake to make payments on behalf of their customers to an unlimited amount. Each settlement bank's net end-of-day position vis-à-vis all other CGO settlement banks is posted to its settlement account at the Bank of England.

#### 4.3.7 DVP arrangements

As far as members are concerned, the assured payment arrangements effectively provide DVP within the CGO. Equitable title in securities is transferred in real time against an irrevocable and unconditional payment obligation. Participants may transfer onwards securities delivered to them against a new payment instruction. Final transfer of funds between settlement banks takes place at the end of the day across their settlement accounts at the Bank of England. The CGO is thus a version of a model 2 DVP system.<sup>11</sup> Arrangements for the settlement of assured payment obligations given on behalf of a member are for the member and its settlement bank to determine.

#### 4.3.8 Pricing policies

The Bank sets a tariff for the CGO which seeks only to cover the costs of the service.

<sup>11</sup> The BIS report "Delivery Versus Payment in Securities Settlement Systems" (Basle, September 1992) defined three models by which delivery of securities might be linked to payment: model 1, in which both securities and funds are settled on a gross trade-by-trade basis; model 2, in which securities settle gross throughout the day and funds settle net at the end of the processing cycle; and model 3, in which both securities and funds settle on a net basis at the end of the processing cycle.

#### 4.3.9 Credit and liquidity risk control measures

Securities transfers cannot be unwound (unless the transfer is rejected by the Registrar). If a taking member fails after securities have been delivered, its settlement bank is not released from its assured payment obligations. A settlement bank's exposures to its customers arising from its irrevocable commitment to make payments on their behalf can be covered by a floating charge over all stock held in its customers' CGO accounts and by a fixed charge over monies receivable. The CGO automatically checks that the consideration for the transaction lies within a narrow margin of the current market value of the stock, and ensures that stock leaves a member's CGO account only against an irrevocable payment commitment from another member's settlement bank.

#### 4.3.10 Main projects and policies being implemented

The Bank of England, after discussion with the market, the Stock Exchange and the Inland Revenue, introduced a general market in gilt sale and repurchase agreements from the beginning of 1996, and a gilt coupon-stripping and reconstitution facility is being developed. Euroclear and Cedel have been admitted to the CGO so that gilts can be held, and gilts transactions settled, in their systems. An upgrade of the CGO is planned to enable the service to handle all these developments efficiently.

It is planned that the CGO should be linked to real-time settlement accounts to enable real time DVP settlement of the cash leg of gilts transactions.

## **4.4 The Central Moneymarkets Office (CMO)**

### **4.4.1 Major legislation and regulation governing the system**

The Bank of England, which operates the system, is exempt from the provisions of the Financial Services Act. The management structure of the CMO is the same as that of the CGO.

### **4.4.2 Participation in the system**

Membership is open to all London money market participants, including discount houses, banks and Stock Exchange Money Brokers, subject to arrangements being made with a settlement bank to make payments on their behalf. There are currently around sixty institutions which are members of the CMO. Before joining the CMO service, each prospective member must enter into contractual agreements similar to those described in the case of the CGO. Each CMO settlement bank must also enter into an agreement with the Bank of England (CMO). CMO members have a book-entry account in their own name and make arrangements for a settlement bank to make and receive payments on their behalf for instruments transferred from and to other direct members. Over 200 firms also participate indirectly in the CMO through agency arrangements with CMO members.

### **4.4.3 Types of transactions handled**

The CMO provides a central depository for money market instruments and an electronic book-entry transfer system that caters for a variety of sterling bearer instruments, both physical and dematerialised (i.e. Treasury bills, local authority bills, bank bills, trade bills, bank and building society CDs and commercial paper, and Short-Term Certificates). For these instruments, CMO provides a comprehensive range of settlement functions

including parcelling, pledging, automatic presentation at maturity and file transfer. Where appropriate, the system also generates the associated payment instructions.

### **4.4.4 Operation of the transfer system**

Processing is continuous between 8.30 a.m. and 4.45 p.m. Deliveries against consideration, however, cannot be accepted after 3.45 p.m. Delivery of instruments is effected in real time once the giver has input the appropriate details into his terminal and the taker has positively accepted the offer from the giver, and provided that the giver has sufficient instruments on his account.

### **4.4.5 Transaction processing environment**

All communication between the CMO and members' terminals is via the Stock Exchange's Integrated Data Network.

### **4.4.6 Settlement procedures**

Except in the case of the exchange of collateral, the transfer of instruments between members simultaneously generates (for completed transfers prior to 3.45 p.m.) an instruction to the taker's settlement bank to pay the agreed consideration to the giver's settlement bank for the giver's account. All such instructions are transmitted to the settlement banks following the payment deadline. Payment instructions generated by the CMO are not assured and may, in exceptional circumstances, be rejected by the paying member's settlement bank. Reversal of such payments is effected by an adjustment to the final end-of-day settlement calculation. Transfers of instruments cannot be reversed.

#### **4.4.7 DVP arrangements**

Securities and funds transfers are not simultaneous, securities being transferred on a gross basis throughout the day and funds transfer occurring net at the end of the day. The CMO is thus a version of a model 2 DVP system.

#### **4.4.8 Credit and liquidity risk control measures**

There are no system limits on securities borrowing by participants. Arrangements for the settlement of payments instructions received and given by a settlement bank are for the member and its settlement bank to determine. In the event that a settlement bank fails or refuses to meet a payment instruction, the associated transfer of instruments will not be reversed by the CMO, which has no role in any subsequent negotiations between the parties to the transaction.

#### **4.4.9 Pricing policies**

The Bank sets a tariff for the CMO which seeks only to recover the costs of the service.

#### **4.4.10 Main projects and policies being implemented**

After the dematerialisation of CDs in September 1994, the Bank is exploring the dematerialisation of other instruments in the CMO, such as Treasury bills, though this is likely to require primary legislation rather than contractual arrangements as was the case with CDs.

### **4.5 The European Settlements Office (ESO)**

#### **4.5.1 Major legislation and regulation governing the system**

The Bank of England, which operates the system, is exempt from the provisions of the Financial Services Act. The ESO has the same management structure as the CGO and the CMO.

#### **4.5.2 Participation in the system**

Membership is open to all market professionals including custodians, dealers and ECU clearing banks, subject to arrangements being made with a settlement bank member to make payments on their behalf. There are currently over twenty members. Through its membership of Euroclear and Cedel, the ESO allows members access to all ECU securities issued directly into these ICSDs and into systems into which they, in turn, are connected.

#### **4.5.3 Types of transactions handled**

In principle, all ECU-denominated money and capital market securities issued into Euroclear and/or Cedel or any settlement system to which they are connected may be transferred in the ESO. The ESO can handle deliveries corresponding to sales/purchases of securities, repos, loans or pledges of securities as collateral, though the system does not distinguish between them.

#### **4.5.4 Operation of the transfer system**

Intra-ESO deliveries against payment must be input by 11.30 a.m. on settlement day in order to settle that day. Deliveries input after 11.30 a.m. for same-day settlement must be against nil consideration. Same-day settlement is not possible for delivery to counterparties in Euroclear or Cedel. Such

deliveries must be input by close of business on the day before settlement. Forward-dated deliveries can be input up to one year ahead. Transfer of securities takes place on a real-time basis once the essential details of the trade input by both parties have been automatically matched by the system and subject to the buying member's debit cap not being exceeded by the transfer, and there being sufficient stock on the selling member's account. Transfers of securities are final and irrevocable. If matched deliveries fail to settle on the expected date, they are automatically carried forward for settlement until the delivery either settles or is cancelled. Any resulting claims for compensation must be settled outside the system.

#### **4.5.5 Transaction processing environment**

All communication between the ESO and members' terminals is via the Stock Exchange's Integrated Data Network.

#### **4.5.6 Settlement procedures**

When a delivery has met all settlement criteria and the securities move, an assured payment (i.e. one which is irrevocable and unconditional) is created, requiring the taker's settlement bank to pay the giver's settlement bank for the credit of the giver. The ESO aggregates all the payments relating to a day's settlement at 11.30 a.m. and the settlement banks use this information to make postings to member's ECU cash accounts and to make payments to other ESO settlement banks in the ECU clearing, settlement of which is not finalised until completion of the ECU Clearing later in the day.

#### **4.5.7 DVP arrangements**

Once securities have been credited to an ESO account (i.e. prior to funds transfer) they are available for immediate onward

delivery. Members can deliver securities against nil consideration but settlement banks are able to restrict such transfers by setting free delivery caps. Final transfer of funds between settlement banks takes place in the ECU Clearing. The ESO is thus a version of a model 2 DVP system with gross transfer of securities preceding net funds transfer.

#### **4.5.8 Credit and liquidity risk control measures**

Settlement banks set real-time debit caps to control their exposure to members on whose behalf they are making payments. These prevent the settlement of any purchase of securities (against consideration) which would cause the debit balance on a member's cash memorandum account to exceed a pre-agreed limit. If a taking member fails once securities have been delivered, its settlement bank is not released from its assured payment obligations.

#### **4.5.9 Pricing policies**

The Bank sets a tariff for the ESO which seeks only to cover the costs of the service.

### **4.6 Talisman**

#### **4.6.1 Major legislation and regulation governing the system**

The London Stock Exchange, which operates the system, is a Recognised Investment Exchange subject to the regulation of the SIB under the Financial Services Act. Dematerialisation of share certificates during the settlement process is permitted by the Completion of Bargains Act 1976 and Section 185 of the Companies Act 1985.

#### 4.6.2 Participation in the system

All member firms of the Stock Exchange (over 300 broker-dealers, market-makers, inter-dealer brokers, Stock Exchange Money Brokers and clearing agents) are eligible to participate in Talisman. Other participants include the London Clearing House, US broker-dealers through the International Securities Clearing Corporation, Institutional Net Settlement (INS) participants (described below) and dematerialised stock lending participants (DSLPS).

#### 4.6.3 Types of transactions handled

Talisman can settle trades in any UK equity listed on the Stock Exchange for consideration in sterling or US dollars. It can also settle Australian and South African securities in London or in Australia and South Africa.

#### 4.6.4 Operation of the transfer system

Details of a day's trades received by the Stock Exchange from its members are validated and matched by batch processing through the Stock Exchange's computerised matching system, known as Checking, which runs overnight. The results are given to participants on T+1. Matched bargains are passed on T+1 to the Talisman system for settlement. Checking matches trades where both parties are market participants; INS allows institutions (or their custodians) to agree settlement by positive acceptance of trade details notified by a market member.

#### 4.6.5 Transaction processing environment

All communication between the Stock Exchange and its members is via the Integrated Data Network.

#### 4.6.6 Settlement procedures

Talisman maintains trading accounts which record holdings of the various securities by market principals and DSLPS in SEPN, the Stock Exchange's nominee company. On the night before the settlement due date, Talisman delivers the stock for sold bargains into SEPN, and apportions the stock for bought bargains out of SEPN by book entries. On the morning of settlement day, Talisman/INS/DSL informs the participant of the single net payment amount due to or from the Stock Exchange in respect of all deliveries and apportionments completed overnight. Institutional investors are able to settle under INS, which enables them to settle one net payment directly with the Stock Exchange (rather than via a market member) for all their Talisman bargains. Payments are made via CHAPS or by IBT (Intra-Branch Transfers) in same-day funds. Settlement takes place on a rolling basis five days after the trade date. A trade that fails to settle on the first due settlement day may be settled on any subsequent business day.

#### 4.6.7 DVP arrangements

Securities are delivered gross in advance of net funds transfer. Transfers cannot be reversed by the participants once the system has begun the settlement process. Talisman is therefore a model 2 DVP system.

#### 4.6.8 Credit and liquidity risk control measures

If a market principal defaults, the Stock Exchange has a charge over the stock in the principal's trading accounts for the money owed. The Stock Exchange is further covered by a bank guarantee, the value of which is set relative to the principal's normal trading activity. In the event of an agency default, the Stock Exchange would, as a last resort, reverse relevant non-INS apportionments made during the previous night's processing.

This would result in re-opening transactions and the money paid/received being reversed. The affected clients of the failed agent would then be put into direct contact with the principals to settle open trades outside the system. INS and DSL participants are not affected by market member defaults; all settlements between the Stock Exchange and INS participants stand.

#### **4.6.9 Pricing policies**

The Stock Exchange has a list of settlement tariffs by which it aims to recoup costs, breaking even in the medium term.

#### **4.6.10 Main projects and policies being implemented**

In December 1995 the link between the Irish Stock Exchange and the London Stock Exchange, which enabled the Stock Exchange to settle transactions in Irish securities, was ended.

The system will begin to wind down from mid-1996 as CREST is introduced.

### **4.7 CREST**

CREST is due for inauguration on 15th July 1996 and securities will begin transition from Talisman to CREST on 19th August 1996. The transitional process is due for completion in early to mid-1997, after which Talisman will be decommissioned. Although designed and established by Bank of England personnel, CREST will be owned and operated by a private sector company, CRESTCo. CRESTCo is owned by sixty-nine investing institutions, which represent the range of equity market participants.

#### **4.7.1 Major legislation and regulation governing the system**

The dematerialisation of securities was made possible by regulations made under Section 207 of the Companies Act 1989 in early 1996. CREST will be supervised under the FSA by the SIB as an RCH, and as an "approved system" under the regulations.

#### **4.7.2 Participation in the system**

Membership will be open to all participants in the United Kingdom and Irish equity markets. Applicants must enter a contractual agreement with CREST and arrange a daylight credit limit for payments settlement with an approved settlement bank.

#### **4.7.3 Types of transactions handled**

CREST will handle the purchase, sale, loan and repo of UK and Irish equities and corporate bonds and other interests in securities with a UK or Irish registrar. It can handle depository receipts on other securities.

#### **4.7.4 Operation of the transfer system**

CREST will accept transfer instructions only from those legally entitled to give them; this is either the actual or intended legal owner of the assets in question, or somebody who has exhibited what is in effect a power of attorney from that owner. The terms of the transfer must be confirmed by both the transferor and the transferee. The CREST settlement match will ensure that the two instructions have the same intention. The settlement process will be continuous between approximately 7.30 a.m. and early afternoon, with deliveries of stock free of cash continuing until approximately 3.30 p.m. The system will remain open for input and matching of forward-dated transactions until approximately 9.00 p.m. The precise timings are yet to be finalised.

#### **4.7.5 Transaction processing environment**

All communication between CREST and members must occur via one of the two competing network providers - S.W.I.F.T. or Syntegra. Final accreditation of the two network providers will occur in June 1996.

#### **4.7.6 Settlement procedures**

CREST will create equitable title at the point of settlement in exchange for an assured payment provided by one of a small number of banks bound together by contract. In the vast majority of cases, equitable title will be replaced by full legal title, confirmed by the issuer's own registrar registering the movement of title, within two hours of settlement in CREST. The payment instructions thus generated, using information from CREST, will be unconditional and irrevocable. Banks will generally (but need not) provide finality to their customers in respect of such payments on an intraday basis. Initially, the banks which provide payment facilities in CREST will settle their net obligations to each other across accounts at the Bank of England at the end of each day.

#### **4.7.7 DVP arrangements**

Securities in CREST are transferred continuously in real time against an irrevocable and unconditional payment obligation. The system generates an irrevocable assured payment obligation simultaneously with the transfer of equitable title. Legal title will typically follow two hours later when the transfer is registered, although stock is available for onward transfer before registration. Final transfer of funds between the settlement banks occurs at the end of the day across their accounts at the Bank of England. CREST is thus a version of a model 2 DVP system.

#### **4.7.8 Credit and liquidity risk control measures**

The settlement banks are bound by contract to settle debts incurred in the CREST system by their buying participants. CREST itself provides no credit facilities, since settlement banks will provide intraday credit to their customers in respect of amounts due for securities they have bought. These banks may set caps to control their exposure to customers, and can take a charge on securities in the system to support credit extended.

#### **4.7.9 Pricing policies**

CREST will set prices to cover its costs, including the cost of capital. Owners of the system receive a fixed dividend on their shares. All users of the system will be eligible for a uniform rebate if revenues exceed costs.

### **4.8 London Clearing House Protected Payment System (PPS)**

#### **4.8.1 Major legislation and regulation governing the system**

The LCH is a Recognised Clearing House subject to the supervision of the SIB under the Financial Services Act (see Section 4.1.1).

#### **4.8.2 Participation in the system**

All clearing members of the exchanges whose transactions clear through the LCH - currently 171.

#### **4.8.3 Types of transactions handled**

Transactions in, and related margin payments for, derivative instruments traded on LIFFE, the International Petroleum Exchange, the London Commodity Exchange and the London Metal Exchange. The LCH also settles equities traded on Tradepoint.

#### **4.8.4 Operation of the transfer system, settlement procedures and DVP arrangements**

The LCH assumes liability as central counterparty for trades on the exchanges upon registration of the day's trades one hour after trading closes. Payments are made to and from the LCH through the PPS. Under this arrangement, every clearing member maintains an account with at least one participating bank and the LCH maintains accounts with all twenty-four banks. Once a bank has confirmed to the LCH that it will make the payment required on the member's behalf, it is irrevocably committed to do so. Margin calls are made on the morning of T+1. Payments are made by internal branch transfers between the accounts of the clearing members and the LCH with final cash settlement taking place in the evening of T+1 in the case of sterling and dollar payments, and on T+2 for other currencies.

#### **4.8.5 Transaction processing environment**

The LCH is linked electronically to the exchanges the trades of which it clears. S.W.I.F.T. messages are used to transmit details of margin requirements to members' paying banks.

#### **4.8.6 Credit and liquidity risk control measures**

The LCH sets minimum capital requirements for clearing members of the exchanges the trades of which it clears. Such members have to satisfy the LCH regarding their ability to meet day-to-day requirements, including the adequacy of their back-office and funds transfer systems, and must supply details of their major shareholders. It sets levels for both initial and variation margin with a view to covering a member's maximum potential loss. The LCH restricts, mainly to government bonds and cash, the types and amounts of collateral that it will accept as initial margin. Trading levels and patterns are monitored throughout the day.

### **4.9 OM London Securities and Derivatives Exchange (OMLX)**

#### **4.9.1 Major legislation and regulation governing the system**

The OMLX is a Recognised Investment Exchange under the Financial Services Act (see Section 4.1.1); it clears both trades conducted on its exchange system, and certain over-the-counter (OTC) trades.

#### **4.9.2 Participation in the system**

The OMLX clears exchange trades for its fifty clearing members, and OTC trades for a separate class of participants, though in practice there is a considerable degree of overlap.

#### **4.9.3 Types of transactions handled**

Exchange-traded products are futures and options on the OMX Index, on twenty-three Swedish equities, and on the UK FTSE 100, FTSE Actuaries 350, and FTSE Actuaries 350 Industry Baskets. OTC products include futures and options on Swedish government bonds.

#### **4.9.4 Settlement procedures and DVP arrangements**

The OMLX becomes the central counterparty once trades are input and matched in its system. Payments associated with futures and options contracts are made to and from the OMLX through its Protected Payment System (PPS). Margin calls are made in the morning of T+1 to the ten PPS banks at which clearing members hold accounts. The banks have until 11 a.m. to confirm whether or not they will meet the calls. Once confirmation has been given by the PPS banks, they are committed to make payment. Payment is made by interbank transfer to OMLX's accounts on T+1 for sterling and T+2 for other currencies.

**4.9.5 Transaction processing environment**

The OMLX operates a screen-based communications network with its members.

**4.9.6 Credit and liquidity risk control measures**

OMLX membership criteria are meant to ensure that clearing members have sufficient resources for their business. Margining procedures and levels are designed to protect the OMLX against likely adverse movements up until payment is received on T+1 or T+2. Trading levels and patterns are monitored throughout the day.

## 5. Statistical data

**Table 1**
**Basic statistical data <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Population <sup>(2)</sup> (thousands)	57,461	57,808	58,007	58,191	58,366
Gross domestic product (GBP billions)	549.4	573.6	595.3	628.4	666.2
Exchange rate vis-à-vis ECU <sup>(2)</sup>	0.7141	0.7011	0.737	0.7805	0.7756

(1) From 1990 a new source of data was used and, therefore, some of these figures may differ from those contained in the Addendum to the "Blue Book", May 1994.

(2) Average for the year.

**Table 2**
**Settlement media used by non-banks**

*(end of year)*

	GBP billions				
	1990	1991	1992	1993	1994
Notes and coins	15.2	15.7	17.0	17.9	18.8
Narrow money deposits <sup>(1)</sup>	240.0	262.6	340.2 <sup>(1)</sup>	377.6	391.7
Narrow money supply (M2)	255.2	278.3	357.2 <sup>(1)</sup>	395.5	410.5

(1) A break in series means that figures from 1992 are not comparable with previous figures in the series. The definition of deposits in M2 was altered with effect from December 1992. Previously, bank deposits in M2 comprised all non-interest-bearing deposits plus "chequable" sight or time deposits regardless of maturity plus other deposits (excluding certificates of deposit) of less than £100,000 and with less than one month to maturity; building society deposits included in M2 were "transaction accounts" and other deposits of less than £100,000 and up to one month maturity. Banks now define retail deposits as deposits which arise from the customers' acceptance of an advertised rate (including nil). Building societies include all shares or sums deposited by individuals plus sums from contractual savings schemes (but exclude retail issues of subscribed capital e.g. perpetual interest-bearing shares).

**Table 3****Settlement media used by deposit-taking institutions***(end of year)*

	GBP billions				
	1990	1991	1992	1993	1994
Cash ratio deposit <sup>(1)</sup>	1.71	1.59	1.41	1.4	1.5
Free reserves held at central bank	0.003	0.027	0	0.183	0.104
Transferable deposits at other credit institutions <sup>(2)</sup>	47.6	46.8	53.1	49.6	55.3

(1) Authorised institutions with average eligible liabilities of £10 million or more are liable to lodge with the Bank of England non-operational, non-interest-bearing deposits of 0.35% (as at 31st December 1993) of their eligible liabilities (0.25% for institutions for which Northern Ireland is the main place of business in the UK).

(2) Includes some time deposits.

**Table 4****Banknotes and coins***(total value, end of year)*

	GBP millions				
	1990	1991	1992	1993	1994
Total banknotes issued <sup>(1)</sup>	15,810	16,096	16,445	17,315	18,505
of which:					
GBP 50	2,518	2,640	2,801	2,996	2,989
GBP 20	5,277	5,797	6,498	7,337	8,362
GBP 10	6,426	6,323	5,856	5,714	5,945
GBP 5	1,528	1,276	1,232	1,211	1,160
GBP 1	61	60	58	57	49
Notes held by credit institutions <sup>(2) (3) (4)</sup>	4,111	4,165	3,613	3,662	4,328
Total coins issued <sup>(5)</sup>					
of which:					
£1	n.a.	n.a.	n.a.	n.a.	1,012
50p	n.a.	n.a.	n.a.	n.a.	240
20p	n.a.	n.a.	n.a.	n.a.	297
10p	n.a.	n.a.	n.a.	n.a.	134
5p	n.a.	n.a.	n.a.	n.a.	133
2p	n.a.	n.a.	n.a.	n.a.	78
1p	n.a.	n.a.	n.a.	n.a.	64
Notes and coins in circulation outside credit institutions <sup>(3) (4)</sup>	15,256	15,715	16,832	17,897	18,752

(1) Bank of England banknotes only.

(2) Not seasonally adjusted.

(3) Average for the month of December.

(4) Figures include coins.

(5) Estimated as at 31st December 1994.

**Table 5****Institutional framework***(end of 1994)*

Categories	Number of institutions	Number of branches	Number of accounts (millions)	Value of accounts (GBP billions) <sup>(1)</sup>
Central bank	1	5		
Commercial banks	489	12,759 <sup>(2)</sup>	73.5 <sup>(2)</sup>	186.1 <sup>(3)</sup>
Building societies	100	5,566	43.5	206.7 <sup>(4)</sup>
Post office	1	19,782	16.0	1.4 <sup>(5)</sup>
<b>TOTAL</b>	<b>591</b>	<b>38,112</b>	<b>133.0</b>	<b>394.2</b>
Branches of foreign banks <i>of which EC-based</i>	262 105			

(1) Figures for the value of accounts with banks and building societies are compatible with M4. National Savings Bank (NSB) accounts are not included.

(2) Includes estimates.

(3) All private sector sterling accounts with UK banks (including the central bank and Girobank).

(4) Private sector ordinary share and deposit accounts with UK building societies, and shares and deposits below £50,000 from corporate bodies. The retail issue of subscribed capital, e.g. Perpetual Interest Bearing Shares, is excluded.

(5) National Savings Ordinary Accounts only. NSB facilities are available at Post Offices on an agency basis.

**Table 6****Cash dispensers, ATMs and EFTPOS terminals**

	1990	1991	1992	1993	1994
<b>Cash dispensers and ATMs</b>					
Number of networks	3	3	3	3	3
Number of machines (thousands)	17.0	17.8	18.2	18.7	19.5
Volume of transactions (millions) <sup>(1)</sup>	992	1,066	1,147	1,198	1,292
Value of transactions (GBP billions) <sup>(1)</sup>	43	49	54	58	60
<b>EFTPOS terminals</b>					
Number of networks <sup>(2)</sup>	3	3	3	3	3
Number of machines <sup>(1) (3)</sup>	110,000	190,000	220,000	270,000	350,000
Volume of transactions	n.a.	n.a.	n.a.	n.a.	n.a.
Value of transactions	n.a.	n.a.	n.a.	n.a.	n.a.

(1) Estimated figure.

(2) SWITCH, VISA and MasterCard.

(3) SWITCH, VISA and MasterCard. The number of points of sale is not available. (Several machines can be installed at one point of sale.)

**Table 7**

**Number of payment cards in circulation <sup>(1)</sup>**  
*(end of year)*

	1990	1991	1992	1993	1994
Cards with a cash function <sup>(2)</sup>	66.9	65.8	67.9	69.6	69.8
Cards with a debit/credit function					
<i>of which:</i>					
<i>cards with a debit function</i>	19.0	20.1	22.6	24.1	26.0
<i>cards with a credit function <sup>(2) (3)</sup></i>	31.4	28.4	27.9	26.9	27.1
Cards with a cheque guarantee function <sup>(4)</sup>	42.3	43.0	44.4	44.0	45.5
Retailer cards <sup>(5) (6)</sup>	n.a.	n.a.	8.9	8.5	10.3

(1) A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures.

(2) Bank cards only (excludes cards issued by some building societies).

(3) Bank VISA, MasterCard and travel and entertainment (charge cards) cards only (excludes cards issued by some building societies).

(4) Includes eurocheque cards.

(5) This figure does not include the number of cards issued by smaller retailers.

(6) Estimated figure.

**Table 8**

Payment instructions handled by selected interbank funds transfer systems:  
volume of transactions

	millions				
	1990	1991	1992	1993	1994
Town Clearing <sup>(1)</sup>	1	0.3	0.1	0.1	<0.1
CHAPS	7.79	8.00	9.08	10.99	11.65
Cheque and Credit Clearings					
Cheques <sup>(1) (2)</sup>	2,517	2,472	2,395	2,323	2,278
Paper-based credit transfers <sup>(1) (2)</sup>	191	183	182	173	173
BACS					
Credit transfers <sup>(1)</sup>	756	786	819	858	910
Direct debits	846	916	1,001	1,045	1,148
TOTAL	4,319	4,365.3	4,406.1	4,410.1	4,520.7

(1) Excludes inter-branch items.

(2) Includes Northern Ireland and Scotland (includes estimates).

**Table 9**

Payment instructions handled by selected interbank funds transfer systems:  
value of transactions

	GBP billions				
	1990	1991	1992	1993	1994
Town Clearing <sup>(1)</sup>	4,776	2,228	1,387	1,069	681
CHAPS	18,880	19,050	20,928	23,545	25,053
Cheque and Credit Clearings					
Cheques <sup>(1) (2)</sup>	1,210	1,207	1,175	1,194	1,210
Paper-based credit transfers <sup>(1) (2)</sup>	118	113	110	106	101
BACS					
Credit transfers <sup>(1)</sup>	418	484	519	574	657
Direct debits	250	288	284	262	284
TOTAL	25,652	23,370	24,403	26,750	27,986

(1) Inter-branch items are excluded.

(2) Includes Northern Ireland and Scotland (includes estimates).

**Table 10****Participants in securities settlement systems**

	Settling securities	Holding securities accounts on behalf of customers	Settling cash directly in central bank accounts
<b>CGO</b>			
Banks	295	n.a.	n.a.
Stockbrokers	)	)	)
Securities houses	)	)	)
Insurance companies	)	)	)
Others	)	)	)
<b>CMO</b>			
Banks	40	17	3
Stockbrokers	2	-	-
Securities houses	4	-	3
Discount houses	8	3	-
Stock exchange money-brokers <sup>(1)</sup>	7	-	1
<b>ESO</b>			
Banks	20	n.a.	n.a.
Others	4	n.a.	n.a.
<b>TALISMAN</b>			
Banks	334	n.a.	n.a.
Stockbrokers	)	)	)
Securities houses	)	)	)
Insurance companies	)	)	)
Others	)	)	)
<b>LCH</b>			
Banks	171	n.a.	n.a.
Stockbrokers	)	)	)
Securities houses	)	)	)
Others	)	)	)

(1) Note: From 1996 stock exchange money-brokers ceased to operate as separate entities.

**Table 11**

Transfer instructions handled by securities settlement systems:  
volume of transactions

	thousands				
	1990	1991	1992	1993	1994
<b>CGO <sup>(1)</sup></b>					
Government securities	n.a.	292	339.1	368.4	384.2
<b>CMO <sup>(1)</sup></b>					
Government securities	n.a.	109.5	123.8	133.8	142.7
Bills of exchange	)	)	)	)	)
Bank CDs	)	)	)	)	)
Building society CDs	)	)	)	)	)
Commercial paper	)	)	)	)	)
Stock exchange STCs	)	)	)	)	)
<b>ESO <sup>(1) (2)</sup></b>					
Government securities	-	-	-	-	-
Bonds	-	-	-	-	4.6
CDs	-	-	-	-	-
<b>TALISMAN <sup>(1)</sup></b>					
Shares	3,570	4,218	4,326	5,287	4,798
<b>LCH <sup>(3)</sup></b>					
Futures	-	-	-	129,746	186,208
Options	-	-	-	24,899	32,930

(1) Turnover includes one side of each transaction.

(2) ESO was inaugurated on 31st August 1993. Statistical information is only available from the week beginning 13th September 1993.

(3) Number of contracts.

**Table 12**

Transfer instructions handled by securities settlement systems:  
value of transactions

	GBP billions				
	1990	1991	1992	1993	1994
CGO <sup>(1)</sup>					
Government securities	n.a.	2,178	3,431	5,863	7,633
CMO <sup>(1)</sup>					
Government securities	n.a.	826	1,027	1,172	1,274
Bills of exchange	)	)	)	)	)
Bank CDs	)	)	)	)	)
Building society CDs	)	)	)	)	)
Commercial paper	)	)	)	)	)
Stock exchange STCs	)	)	)	)	)
ESO <sup>(1) (2)</sup>					
Government securities	-	-	-	-	18.8
Bonds	-	-	-	-	)
CDs	-	-	-	-	)
TALISMAN <sup>(1)</sup>					
Shares	160	181	218	283	305

(1) Turnover includes one side of each transaction.

(2) The ESO was not inaugurated until 31st August 1993. Statistical information required between August 1993 and December 1993 is unavailable.

**Table 13**

**Nominal values registered by securities settlement systems**  
(end of year)

	GBP billions				
	1990	1991	1992	1993	1994
<b>CGO</b>					
Government securities	115	122.4	144.1	204.4	227.9
<b>CMO</b>					
Government securities	5.2	7.1	3.8	3.1	5.2
Bills of exchange	13.8	20.0	21.9	21.5	17.6
Bank CDs	17.8	43.7	44.6	44.6	52.5
Building society CDs	2.7	6.5	6.0	5.9	7.0
Commercial paper	0	neg.	neg.	neg.	neg.
Stock exchange STCs	0	0	0	4.5	4.1
<b>ESO</b>					
Government securities	-	-	-	-	-
Bonds	-	-	-	4.9 <sup>(1)</sup>	5.6
CDs	-	-	-	-	-
<b>TALISMAN</b>					
UK: Equities and unlisted securities	455.9	542.4	629.2	815.4	779.5
UK: Fixed interest	29.7	31.4	29.6	41.4	32.3
UK: Eurobonds	46.5	49.8	60.8	81.8	97.8
Foreign: Equities	1,124.1	1,332.2	1,552.8	1,919.4	1,982.8
Foreign: Fixed interest	6.0	1.5	1.0	1.7	0.1
Foreign: Eurobonds	75.7	97.0	124.3	210.7	208.7

(1) The ESO was not inaugurated until 31st August 1993.

**Table 14****Indicators of use of various cashless payment instruments:  
volume of transactions**

	millions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1) (4)</sup>	3,213	3,126	3,005	2,886	2,802
<i>large-value (Town)</i>	1	0.4	<0.1	<0.1	<0.1
<i>others</i>	3,212	3,126	3,005	2,886	2,802
Payments by card	855	1,049	1,237	1,397	1,606
<i>debit</i>	192	359	522	659	808
<i>credit</i> <sup>(3)</sup>	693	690	715	738	798
Paper-based credit transfers <sup>(2) (4)</sup>	496	477	462	432	415
Paperless credit transfers	840	869	901	936	987
<i>large-value (CHAPS)</i>	8	8	9	11	12
<i>others</i> <sup>(4)</sup>	832	861	892	925	975
Direct debits	846	916	1,001	1,046	1,148
<b>TOTAL</b> <sup>(5)</sup>	<b>6,280</b>	<b>6,437</b>	<b>6,606</b>	<b>6,697</b>	<b>6,958</b>

- (1) Excludes cheques processed at branch level, but includes cheques used by customers to obtain cash from a bank other than their own.
- (2) Excludes items processed at branch level.
- (3) VISA and MasterCard only. Excludes transactions by holders of charge cards (travel and entertainment cards) and retailer cards.
- (4) Includes inter-branch items (values are estimates).
- (5) Excludes postal orders and government payments in cash from post offices against state benefit vouchers.

**Table 15**

Indicators of use of various cashless payment instruments:  
value of transactions

	GBP billions				
	1990	1991	1992	1993	1994
Cheques issued <sup>(1) (4)</sup>	6,669	3,953	2,934	2,587	2,177
<i>large-value (Town)</i>	5,120	2,420	1,451	1,095	681
<i>others</i>	1,549	1,533	1,483	1,492	1,496
Payments by card	32.8	38.9	45.1	51.4	59.7
<i>debit</i>	5.1	9.5	13.8	17.9	22.4
<i>credit <sup>(3)</sup></i>	27.7	29.4	31.3	33.5	37.3
<i>Paper-based credit transfers <sup>(2) (4)</sup></i>	677	652	621	582	543
Paperless credit transfers	19,321	19,562	21,470	24,143	25,733
<i>large-value (CHAPS)</i>	18,880	19,050	20,928	23,545	25,052
<i>others <sup>(4)</sup></i>	441	512	542	598	681
Direct debits	250	288	284	262	284
<b>TOTAL <sup>(5)</sup></b>	<b>26,949.8</b>	<b>24,493.9</b>	<b>25,354.1</b>	<b>27,625.4</b>	<b>28,796.7</b>

(1) Excludes cheques processed at branch level, but includes cheques used by customers to obtain cash from a bank other than their own.

(2) Excludes items processed at branch level.

(3) VISA and MasterCard only. Excludes transactions by holders of charge cards (travel and entertainment cards) and retailer cards.

(4) Includes inter-branch items (values are estimates).

(5) Excludes postal orders and government payments in cash from post offices against state benefit vouchers.

**Table 16****Participation in S.W.I.F.T. by domestic institutions <sup>(1)</sup>**

	1990	1991	1992	1993	1994
S.W.I.F.T. users	272	286	295	309	344
<i>of which:</i>					
<i>members</i>	54	54	57	57	59
<i>sub-members</i>	196	204	210	214	228
<i>participants</i>	22	28	28	38	57
Memorandum item:					
Total S.W.I.F.T. world-wide	3,344	3,648	3,903	4,004	4,623
<i>of which:</i>					
<i>members</i>	1,812	1,963	2,074	2,103	2,412
<i>sub-members</i>	1,469	1,607	1,738	1,802	2,023
<i>participants</i>	63	78	91	99	188

(1) The UK and the Isle of Man.

**Table 17****S.W.I.F.T. message flows to/from domestic users <sup>(1)</sup>**

	1990	1991	1992	1993	1994
Total messages sent	40,436,615	43,171,404	48,167,743	54,796,966	60,967,184
<i>of which:</i>					
<i>category I</i>	7,639,886	8,106,518	8,851,050	9,537,290	10,352,681
<i>category II</i>	14,036,209	14,799,002	16,109,002	18,110,333	19,379,515
<i>sent/received to/from domestic users</i>	9,495,324	10,058,121	11,538,743	12,838,570	14,154,000
Total messages received	35,495,611	37,850,280	42,182,121	48,734,436	55,179,903
<i>of which:</i>					
<i>category I</i>	-	-	10,212,447	11,316,746	12,540,347
<i>category II</i>	-	-	7,863,519	8,284,102	8,350,297
Memorandum item:					
Global S.W.I.F.T. traffic	332,895,932	365,159,291	405,540,902	457,218,200	518,097,873

(1) The UK and the Isle of Man.

## Definitions

- Sub-members: domestic users sponsored by members abroad;
- Participants which are not shareholders in S.W.I.F.T.; their message traffic over the network is restricted;
- Category I: customer (funds) transfers;
- Category II: bank (funds) transfers.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Cross-border  
payment and  
securities settlement  
systems

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## List of abbreviations

<b>ACH</b>	Automated Clearing House
<b>BACS</b>	ACH in the United Kingdom
<b>BGC</b>	ACH in the Netherlands
<b>BIC</b>	Bank Identifier Codes developed by S.W.I.F.T.
<b>BIS</b>	Bank for International Settlements
<b>BZS</b>	ACH in Germany
<b>CAFE</b>	Conditional Access For Europe
<b>Cedel</b>	<i>Central de Livraison de Valeurs Mobilières</i> (international securities depository located in Luxembourg)
<b>CHIPS</b>	Clearing House Interbank Payments System
<b>DVP</b>	Delivery versus payment
<b>EBA</b>	ECU Banking Association
<b>ECB</b>	European Central Bank
<b>eCCs</b>	eurocheque Clearing Centres
<b>ECHO</b>	Exchange Clearing House
<b>EDI</b>	Electronic Data Interchange
<b>EDIFACT</b>	Electronic data interchange for administration commerce and transport
<b>EEC</b>	European Economic Community
<b>EMV</b>	Europay International, MasterCard International and VISA International
<b>EOC</b>	Euroclear Operations Centre
<b>EPS-Net</b>	European Payment Systems Services SA's telecommunications network
<b>EPSS</b>	European Payment Systems Services SA, Brussels
<b>ESCB</b>	European System of Central Banks
<b>EU</b>	European Union
<b>EUFISERV</b>	Savings banks' cross-border payment service
<b>EUROGIRO</b>	Post/Giro organisations' cross-border payment service
<b>IC card</b>	Integrated circuit card
<b>ICSD</b>	International central securities depository
<b>IFT</b>	Interbank File Transfer
<b>IFTS</b>	Interbank funds transfer system
<b>iKP</b>	Open payment protocol
<b>IML</b>	Institut Monétaire Luxembourgeois
<b>ISMA</b>	International Securities Market Association

<b>ISO</b>	International Standards Organisation
<b>MESA</b>	Mutual ECU Settlement Accounts
<b>NCB</b>	National central bank
<b>OJ</b>	Official Journal
<b>PDA</b>	Package Deal Agreement
<b>PIN</b>	Personal Identification Number
<b>POS</b>	Point of sale
<b>RTGS</b>	Real-time gross settlement
<b>S.W.I.F.T.</b>	Society for Worldwide Interbank Financial Telecommunication
<b>SIA</b>	ACH in Italy
<b>SIGMEW</b>	Special Interest Group for Multi-currency Electronic Wallets
<b>TAPS</b>	Transcontinental Automated Payment Service
<b>TARGET</b>	Trans-European Automated Real-time Gross settlement Express Transfer system
<b>TFA</b>	Tripartite Financing Agreement
<b>TIPA</b>	<i>Transferts Interbancaires de Paiement Automatisé</i> (co-operative banks' cross-border payment service)
<b>TOF</b>	Technical Overdraft Facility
<b>UFF</b>	Unconfirmed Funds Facilities
<b>VisaNet</b>	VISA's computer and telecommunications network
<b>WGPS</b>	Working Group on EU Payment Systems

## I. General features of cross-border payments

### 1.1 Legal framework

#### 1.1.1 *The tasks of the European Monetary Institute (EMI) according to the EC Treaty*

The tasks of the European Monetary Institute (EMI), which became into being on 1st January 1994, are laid down in Article 109f of the EC Treaty. Three of the tasks relate to payment systems:

##### *Strengthening co-operation between national central banks*

The EMI is a forum for the co-operation among EU central banks. The EMI also provides the Secretariat of the Working Group on EU Payment Systems (WGPS), in which payment systems experts from all EU central banks are represented. The European Commission participates as observer in the WGPS. At the EMI, these experts from all EU central banks share their experiences in the field of payment systems and take collective decisions whenever necessary. In this context, they issued a report on "Prepaid Cards" in May 1994 (see Section 2.3) in which they indicated that only credit institutions should issue multi-purpose prepaid cards. In November 1993, under the aegis of the predecessor of the EMI, the Committee of Governors of the Central Banks of the Member States of the European Economic Community, a report on "Minimum common features for domestic payment systems" was published, in which ten principles were formulated, including, in particular, the need for all EU countries to have one RTGS system, and the need for all large-value net settlement systems to settle at a central bank and to meet the criteria set out in the G-10 report on Interbank netting schemes published in November 1990. In February 1995 and April 1996 the Working Group on EU Payment Systems published follow-up reports on "Developments in EU Payment

Systems" in which progress towards compliance with these principles was assessed. Some other issues, such as remote access to interbank funds transfer systems, were also analysed in greater detail in these reports, such as remote access to funds transfer systems.

Furthermore, co-operation between central banks encompasses the oversight duties of EU central banks which, because of cross-border participation in national payment systems, have to be co-ordinated, at least at the EU level. The task of oversight is intended to promote the smooth functioning of payment systems and to protect the financial system from possible "domino effects" which may occur when one or more participants in the payment system incur credit or liquidity problems. "Oversight" needs to be distinguished from "banking supervision"; the former deals with a given system (e.g. a funds transfer system) rather than with individual credit institutions, as is the case with banking supervision.

##### *Preparation for Stage Three of EMU*

For the preparation for Stage Three of EMU, the EMI shall: (i) prepare the instruments and the procedures necessary for carrying out a single monetary policy in the third stage; and (ii) promote the efficiency of cross-border payments.

In order to allow the impact of monetary policy transactions to be transmitted quickly and efficiently to all participants in the Single Market, the EU central banks and the EMI are developing a new payment arrangement known as the TARGET system which will be composed of one RTGS system per country and of a central element, the Interlinking (see Section 3.1). This system will also contribute to improving the efficiency of cross-border payments in the future European Monetary Union.

Given the risks large-value payment systems can entail and the need for efficient payment systems to handle monetary policy operations, the main focus of the EMI's work has been on large-value payment systems. However, the EMI and EU central banks also monitor initiatives which are taken to improve the efficiency of small-value cross-border payments. The EMI considers that efficiency in payment systems requires a certain degree of interbank co-operation in order to avoid the unnecessary duplication of investment and also to facilitate inter-operability, in particular through the use of common standards.

#### *Oversight of the ECU Clearing and Settlement System*

The EMI oversees the smooth functioning of the ECU Clearing and Settlement System. To fulfil this task, the EMI has invited the manager of the system, the ECU Banking Association (EBA), to improve the soundness of the operating mechanisms of the System and, in particular, to ensure that the System meets the standards set out in the Lamfalussy Report (see Section 3.3).

#### **1.1.2 Initiatives launched by the European Commission**

First, the Treaty on European Union (EU) introduced a new regime of free movement of capital by recognising the principle of complete liberalisation with regard to capital movements and payments.<sup>1</sup> The modification of the Treaty was necessary to align its provisions with both the reality of complete liberalisation already achieved through the Capital Movements Directive of 1988<sup>2</sup> and the objective of Economic and Monetary Union, since free movement of capital is an indispensable precondition for the integration of domestic financial markets.

Second, Articles 52 (freedom of establishment) and 59 (freedom to provide

services) of the Treaty are cornerstones of the Single Market for financial services. The freedom of establishment constitutes the right of an institution established and authorised in one Member State (the home Member State) to set up and operate branches in another Member State (the host Member State) without having to apply for further authorisation or being subject to the prudential supervision of the host Member State. The freedom to provide cross-border services means the possibility to freely provide services throughout the Community territory under the legislation of the home Member State.

Third, the specific framework of EU legislation in the field of banking and securities services contains the precise rules applicable to undertakings wishing to exercise the freedom created by Articles 52 and 59 of the Treaty. In the area of banking services, the foundations have been laid by the Second Banking Co-ordination Directive<sup>3</sup> and a number of specific directives harmonising the basic rules of prudential supervision in the banking sector (notably the Own Funds Directive, the Solvency Ratio Directive, the Large Exposures Directive and the Directive on the supervision of credit institutions on a consolidated basis). In the sector of securities services a similar result has been achieved through the Investment Services Directive<sup>4</sup> and the Directive on the Capital Adequacy of

<sup>1</sup> With effect from 1st January 1994, Articles 73b to 73g of the Treaty replaced Articles 67 to 73 of the EEC Treaty, making the freedom of capital movements and payments a directly applicable right under the Treaty and extending the obligation for liberalisation, with limited exceptions, to third countries.

<sup>2</sup> Council Directive 88/361/EEC of 24th June 1988; OJ L 178 of 8th July 1988.

<sup>3</sup> Council Directive 89/646/EEC of 15th December 1989; OJ L 386 of 30th December 1989.

<sup>4</sup> Council Directive 93/22/EEC of 10th May 1993; OJ L 141 of 11th June 1993.

investment firms and credit institutions,<sup>5</sup> which is the specific directive on the prudential standards to be maintained by investment firms (and also by credit institutions carrying out securities business on a significant scale). On the basis of the Second Banking Coordination Directive and the Investment Services Directive, the freedom of establishment can be exercised according to the principles of minimum harmonisation of supervisory rules and mutual recognition. This principle is based on the idea that the authorities of each Member State recognise the authorisation granted and the supervision exercised by all other Member States which have implemented in their national legislation the provisions prescribed by the European banking and securities legislation. Thus, an institution authorised in one Member State is allowed to carry out all the activities listed in the respective directives throughout the entire Community, either by establishing a branch or by providing services without receiving a request for new authorisation from or supervision by the authorities of the host Member State(s).<sup>6</sup> This legal harmonisation of financial services forms the basis on which the cross-border provision of payment services can be expected to increase in line with the further development and intensification of the Single Market.

<sup>5</sup> Council Directive 93/6/EEC of 15th March 1993; OJ L 141 of 11th June 1993.

<sup>6</sup> Services lawfully provided under EU legislation (e.g. "core" banking services under Directive 89/646/EEC) qualify *ipso facto*. Other services depend on the general principles of Articles 52 and 59.

<sup>7</sup> Commission Recommendation 87/598/EEC of 8th December 1987; OJ L 365 of 24th December 1987.

<sup>8</sup> Commission Recommendation 88/590/EEC of 17th November 1988; OJ L 317 of 24th November 1988.

<sup>9</sup> Commission Recommendation 90/109/EEC of 14th February 1990; OJ L 67 of 15th March 1990.

<sup>10</sup> Proposal for a European Parliament and Council Directive of 18th November 1994; OJ C 360 of 17th December 1994.

In the area of face-to-face cross-border payments, the first legislative step was the Recommendation<sup>7</sup> on a European Code of Best Conduct relating to electronic (card) payments. The Recommendation, addressed principally to issuers, traders and consumers, sets out general guidelines in respect of contracts, interoperability, equipment, data protection and security, and fair access to the system. The 1987 Recommendation was complemented by a further Recommendation<sup>8</sup> concerning payment systems and in particular the relationship between the cardholder and card issuer. The latter Recommendation aims to ensure that the cardholder receives adequate information concerning the terms of the contract and sets out certain minimum requirements regarding the card issuer's and cardholder's reciprocal rights and obligations. The application of this Recommendation is currently under review to ascertain whether further action is necessary in this domain.

In the area of remote cross-border payments, the first legislative step was the Recommendation<sup>9</sup> on the transparency of banking conditions relating to cross-border financial transactions. The 1990 Recommendation is to a great extent the predecessor of the proposal, in 1994, for a directive on cross-border credit transfers.<sup>10</sup> The proposed directive sets out a framework of mutual rights and obligations both between institutions and between institutions and their customers, thus filling the present void in harmonised legal conditions for credit transfers across the Community. In promoting this directive, the Commission intends to encourage institutions offering cross-border transfer systems to review their systems to achieve two objectives: first, that they provide customers with essential information on their cross-border transfer services and, second, that the quality of the services they publicise is effectively matched by the actual quality of service, while ensuring that appropriate protection is afforded to users of such services.

Work is also under way to define basic legal rules for settlement finality and collateral security, notably in the event of the insolvency of participants in payment systems. The objective is to reduce uncertainties and risks stemming from certain features of the laws in a number of Member States and the differences between Member States' laws as applied to payment systems. The first phase of the work consisted in establishing an inventory of the legal issues, and in exploring the potential solutions and their consequences, with a view *inter alia* to facilitating compliance with Principle No. 1 of the Lamfalussy Report<sup>11</sup> of 1990. A formal legislative proposal on these aspects is expected to be made in 1996.

## 1.2 Correspondent banking relationships

As in the case of domestic payment arrangements, cross-border payment mechanisms involve a variety of payment intermediaries, monetary assets, legal and regulatory arrangements and communication channels. Contractual freedom is generally the main legal feature of the correspondent banking relationships. Greater complexity comes from the fact that more than one geographical area or jurisdiction is typically involved as well as, in some cases, multiple currencies. One general feature is that non-resident banks do not generally participate directly in domestic interbank funds transfer systems and do not normally hold accounts with the local central bank. Therefore, payments in any particular currency tend to be executed via banks located in the country of issue. Individuals and firms may, in principle, be able to use the relevant accounts with a bank abroad to effect their payments in currency. However, in most cases it is more convenient for them to rely on the international payment services offered by their domestic banks, which in turn make use of their own branches or subsidiaries or of correspondent banking relationships abroad to execute cross-border transactions. These

correspondent banking relationships may cover a wide range of operations and services which a financial institution offers to other financial institutions both at a domestic and at a cross-border level, the execution of payments typically being the most important of these. Cross-border payments through correspondents are executed by means of reciprocal accounts (so-called *nostro* and *loro* accounts), to which standing credit lines may be attached. A correspondent describes an account held on behalf of a foreign bank as a "loro" account, while the foreign bank would in turn regard this account as its "nostro" account.

The growth in cross-border payment transactions in recent years and the costs resulting from the complexity of constructing indirect linkages between payment systems in different countries have resulted in a continuing search for risk reducing and more cost-effective ways to execute cross-border payments. With regard to retail payments, for instance, where the cost of processing often represents a much greater proportion of the amount paid than in the case of transactions involving large amounts, alternative arrangements are being developed. Some banks have built up an in-house network covering several countries, whereas others have decided to establish co-operation arrangements with banks in different countries to take advantage of synergy effects among complementary institutions (a number of developments are discussed in greater detail in Section 2). In the case of large-value payments, the market operators' main interest is to reduce the banks' exposure to settlement risk through the establishment of special bilateral or multilateral arrangements and through the development of cross-border and multi-currency netting schemes. The first multilateral multi-currency netting scheme to

<sup>11</sup> *Report on Interbank Netting Schemes to the Governors of the Central Banks of the Group of Ten countries. Principle No. 1 is that "netting schemes should have a well-founded legal basis under all relevant jurisdictions".*

begin operating is the Exchange Clearing House (ECHO) which is located in London (see Section 3.2). Furthermore, the EMI and the EU central banks are developing procedures to link domestic RTGS systems across the European Union, TARGET (see Section 3.1). Another factor that might lead to a reduction in the use of traditional correspondent channels is the possibility of remote access, which, within the European Union, allows a credit institution established in one country (the home country) to become a direct participant in an interbank funds transfer system (IFTS) established in another country (the host country) and, for that purpose, to have a settlement account in its own name with the central bank in the host country, if necessary, without having established a branch in the host country.

All the financial institutions involved in executing cross-border payments are linked by a series of communication networks which may be operated by the postal authorities, the banks themselves (proprietary networks), central banks or other suppliers of telecommunication services such as the Society for World-wide Interbank Financial Telecommunication (S.W.I.F.T.) (see Section 1.3).

The various networks carry instructions to send or receive payments through the relevant domestic payment systems, to buy or sell securities, or to carry out a range of other financial transactions. Banks are becoming increasingly dependent on automated interfaces with these networks to handle and pass on incoming payment instructions. Thus a bank which receives e.g. a S.W.I.F.T. payment message from an overseas correspondent may automatically convert it into a local payment message and send it on to another bank through a domestic large-value transfer system. The latter bank may, in turn, automatically generate an

onward message advising its customer of the receipt so that the customer can, in turn, initiate an onward payment. This type of straight-through processing can take place within a short space of time and without manual intervention.

### 1.3 Global interbank communication systems: the role of S.W.I.F.T.

#### 1.3.1 The organisation

The Society for Worldwide Interbank Financial Telecommunication (S.W.I.F.T.) is a private company, established in Belgium in 1973, which is engaged in the transmission of financial messages for the benefit of its shareholding member banks and other approved categories of financial institutions. The S.W.I.F.T. group is also involved in the development and marketing of specific network applications and in the research, development, marketing and sales of terminals and related software. S.W.I.F.T. is a co-operative company owned by 2,856 banks world-wide.<sup>12</sup> It fully owns a number of subsidiaries in other countries and a reinsurance company in Luxembourg through which part of the group's insurance is placed.

S.W.I.F.T. transmits financial messages between 5,200 financial institutions connected to the company's proprietary network which covers 137 countries. While access to the network has traditionally been restricted to S.W.I.F.T.'s shareholding members and their subsidiaries (sub-members) - all of whom are banks - a number of so-called participants have been allowed to use it since 1987 (at the end of 1995 there were 316 "participants"). These participants include securities brokers and dealers, investment management institutions and various other institutions mostly in the securities business, such as Euroclear and Cedel. Domestic clearing institutions are also accepted as participants. Participants are not shareholders in S.W.I.F.T. and their message traffic over the network is restricted. For instance, some

<sup>12</sup> All figures in this section relate to end-1994 or to that year.

categories of participants may neither send nor receive certain types of messages, while other categories may exchange specific messages with their banks (e.g. payment messages), but not with each other.

### 1.3.2 Basic services

The core services offered by S.W.I.F.T. consist of handling the exchange of financial messages over its proprietary network (composed of computer facilities, switching equipment, leased lines and related software). The network functions comprise the acceptance, validation, storing and delivery of messages. The network, which is accessible 24 hours a day, seven days a week, handled a total traffic of 603 million messages in 1995 or an average of 2.7 million per business day. These messages are highly structured and cover a wide range of banking and other transactions such as payment orders, foreign exchange confirmations and securities deliveries. There are nine categories of banking messages covering 158 message types, each designed to meet the specific data requirements of the transactions involved. S.W.I.F.T., with its members, is active in enhancing existing message text standards and developing new standards for the benefit of all network users. Thus, for instance, S.W.I.F.T. has developed Bank Identifier Codes (BIC), which amount to a universal standard for identifying financial institutions in telecommunication messages. S.W.I.F.T. is also actively involved in drawing up EDIFACT standards for financial messages.

To ensure confidentiality, each message is automatically encrypted by S.W.I.F.T. when it enters the network, while users have the option to encrypt the message flow between their in-house terminals and their S.W.I.F.T. access point. Each message also contains an authenticator which makes it possible to identify the sender and receiver and which provides a guarantee that the text of the message has not been modified during transmission. Authentication is based on a

common algorithm provided by S.W.I.F.T. and on bilateral keys, known only to the sending and receiving pair of users. The network's operating system generates a broad range of automatic reports on individual users' message traffic, for instance relating to undelivered messages, but users may also request special reports, such as terminal error reports and delivery status reports.

S.W.I.F.T. accepts a contractual responsibility and associated financial liability in respect of the carriage and delivery of messages. The rules governing the use of the system and the company's responsibility and liability are set out in the S.W.I.F.T. Users' Handbook, and are contractually binding up on every member and participant. They stipulate some of the responsibilities of the originating and receiving banks, and of S.W.I.F.T. itself, in respect of the timely transmission and handling of payment orders and other financial messages. The rules are often taken as a reference source for correspondent banking relationships.

### 1.3.3 Traffic size

Statistics on the breakdown of EU S.W.I.F.T. users and of message flows over the network are shown in Comparative Tables 11 to 14. EU countries (especially Italy, Germany and France), sub-members (especially France, Germany and the United Kingdom) and participants (mainly located in the United Kingdom) are strongly represented in the S.W.I.F.T. user community. Banks in EU countries generate almost half of the traffic over the network and hold more than half of the shares in the company - with the banking communities of France, Germany and the United Kingdom together holding a quarter of the total.

With respect to message traffic, the S.W.I.F.T. network may be used for both cross-border and domestic transactions involving member banks or participants. The proportion of domestic traffic in the total varies considerably from country to country, partly depending on

the rules of the national telecommunication authority and partly on the types of alternative interbank telecommunication facilities available. Among EU countries, France and the United Kingdom generate the largest proportion of domestic traffic in relation to their total traffic. In the case of France, this reflects the fact that the SAGITTAIRE system (see Chapter on France) uses S.W.I.F.T. as its message carrier. Total intra-EU traffic, including both domestic traffic within EU countries and cross-border traffic between EU countries, is around 65% of the total traffic from EU countries. This percentage reaches 60% or more in practically every individual EU country.

#### **1.3.4 Value added services**

In addition to its basic service, S.W.I.F.T. also provides application and processing services to groups of banks engaged in particular activities. One so-called value added processing service relates to the ECU Banking Association's private ECU Clearing and Settlement System (see Section 3.3), for which ECU payment messages between the Association's members sent over the network are copied and forwarded to a central ECU netting computer. Another service, called Accord, was introduced in 1990. It is a computerised system for the automatic matching of foreign exchange and money market deal confirmations sent via the S.W.I.F.T. system. In 1991 the Accord service was extended to include an advisory bilateral foreign exchange netting service: payment information from matched confirmations is extracted to provide statements of bilateral net positions, which subscribers can use in the implementation of bilateral agreements.

The S.W.I.F.T. Interbank File Transfer (IFT) service allows bulk data to be sent across the network, for example reports between branches of the same bank, or batches of low-value payment orders. For the latter application (Mass Payments Facilities), a bulk payments format has been devised, which is sufficiently generic to allow receiving banks to input the

instructions into their domestic automated clearing house(s). In the long term, the IFT facility will also be used to exchange EDI messages, using EDIFACT standards.

#### **1.3.5 Nature of S.W.I.F.T. messages**

A S.W.I.F.T. message containing a payment order is different from the electronic messages that pass through domestic large-value funds transfer systems because the S.W.I.F.T. payment order does not, by itself or under S.W.I.F.T. rules, create an irrevocable obligation on the part of the sending bank. Financial institutions exchanging S.W.I.F.T. messages have to arrange the clearing and/or settlement of the incoming payment orders themselves, either by relying on bilateral correspondent relationships which they have with one another or by forwarding incoming orders to domestic interbank funds transfer systems. However, an increasing number of major banks have introduced "straight-through processing", in which there is an automated linkage between their S.W.I.F.T. connection and their computer systems linked to the domestic payment system. Banks also increasingly tend to treat incoming S.W.I.F.T. payment orders as authoritative, particularly if these include the beneficiary's account number. Although these automated links will normally include, as in the case of manual procedures, internal mechanisms for controlling banks' exposure to their correspondents and customers, S.W.I.F.T. is often an integral part of interbank funds transfer arrangements, especially those handling internationally related payments. Furthermore, where S.W.I.F.T. messages are sent or copied to clearing houses or netting providers, as in the case of SAGITTAIRE in France or the ECU Clearing and Settlement System, they form the backbone of the particular funds transfer systems involved. The technical standards set by the S.W.I.F.T. community for international financial transaction messages - including those drawn up in co-operation with international bodies such as ISO and with EDIFACT - are

increasingly used by outside organisations and may also set the standard for many countries' domestic financial messages.

#### 1.4 Foreign exchange settlement risk

Foreign exchange settlement risk is the risk that an institution will irrevocably pay out funds in one currency only to find that its counterparty, which is due to provide countervalue in another currency (e.g. to complete settlement of a maturing spot or forward foreign exchange transaction), is unable to deliver these funds. The inability of the second party to deliver countervalue may reflect, *inter alia*, operational or liquidity problems, the commencement of insolvency proceedings or political factors. An institution which has given value irrevocably in such circumstances will be exposed for the principal amount outstanding and may possibly lose the full amount involved.

The risks raised by the asynchronous settlement of foreign exchange transactions were highlighted in July 1974, when Bankhaus Herstatt, a relatively small German bank very active in foreign exchange dealings, was ordered into liquidation by the German banking supervisory authorities, thereby suspending all payments. The suspension and related announcement took place after the closing of the interbank funds transfer systems in Germany so that all Herstatt's Deutsche Mark receipts were already final, but before its US dollar obligations were to be settled on Clearing House Interbank Payments System (CHIPS). As a consequence of its failure, Herstatt did not complete payment to its counterparties in US dollars and a number of these counterparties faced the prospect of losses as a result.

Despite the fact that average exposures in 1974 were much smaller than at present, the episode caused great disruption to the interbank funds transfer system in the United States and to CHIPS in particular. The disruption was related, in part, to declining

confidence in counterparties generally. It was only with difficulty that normal interbank payment flows were re-established. Creditors eventually received partial compensation for the losses they had suffered, but the episode illustrated how uncertainty regarding the size, distribution and resolution of exposures might lead to a broader financial crisis. Concerns about foreign exchange settlement risk have also arisen in a variety of later episodes, such as the liquidation of BCCI, the emergency in the former Soviet Union in August 1991 and the collapse of Barings.

Current procedures for the settlement of foreign exchange transactions give rise to significant risk concerns owing to the very large daily values involved, the absence of arrangements allowing settlement in one currency to be made contingent on settlement in another, and the interdependence of payment system participants throughout the world. BIS estimates indicate that global foreign exchange market activity alone amounted to about USD 1,230 billion (ECU 964 billion) on a net basis per day in April 1995. The settlement flows resulting from these and other international transactions, moreover, represent a sizable share of the daily turnover in many home-currency payment systems.

From the point of view of overall credit and liquidity risks in making and receiving cross-border and multi-currency payments and counter-payments, current national interbank funds transfer systems have two related characteristics that may complicate the management of foreign exchange settlement risks. First, there are differences between national systems as to when, during their operating cycle, transfers can be initiated and when they are final. Second, there are variations in the operating hours of payment systems themselves, which in turn implies a constraint on the times of day at which final transfers can be initiated and completed. Both these restrictions limit the possibility for the simultaneous and final exchanges of currencies through national payment systems.

The legal and operating environment faced by participants in high-value transfer systems varies between countries. The structure of each system, along with relevant payments and insolvency law, will determine the timing of the finality of transfers. As explained in the preceding country chapters, significant changes to large-value payment systems are under way in a number of EU countries. In most cases, payment system infrastructure cannot be readily altered by individual institutions and their correspondent banks to meet specific circumstances, although there is action that can be taken at this level to mitigate foreign exchange settlement risk (e.g. the setting of counterparty limits and the prompt reconciliation of expected receipts).

Due to the fact that there is a limited overlap in the operating hours and different timing of settlement finality and cut-off times for third-party transfers of key transfer systems used for settling foreign exchange transactions in several of the major currencies, it would be difficult, if not impossible, to conduct simultaneous settlements for certain major currencies over national large-value systems under present conditions. The degree of overlap is greater if EU payment systems are considered in isolation. But, given the extent to which EU institutions are involved in trading currency pairs which involve at least one non-EU currency, and the lack of any mechanism for synchronising EU currency exchanges, the significance of this form of settlement risk in a European context should not be underestimated. The degree of overlap may be greater from 1997 when it is proposed

that Fedwire will be open for eighteen hours. In addition, it is possible that a multi-currency settlement facility could be developed, which would allow the transfer of value and countervalue to be either simultaneous or contingent on each other.

There are, however, other factors which determine the scale and duration of foreign exchange settlement risk over which trading institutions and their correspondents are able to exercise substantial control. A key event in defining the settlement risk profile of a trading institution is the deadline after which it can no longer unilaterally cancel payment orders for the currency it is due to deliver. Banks often send foreign currency payment instructions to their overseas correspondents ahead of the date on which these are due to be settled and they frequently become effectively irrevocable before that due date. Furthermore, the time at which an institution conducts reconciliations for a given date defines the point at which it becomes certain whether or not it has received countervalue. Such information can be used by a trading bank to determine whether or not it would be appropriate to change its trading activity with a given counterparty.

A bank's actual exposure in the settlement of any foreign exchange deal can be defined, therefore, as being equal to the full amount of the currency it has purchased, and lasts from the time at which its payment instruction for the currency sold can no longer be cancelled unilaterally until the time at which the currency purchased is received with finality.<sup>13</sup>

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<sup>13</sup> This definition is derived from a study of cross-currency settlement undertaken by a sub-group of the G-10 Committee on Payment and Settlement Systems, the Steering Group on Settlement Risk in Foreign Exchange Transactions, and is described in a report published in March 1996.

## 2. Cross-border retail payment systems

### *International payment systems companies*

In addition to banks, two main companies offer cross-border payment services in Europe: Europay and VISA. Both companies have a range of products mainly covering credit cards and debit cards. They are also actively developing prepaid card products.

### 2.1 Europay International

#### 2.1.1 The organisation

Europay International SA was established in Belgium on 1st September 1992 as a result of the merger between Eurocard International, eurocheque International and eurocheque International Holdings. The national Eurocard, eurocheque and Europay companies established in Europe, as well as some other payment systems companies, banks and banking associations, are shareholders in Europay International. The principal shareholders, which together represent over 50% of the shares, are the Payment Systems Company GZS (Germany), Europay France (France), MasterCard/Europay UK (United Kingdom) and MasterCard International (United States).

Europay owns, manages and licences international retail payment system brands and manages an international telecommunications network and processing centre. Europay is managed by an international Board of Directors. The main Board, together with the Shareholders' Assembly, is the only decision-making body. Regional boards - representing smaller shareholders and members - are involved in preparing the main Board meetings.

#### 2.1.2 The services

The integrated Europay company offers a range of cashless payment services called "Europackage" which covers three segments known as "pay before", "pay now" and "pay later". In each segment of the Europackage one or more products are available - in many cases in a "Europe-only" and a world-wide acceptance version.

##### *Pay before: travellers' cheques, electronic purse*

Europay International bought Eurotravellers Cheque International from its current shareholders in June 1995; a partnership with Thomas Cook in the traveller's cheque business has also been finalised at the same time. Furthermore, Europay International is currently developing an international multi-currency electronic purse product to be offered to its member banks (see Section 2.3.2).

##### *Pay now: cheques, cash dispenser cards and debit cards*

The eurocheque system was the first building block in the "pay now" segment. In 1968 this system was established to replace the numerous individual bilateral cheque encashment arrangements that existed between banks in Europe. The primary aim was to provide a uniform cash advance service in bank branches abroad, based on the cheque and the guarantee card. In 1972 uniform eurocheque standards were introduced, thus allowing the extension of the service to retailers, as these cheques could be issued in the currency of the country visited, and not only in the home currency. In 1981, eurocheque's Package Deal Agreement enabled retailers in more countries to accept eurocheques and to rationalise international clearing. In 1984,

ATM functionality was introduced to the eurocheque cardbase, uniform standards agreed for ATM use and the first European cross-border ATM network was established.

In a number of EU countries the eurocheque is effectively used as an important domestic cheque system in addition to its use as a cross-border payment mechanism. This domestic use encompasses also the eurocheque ATM functionality, including cash withdrawal and debit card facilities.

More recently, an agreement with Cirrus (a US-based international ATM network owned by MasterCard) provided new opportunities for European banks to enhance their ATM services by adding a world-wide cash access utility to eurocheque cards and proprietary ATM, electronic debit and cheque guarantee cards.

The latest development within the "pay now" segment is the edc/Maestro online POS service. Eurocheque cards, as well as proprietary bank cards, are increasingly usable in POS networks all over Europe through

this service. Additionally, they may be used world-wide via Maestro, the global debit service developed jointly by Europay and its partner, MasterCard.

#### *Pay later: credit cards*

A range of credit card facilities are available under the Eurocard/MasterCard marks.

All Eurocard/MasterCard cards (316.6 million world-wide) are accepted globally at nearly 12.0 million retail outlets in 222 countries and territories and have access to a global ATM network of more than 256,500 machines (see also Table 1).

### **2.1.3 Technical, organisational and clearing aspects**

#### *Data transmission*

Most international transactions with Europay products are serviced through EPSS (European Payment Systems Services SA,

**Table 1**

*Figures are as of end-1995 and cover only Europe*

	thousands
eurocheque cards	55,152
Other debit cards (*)	45,875
Eurocard/MasterCard cards (**)	30,885
eurocheque ATMs	130
Eurocard/MasterCard ATMs	133
Cirrus ATMs	110
edc/Maestro POS terminals	478
eurocheque retail outlets	5,000
Eurocard/MasterCard retail outlets	3,069
	billions
Value of transactions in 1995 (***)	ECU 94.5
of which cross-border	ECU 19.8

Source: *Europay International*

(\*) Debit cards without eurocheque cheque guarantee functionality but with one or more of the following brands: ec ATM, Cirrus, edc, Maestro or Eurocard/MasterCard (offline debit).

(\*\*) Excluding offline debit Eurocard/MasterCard cards.

(\*\*\*) Excluding domestic eurocheque transactions for which no accurate data are available.

Brussels), owned jointly with MasterCard International (15% shareholding). EPSS enables data to be exchanged between the acquirer and the issuing bank. Through its telecommunications network, called EPS-Net, Europay provides the following services: data transmission, authorisation, clearing and settlement. National transactions use various national communication networks, which are linked to the international communication networks.

#### *Authorisation*

The issuer of the different Europackage products basically chooses the method of authorisation which it wants for the particular product. This can be the so-called "online to issuer" method or the "stand-in system" method, whereby Europay provides the authorisation. Online authorisation to the acquirer is no longer supported.

#### *Clearing and settlement procedures*

Under the new Net Settlement Service, cross-border transactions related to all products are cleared at Europay International, where they are sorted and aggregated for each card-issuing company. Claims (acquired transactions) and liabilities (issued transactions) are then offset and the net balance is calculated for each institution in the currency of its choice (multi-currency multilateral netting with one single cut-off time each day). Foreign exchange operations are limited to those necessary to settle this net balance. Commerzbank, with which all participants hold an account, acts as a settlement institution.

In order to establish a full international payment system for the eurocheque, two basic agreements have been introduced to rationalise clearing procedures for "pay now" products: the Package Deal Agreement (PDA), introduced in 1981, and the Simplified Clearing Agreement for countries in which

the former agreement did not apply. The latter is based on the following elements:

- no deduction of commission at the time of encashment;
- cheques written in foreign currency;
- centralised clearing procedures;
- uniform commission.

In 1994 Europay established a single licensing structure for all its products, including the eurocheque. Eurocheque product rules were also rewritten in 1995. These developments led to the disappearance of the PDA and similar agreements.

Clearing is performed via eurocheque Clearing Centres (eCCs) if the acceptance requirements of the eurocheque clearing system are fulfilled. For operations above the maximum clearing amount (currently ECU 1,000) and for countries in which no agreements apply, traditional correspondent banking procedures are followed.

In the past, settlement of international eurocheque transactions between countries took place exclusively on a bilateral basis. In April 1993 the first eurocheque members switched to multilateral net settlement and are expected to have migrated to the new system by 1996.

Cheques can be physically mailed or electronically captured with cheque reading equipment. The electronically captured clearing data are then transmitted via a data communication link or mailed on a tape directly to the issuing eCC. If legally permitted, cheques can be stored in the acquiring country ("cheque truncation").

For eurocheque paper cheque and ATM members without access to the standard clearing and settlement system only, a special interface called the EAP (Evans Access Point) has been developed in order that daily

remittance totals can be entered for net settlement. These EAPs will be installed at the appropriate Clearing Centres.

#### **2.1.4 Future developments**

Europay International is actively preparing and assisting its member banks for the migration of cards and terminals to chips, which will start in mid-1997. Chips will not only increase security and reduce processing costs but will also allow the introduction of new products and services, such as the electronic purse (see Section 2.1.2) and secure electronic payment methods (e.g. on the Internet).

Europay is also currently replacing its overall network infrastructure (EPS-Net), with all member connections due to be converted to the new platform by the end of 1997.

## **2.2 VISA International**

### **2.2.1 The organisation**

VISA is an international membership association with some 19,000 members located in more than 200 countries all over the world. Membership is limited to deposit-taking financial institutions and to bank-owned organisations operating in the bank card sector, such as Carte Bleue in France and Servizi Interbancari in Italy.

VISA is managed by an international board and six autonomous regional boards. The international board is responsible for global policy; it provides the operating regulations and by-laws and manages a world-wide electronic system which handles authorisations and the transmission of clearing and settlement data. The regional boards have full autonomy in defining commercial policies and promoting VISA products within their geographical areas. Member institutions market and issue cards to their customers taking their own decisions about pricing and

marketing (the so-called issuing activity) and sign up and provide services to merchants who accept VISA cards (the so-called acquiring activity). In particular, it is up to VISA members to set and charge fees and interest, decide on credit and spending limits and select which benefits should be offered to their cardholders.

### **2.2.2 The services**

VISA provides a range of card products aimed at meeting the heterogeneous needs of cardholders in individual markets around the world. In December 1995, there were 464 million VISA cards in circulation which can be used at over 13 million outlets and at 264,500 cash dispensers in more than 93 countries around the world.

In particular, in the EU region VISA currently offers two types of cards:

- the VISA card, existing in different versions, which can be used as either a credit or debit card;
- Electron is a globally accepted payment card which may either have a debit or a credit function depending on the choice of the issuing bank. Electron can only be used at electronic point of sale terminals. Every time a Visa Electron card is used the transaction is authorised and the availability of funds is checked.

Furthermore, the PLUS mark can be added to an ordinary bank card or Electron card, transforming it into an international cash card which can be used to withdraw local currency from the PLUS ATM network. PLUS transactions are also fully authorised online.

**Table 2***Figures are as of end-1995*

	EU	CEMEA <sup>(1)</sup>
Total number of VISA cards	86.5 million	2.7 million
Annual cardholder expenditure	ECU 210.8 billion	ECU 4.9 billion
Total number of VISA transactions	3.6 billion	0.7 billion
Total number of VISA acceptance locations	3 million	0.3 million
Total number of banking offices available to VISA cardholders	172,100	11,658
Cash dispensing machines (ATMs) which can be used by VISA cardholders	121,518	6,537
Cash dispensing machines (ATMs) which can be used by PLUS cardholders	77,361	5,292
Number of members	4,003	322
Travellers' cheque sales volume	ECU 1.5 billion	ECU 0.5 billion

*Source: VISA International*

(1) Central and eastern Europe, Middle East, Africa.

### 2.2.3 Technical, organisational and clearing aspects

#### *Data transmission*

VisaNet is the computer and telecommunications network which links the VISA member financial institutions world-wide with the two VISA Interchange Centres located in the United Kingdom and in the United States. Each of these centres is capable of processing every VISA transaction in the world in order to ensure the regular working of the system should a disaster put one out of action. Two applications are managed through VisaNet: the Base I authorisation service and the Base II clearing and settlement service.

#### *Authorisation*

Before a transaction is finalised, a series of securities checks are carried out through VisaNet in order to ensure that: the card is valid; it has not been lost, stolen or forged; the cardholder's spending limit has not been exceeded and the cardholder's personal identification number (PIN), if used, is correct. The VISA authorisation service operates 24

hours a day world-wide. Transactions are authorised either by the issuing bank or by VisaNet.

#### *Clearing and settlement procedures*

The VISA International Base II system clears transactions and "facilitates" settlement. It operates six days a week. To complete such calculations, VISA international supports approximately 170 transactional currencies enabling the processing of international transactions. Members choose to receive their transactional reports in any of these currencies.

Of these 170 currencies, 25 currencies are used in the net settlement between VISA International and the participating membership, the choice of currency being decided by each member involved with settlement.

Foreign exchange operations are in accordance with those necessary to settle this net balance, and are executed with two banks, one located in London (Barclays) and one in New York (Citibank).

Settlement is not carried out through Base II, VISA merely provides the data to allow settlement to be carried out. For settlement in US dollars, Chase Manhattan Bank, New York acts as the settlement bank; for multicurrency settlement, Chase Manhattan Bank, London acts as the settlement bank. All members may hold their own settlement account with any other financial institution, such that all requests for funds or payments are ultimately settled through the correspondent services of domestic clearing and settlement systems.

#### **2.2.4 Some future developments**

VISA is currently testing two new products which will be available in 1996. VISA Travel Money is a card which was first developed on an experimental basis in February 1994. This product has been designed for people who need to withdraw local currency from a cash dispenser. The VISA Purchasing Card, which is currently piloted in the United Kingdom, has been designed for corporate cardholders to help them reduce lengthy requisitions, purchase orders and invoices for routine low-value purchases.

Furthermore, VISA International is currently developing strategies to support the integration of chip technology into the VISA product base. In this regard, at the end of 1993, VISA established a joint working party with MasterCard and Europay to establish a global industry standard for chip cards (see Section 2.3.2). In June 1995, the EMV joint card and terminal specifications for chip-based cards and card-reading terminals were released allowing industry participants to begin developing chip card applications that will work across borders and systems.

In the field of chip technology applications, VISA is studying the development of the electronic purse, designed for low-value transactions, as a complementary function to the debit and credit products it currently offers (see Section 2.3.2). VISA International's

prepaid card electronic purse is called VISA Cash. During 1995, VISA Cash pilot schemes were launched in Australia, Canada, Columbia, Argentina and the United States.

In Spain, VISA Cash has been launched as a domestic stored value system and around one million reloadable VISA Cash cards will be issued by banks and savings banks belonging to VISA España during 1996. VISA will also run a VISA Cash pilot scheme at the 1996 Summer Olympic Games in Atlanta.

### **2.3 Prepaid card schemes**

The prepaid card is a new payment instrument which will be used in some cases cross-border. Section 2.3.1 describes the instrument in a general way, summarising a report published by the EMI in May 1994. Section 2.3.2 deals more specifically with cross-border schemes which are just emerging at present.

#### **2.3.1 A new payment instrument**

The prepaid card is a payment instrument which contains real purchasing power, for which the customer has paid in advance. Prepaid cards were initially developed as a single-purpose payment instrument for which the card issuer and the goods or service provider were one and the same (e.g. telephone cards). Further innovation in this area has resulted in the development of the multi-purpose prepaid card or "electronic purse", which can be used at the outlets of several service providers for a wide range of purposes. In addition to the card schemes already implemented at a national level, several service providers intend to offer cross-border schemes which would enable the cardholder to load his/her card with several currencies and thus use it in a number of countries.

Electronic purses will be used primarily to settle face-to-face transactions. Some of the

purse schemes also allow for remote payments via telecommunications methods, e.g. the telephone. They differ from other cashless payment instruments in that they are supplied in advance with a generally accepted purchasing power. They may be loaded at bank counters, ATMs or specially equipped telephones, against a debit entry on an account with a credit institution, or against banknotes and coins. The stored purchasing power is drawn down at the point of sale by an electronic device that can adjust the information on the card accordingly.

The information needed to effect the transactions is usually contained in a magnetic stripe on the back of the card or in a chip. A chip card contains a microcomputer - consisting of a processor and a memory component - embedded in the card, thereby allowing remote verification and, accordingly, purchases at a local level which for security reasons could previously be executed only with the assistance of a central computer.

Current legal opinion in most European countries is that, under existing legislation, the banknote monopoly does not extend to electronic purses. This implies that: 1) the issuance of electronic purses by parties other than central banks is possible; and 2) central banks' statutory obligations do not create any legal obligation for them to issue electronic purses themselves, thus leaving them free to choose the extent to which they wish to be involved. However, central banks are paying special attention to the possible development of electronic purses. In May 1994 the Council of the EMI published a report on prepaid cards in which it stated that the right to issue electronic purses should be restricted to credit institutions in order to: 1) protect consumers against the consequences of the failure of the issuers; 2) protect the integrity of the retail payment system; 3) facilitate the conduct of monetary policy; and 4) ensure fair competition between issuing institutions. In line with this report, central banks continue to monitor developments in the area of prepaid cards.

While the various solely domestically operated prepaid card schemes apply very different standards, cross-border schemes have to be based on highly sophisticated standards which are acceptable to banks and retailers in the various countries. One of the first full common sets of technical specifications for the integration of microprocessor chips in payment cards and their interaction with chip card-reading terminals will be the EMV standard, developed jointly by Europay International, MasterCard International and VISA International.

EMV is based on ISO standards and is a joint specification for Integrated Circuit (IC) Cards for Payment Systems consisting of three parts: Part I addresses the electronic and mechanical specifications for the manufacture of the chip cards and retailers' POS terminals; Part II defines the interaction between the chip card and the retailers' POS terminals in order to provide the cardholder with payment services; and Part III illustrates how the chip card and the retailers' POS terminals will work together to complete a financial transaction. EMV is currently working on the following developments, to be released in June 1996: (i) the creation of an interpreter concept for adding new chip card applications to provide the issuing institution with more control over the transaction process; (ii) a dynamic data authentication method for offline payment transactions to provide greater protection against fraud and counterfeit losses; and (iii) specifications for an international electronic purse, or stored value card, to ensure the global acceptance and interoperability of stored value cards.

### **2.3.2 *Emerging cross-border prepaid card schemes***

The cross-border prepaid card schemes operating or emerging in Europe of which the EMI is aware are the following:

*CAFE project*

CAFE (Conditional Access For Europe) was conceived as a project under the so-called ESPRIT Three research programme launched by the Commission. Essentially a trial of electronic payment technology (which the European Commission has agreed to host on its premises), it seeks to demonstrate the feasibility of the electronic purse as a vehicle for cross-border financial transactions in a multi-currency environment. It is therefore a trial, limited to a few Commission premises and involving a limited number of Commission staff.

The trial is the result of close collaboration between commercial companies, universities and research organisations within the European Union. A wider Special Interest Group for Multi-currency Electronic Wallets (SIGMEW) provides a much broader representation of the prepaid card industry to improve liaison between its members and with regulatory bodies, professional associations and other special interest groups.

Extensive market research was used to draw up a list of features considered by members of the general public to be desirable in an electronic payment system of this type and, wherever possible, these features have been implemented.

Participants will be equipped with an IC card - the Xchange card. A limited number of participants will also receive an electronic wallet. The latter uses a contactless infrared interface to effect remote payments, the customer merely having to point the wallet at the cash register and press a button.

The CAFE instrument is characterised by the following features:

- an advanced electronic public key cryptography;
- multi-currency operation - the electronic purse may be used to make payments in

local currency (i.e. Belgian francs) or in ECUs, which can be loaded in parallel;

- fault and loss tolerance provision - to allow fraudulent, erroneous and cryptographically flawed transactions to be detected and ignored;
- the ability to preserve the anonymity of the person making payment unless that person chooses to reveal his/her identity, for example in the event of the theft or loss of the card.

At the end of the trial, the reaction of participants will again be sought to determine the acceptability of the features tested.

*Europay*

In December 1994 Europay International (see Section 2.1), based in Belgium, decided to launch a cross-border electronic purse scheme code-named EXPRESS, thus providing a platform for bringing interoperability to purse schemes launched all over Europe. It is designed to act as a domestic electronic purse as well as a cross-border scheme for members. The pilot launch is scheduled for end-1996. Europay's electronic purse product will be positioned as an option for lower-value transactions in sectors such as public transport, taxis, tolls, payphones, vending machines and fast food restaurants. It will be possible to hold a number of different currencies in each purse. The purses will only be issued by banks, which can choose to market the purse product as an international enhancement to an existing domestic purse scheme or as part of the national scheme. EXPRESS will be fully auditable, so that all participants in the transaction process will be able to obtain detailed information on each purchase or loading operation.

As an additional initiative, Europay is working with IBM to use IBM's multi-party, open payment protocol, iKP, with Europay's electronic purse product, in order to provide

World Wide Web users with the necessary level of protection to make secure electronic transactions, by inserting a payment card containing a chip into a "card reader" attached to electronic devices such as personal computers, telephones or televisions. The chip will also cover debit and credit card applications as well as ensuring that consumers have the same choice in the electronic world as they have in today's physical shopping environment.

All Europay products (such as Eurocard/MasterCard credit cards, eurocheque cards and electronic bank debit cards linked to edc/Maestro) will carry a chip not later than 2002.

#### *Mondex*

National Westminster Bank (NatWest) in association with Midland Bank and British Telecommunications plc has developed an open prepaid card, branded Mondex. Mondex is described as global electronic money. It is intended to be a mass-market, multi-territory electronic purse which resides on an ISO standard IC card. Cardholders will eventually be able to load a maximum of five currencies at a time, and these are interchangeable according to customer requirements.

In mid-1995 Mondex UK trials began in Swindon, with an upper card limit for consumers of GBP 500. The trial will last up to two years.

In the pilot scheme cards can be initially loaded (and reloaded) with money from bank accounts using specially adapted ATMs or modified telephones either at home or in public places. Cardholders are able to check the value stored on the card by using a small, key-ring-sized personal card reader. A pocket-sized electronic wallet will show the stored value, and provide a record of the last ten transactions made with the card. This device also allows for funds to be transferred from purse to purse between private individuals

without the involvement of a bank. Modified telephones can also be used for this purpose. Payments to retailers, and refunds to customers, are made by inserting the card into a terminal which, on the retailer's instructions, debits the amount due from the card and automatically credits the retailer. This process is completed without recourse to a PIN, signature or issuer authorisation. However, Mondex cards can also be locked by the cardholder, to ensure that the value on the card cannot be spent until a personal code is entered. Settlement occurs instantaneously in the sense that the electronic value is a bearer instrument.

#### *VISA*

VISA International (see Section 2.2) is also working on the development of a multi-currency stored value card for cross-border applications. A VISA working group on stored value cards is evaluating pilot schemes in the United Kingdom.

The development of VISA's stored value card is based on the following assumptions: the card will carry a limited value on the chip and will operate only in local currency at first. It should be disposable or reloadable and able to be reloaded at modified ATMs or telephones. It should be fast and easy to use since no PIN, signature or authorisation will be required. Furthermore, it is intended that it should have accounting controls and be auditable. While stored value card transactions are anonymous, it is possible to relate a payment to the chip on the card. In this way, the customer need not identify himself/herself at the time of purchase, but banks would be able to determine the unused value of a damaged card and replace it. The card will use common financial industry specifications to ensure compatibility with other chip-based product applications. There is no fixed time-scale for realisation of the VISA project.

## 2.4 Developments with regard to remote cross-border payment systems

### 2.4.1 *Developments in the European Community*

The growth in cross-border payment transactions in recent years together with a high demand for the most effective and cost-efficient methods of transferring money have been a decisive factor in the search for innovative organisational models for offering cross-border transfer services formerly executed via traditional correspondent banking relationships (see Section 1.2).

This section outlines the broad types of models that have been or are currently being introduced.

#### *Enhanced correspondent banking relations*

As the title suggests, enhanced correspondent banking is the solution that departs least from the traditional concept of effecting transfers across borders. It is also the solution most widely resorted to in recent years by institutions wishing to upgrade the services they provide for effecting cross-border transfers. All examples of systems based on this technique share the feature that they are based on special (preferential) relations between institutions in different countries. These preferential relations entail agreements between member institutions on common formats/formatting arrangements for file transfers between different countries.

At one end of the spectrum is the “in-house solution”. This is a situation in which one and the same institution, typically a large bank with a presence in different countries through branches or subsidiaries, becomes a member of the relevant domestic clearing and settlement systems in the countries concerned. This enables the institution in question to route its cross-border transfers through its in-house network and to enter

them into the domestic clearing system of the country of destination of the transfer. A variation on the in-house solution is possible for institutions which do not have, or choose not to use, their own network of branches and subsidiaries. A typical example is the Bank of Scotland’s TAPS (Transcontinental Automated Payment Service) system; the Bank of Scotland transfers payment orders in the format required by the clearing system in the country of the receiving correspondent bank, which then transfers funds through the national clearing system to the beneficiary’s account at the beneficiary’s bank in that country.

At the other end of the spectrum is the “club solution”. This differs from the former in that it consists of agreements between a group of individual institutions, one or more in each country, which provide one another with indirect access to the domestic clearing systems in which the club member participates. A typical example is the DISCUS system, designed and operated between “core” participating banks, Commerzbank, Credito Italiano, National Westminster Bank and Société Générale, but which also extends to cover other countries through bilateral agreements with associate members in these countries.

However, a clear-cut distinction between these solutions may appear inappropriate in some circumstances. In effect, many combinations are possible between the models described above. Thus, for instance, a large bank may opt for an in-house solution with regard to a certain number of countries, while entering into club-type agreements with countries in which it has no direct presence or in which it finds such co-operation agreements advantageous for whatever reason. Clearly a typical example would be Deutsche Bank’s Bulk Payment Services, based both on a network of Deutsche Bank entities as well as on co-operation with other banks for certain countries.

*The sectoral solution*

This solution consists of arrangements between groups of institutions of the same kind or sharing common objectives. By contrast with the previous types of systems, these are groups of several institutions co-operating in one country, with a view to linking up with (similar) groups of institutions in other countries. Just as in the case of the club solution, the cross-border link established between groups of institutions that are parties to the agreement will provide participants with indirect access to local clearing systems. A typical example is the TIPA system (*Transferts Interbancaires de Paiement Automatisé*), created to service a network of co-operative banks, so as to allow any co-operative bank to have automatic access to the clearing systems of those countries whose co-operative institutions have joined the network, by means of one or more clearing banks in each country. Further examples are EUROGIRO, a cross-border payment service which is available to private and business customers of the Post/Giro organisations of sixteen European countries, and EUFISERV, a network created between savings banks.

*Direct ACH linkages*

The creation of cross-border linkages can be taken a step further by creating interfaces directly between the Automated Clearing Houses (ACHs) of several countries. At the end of 1995, pilot ACH links are also operational between BZS in Germany and

BACS in the United Kingdom and BGC in the Netherlands. Extension to a number of other countries is under consideration. For instance, the Italian ACH (SIA) has scheduled to start its activity by the end of 1996. In the range of possible organisational models, the solution consisting of direct linkages between ACHs is probably the one that most departs from the concept of traditional correspondent banking. It is also the one which, for the time being, remains least developed. In its purest example, the ACH in the country of the originator is in charge of currency conversion operations and transmits the payment order to the recipient ACH in the country of the beneficiary, where the order is handled as a domestic item. Settlement functions are performed by means of a designated institution (e.g. the central bank) in the country of each ACH or by means of correspondent banking relationships. In a variant of the previous example, a number of operations (e.g. currency conversion, formatting, transmission) are delegated to a nominated institution, probably a bank.

*"Virtual" cross-border banking*

The IBOS system, originally created by the Royal Bank of Scotland and Banco Santander and now attracting members in a number of countries, adopts a different approach. Operating in real time, and using proprietary harmonised standards, funds are directly transferred in seconds between the customers' accounts at the IBOS member branches.

### 3. Cross-border interbank settlement systems

#### 3.1 The TARGET system<sup>14</sup>

##### 3.1.1 A new payment mechanism for the Economic and Monetary Union

In all EU countries, the impact of monetary policy operations is currently transmitted to the money market through interbank funds transfer systems which settle in the books of the central bank. From the start of Stage Three of EMU there will be a single monetary policy and an integrated money market for those countries participating in EMU. As in any monetary area, there will be an integrated money market on which interest rate arbitrages will occur so that the single monetary stance applies in identical terms throughout the Union. Thus, there will then be a need for a payment arrangement via which the payment operations between the European System of Central Banks (ESCB) and the banking system can be effected quickly and safely. In order to serve the needs of the future single monetary policy, EU central banks agreed to establish the TARGET system.

TARGET is the acronym for Trans-European Automated Real-time Gross settlement Express Transfer system. TARGET will be

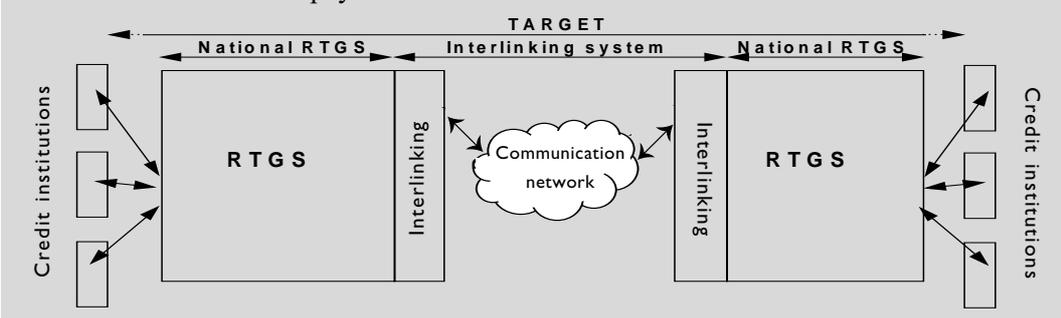
designed as a payment system composed of one RTGS system in each of the countries which will participate in Stage Three of EMU and a mechanism to link the RTGS systems. EU central banks have agreed that each Member State should have a real-time gross settlement (RTGS) payment system into which as many large-value payments as possible should be channelled. The RTGS systems will be interconnected to each other according to common infrastructures and procedures: the Interlinking system. Each national central bank (NCB) will have an interface between its RTGS system and the Interlinking system, called the national Interlinking component (see Chart 1). EU countries with a derogation may also be connected to TARGET. The payment facilities of the European Central Bank (ECB) will also be part of TARGET, although the ECB will not run an RTGS system. Besides its main objective, namely to provide the payment procedures necessary for carrying out a single monetary policy in Stage Three of EMU, the other objective of the TARGET system will be to contribute, by facilitating the wider use of RTGS procedures, to the development of sound and efficient payment mechanisms in Europe.

TARGET will be designed in such a way that it will be able to process cross-border payments denominated in euro almost as smoothly as if they were domestic payments.

<sup>14</sup> For more detailed information, see the Report on the TARGET system, published by the EMI in May 1995.

**Chart 1**

Cross-border TARGET payments



It will allow payments - and especially money market payments - to be made throughout the single currency area at low cost with high security and very short processing times.

### 3.1.2 Guiding principles

The basic principle of TARGET will be that of an RTGS system: through TARGET unconditional payment orders will be automatically processed one by one on a continuous basis. Therefore, TARGET will provide for the immediate and final settlement of all payments, provided that there are sufficient funds or overdraft facilities available on the sending institution's account with its central bank.

When defining the TARGET system, three other guiding principles were identified, namely the market principle, the decentralisation principle and the minimum approach. According to the market principle, the use of TARGET will not be mandatory, either for interbank payments or for commercial payments. However, since the main objective of the TARGET system is to facilitate the implementation of the single monetary policy in Stage Three of EMU, the use of TARGET will only be mandatory for payments directly connected with monetary policy operations in which the ESCB is involved either on the recipient or the sender side. Moreover, because of the need to contain the systemic risk inherent in large-value net settlement systems within manageable limits, all such systems operating in euro will be required to settle through TARGET. For all other purposes, other payment arrangements (correspondent banking, net settlement systems, etc.) can operate in parallel with TARGET.

According to the decentralisation principle (established by Article 12.1 (3) of the ESCB/ECB Statute) the TARGET system will make use of the infrastructures in place in the EU Member States and settlement accounts will be held at the national central banks. The

structure of the TARGET system will mirror that of the European System of Central Banks: it will be a decentralised system with only some centralised functions undertaken by the ECB.

In designing the TARGET system, the minimum approach aimed at minimising the time and cost required to establish a fully operational system. Therefore, the national RTGS systems will retain their specific features to the extent compatible with both the singleness of the ECB's monetary policy and the level playing-field for credit institutions. Harmonisation will be reduced to the minimum; however, a certain level of harmonisation might be necessary and is currently being discussed in three areas: the provision of intraday liquidity, operating hours and pricing policies. Since TARGET will incorporate RTGS systems which have been or are being established under local conditions, which are not identical in all countries, it will not offer entirely identical services to the end-users of different national systems.

### 3.1.3 Participation in the system

RTGS systems in EU Member States will be incorporated in TARGET as soon as the country in which they operate adopts the euro as its currency. RTGS systems of countries which have not (or not yet) adopted the euro will have the possibility to be connected to TARGET in order to process euro.

Only the NCBs, as settlement agents of their national RTGS systems, will be allowed to make use of the Interlinking procedures, for their own purposes or on behalf of their customer banks. The ECB will also be allowed to participate in the Interlinking.

No need has been identified to define common access criteria for RTGS systems in TARGET (or connected to it). Access criteria will continue to rely on national approaches, provided that they comply with the general

framework adopted by EU central banks in the report on “Minimum Common Features for Domestic Payment Systems”.<sup>15</sup>

### 3.1.4 Types of transactions handled

The Interlinking will be able to process credit transfers in euro only. The use of TARGET will only be mandatory for payments directly connected with monetary policy operations in which the ESCB is involved either on the recipient or on the sender side. In practice, TARGET will handle almost exclusively large-value payments to be transmitted between participants on their own behalf or on behalf of their customers. However, there is no intention to set an upper or a lower limit for the amounts to be transferred in TARGET, but it can be expected that retail payments which do not require the execution speed guaranteed by

TARGET will be more likely to be processed by other funds transfer systems which will offer lower costs and longer processing times.

### 3.1.5 Operation of TARGET

Because of the “minimum approach” (see Section 3.1.2), domestic payments in TARGET will continue to be processed according to the procedures which exist today (or will exist soon) in present RTGS systems. Cross-border TARGET payments processed between the NCBs (and the ECB) will be organised according to the “central bank multilateral correspondent model”, in which payment messages are exchanged on a bilateral basis between national central banks, with reciprocal accounts being credited and debited each time a payment order is transferred from one NCB (or the ECB) to another.

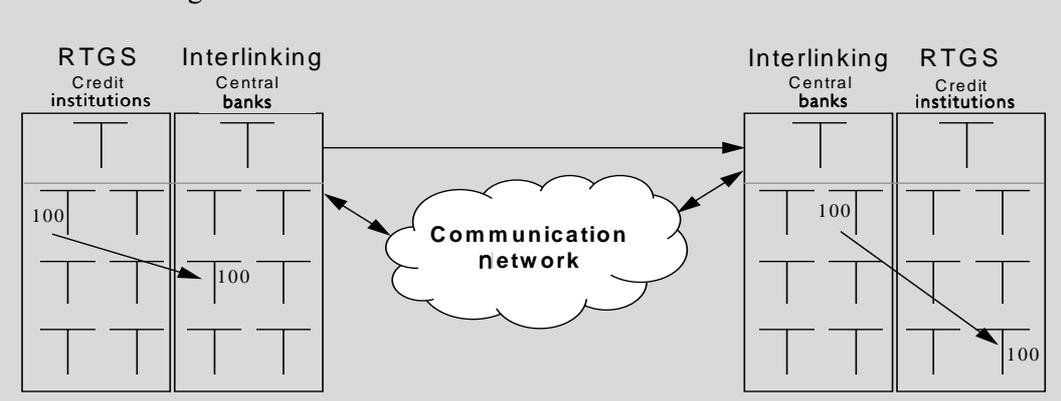
<sup>15</sup> Principle 1: Direct access to interbank funds transfer systems.

*As a rule, only central banks and credit institutions, as defined under the Second Banking Co-ordination Directive, can be admitted as direct participants in funds transfer systems which process third-party payments. As exceptions, certain other bodies authorised to hold accounts for customers may also be, with the approval of the central bank, direct participants in such systems provided that (a) their public nature ensures little risk of failure or (b) they are supervised by a recognised competent authority.*

In order to initiate a cross-border payment, the ordering TARGET participant will send payment orders to the local NCB through the local RTGS system (see Chart 1). The first instructed central bank, the sending NCB, will check the validity of the payment order, i.e. that it is presented according to the agreed standards, that it contains the information needed and that the amount of the payment does not exceed the balance of the account of the sending bank or the amount of the credit line available to it on the books of the sending NCB. The sending NCB will also check the

**Chart 2**

The accounting framework



availability of the receiving NCB, i.e. that the receiving NCB and the receiving RTGS system are operational. If the availability check is positive, the amount of the payment is immediately and irrevocably debited from the RTGS account of the sending credit institution and credited to the Interlinking correspondent account of the receiving NCB (see Chart 2). The sending NCB will then convert, if necessary, the payment order into the message standards which are used by the Interlinking, include the additional security features used during the communication between NCBs (sealing, authentication and encryption), and send the message, through the Interlinking network, to the receiving NCB.

The receiving NCB will check the security features of the payment message, and that the receiving bank specified in the payment order is a participant in its RTGS system. If this is the case, the receiving NCB converts, where appropriate, the message from Interlinking standards into domestic standards and credits the receiving bank's RTGS account. Finally, the receiving NCB sends the payment order via the local RTGS procedures to the receiving credit institution.

Transmission of payment orders between the NCBs will be done via telecommunication lines. Besides speed and availability requirements, the communication network

will have to meet strict requirements regarding security and also provide flexibility with regard to processing capacity.

### 3.1.6 Credit and liquidity risk

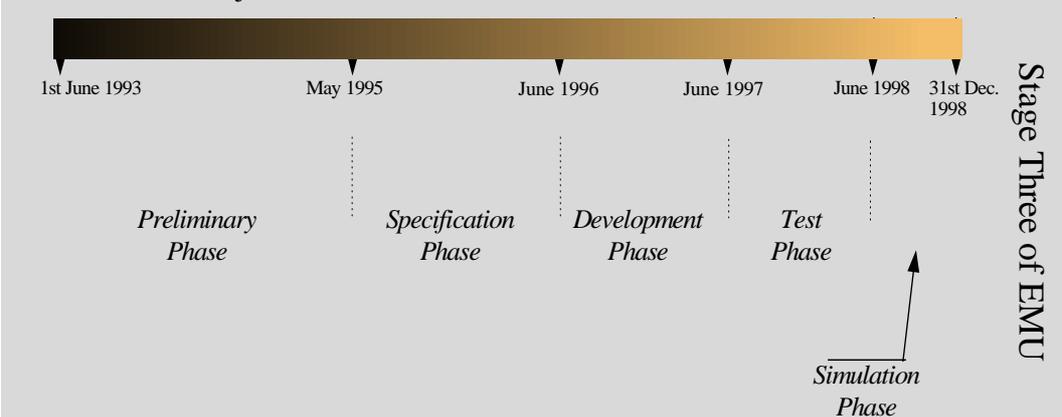
According to the operating principles of an RTGS system, TARGET payments will only be processed on condition that there are sufficient funds or overdraft facilities available on the sending institution's account with its central bank. NCBs will grant overdraft facilities only if they can be fully collateralised. There is always a guarantee for the receiving institution that payment orders received from TARGET are unconditional and irrevocable.

### 3.1.7 TARGET Project Plan

The main features of TARGET were defined during a preliminary phase which ended in May 1995 with the submission of a special report to the Council of the EMI. The next phase will end in June 1996, when the detailed specification of the Interlinking will be finished. By mid-1997, most RTGS systems should be ready for testing against an EMI test centre. The system as a whole should be available by mid-1998 to start simulating the ESCB operations.

**Chart 3**

**The TARGET Project Plan**



### 3.2 ECHO (Exchange Clearing House)

ECHO is a clearing house based in London for the multilateral netting and settlement of spot and forward foreign exchange obligations between its users. ECHO commenced live operations on 18th August 1995 with eleven major trading currencies and sixteen participating users. It is ultimately intended to net further currencies of issue and to admit financial institutions from a wider group of jurisdictions (including all EU Member States and the ECU as an eligible currency), subject to the prior approval of each central bank of issue and supervisory authority.

The netting is based on an open offer approach and is governed by English contract law. Under this arrangement, a pair of users enter into a transaction to be settled through ECHO and, provided that certain preconditions transparent to both parties are satisfied, ECHO automatically and immediately becomes the central counterparty in that deal. In this way, the multilateral netting of users' contracts is achieved, such that each user will either pay or receive a single net sum in each participating currency for each value date.

The settlement of these amounts takes place through traditional payment channels. ECHO has arranged nostro accounts with correspondent banks in the country of issue of each participating currency, and users are required to establish similar arrangements as one of the pre-admission criteria.

ECHO has developed a series of proactive and reactive risk management procedures to counter potential credit and liquidity risks within the system. The two key proactive measures are the membership criteria for prospective users and predefined exposure limits. ECHO has placed limits on its total, forward and individual currency exposure to each user, and on each user's notional bilateral exposure to any other user. These

limits are unique to each participant, with the exception of the currency limits which are determined by ECHO's available liquidity in each eligible currency.

If a user defaults on a payment, ECHO will deploy its collateral holdings to ensure that the day's settlement is completed. ECHO holds US dollar-denominated collateral in excess of the amount at which its exposure to any single user is capped, and has arranged committed facilities to convert this liquidity into same-day value in each of the eligible currencies. ECHO's users and shareholders provide the securities which constitute the collateral pool, and there are loss-allocation procedures for the replenishment of this facility following a failure to pay.

The ECHO scheme has been scrutinised by the interested central banks within the framework of the Lamfalussy standards. In the terms of the Lamfalussy report, the Bank of England has lead responsibility for this process and for the ongoing oversight of ECHO, since the clearing house is incorporated under English law, and is located in London. A special statute-based regime has been put in place under Section 171 of the UK Companies Act 1989 for this purpose.

### 3.3 The private ECU Clearing and Settlement System

#### 3.3.1 Origin of the system

The ECU Clearing and Settlement System is a private multilateral net settlement system which clears/handles payments denominated in private ECUs.

The private ECU Clearing and Settlement System was developed in order to replace a clearing scheme for the settlement of private ECU balances which had been set up in 1982 by a small group of commercial banks active in the ECU market. The original scheme, known as MESA (Mutual ECU Settlement Accounts), soon proved to be ill-suited to

handling the increasing number of ECU payment orders between a growing circle of financial institutions.

In early 1983 the Bank for International Settlements (BIS) was approached by a group of commercial banks with a view to establishing a clearing system for operations in private ECUs. The Committee of Governors of the EC central banks was consulted prior to the setting-up of the present system and, in March 1983, it issued certain guidelines for the operation of the system. These included the requirements that the system remained exclusively within the framework of relations between the BIS and the commercial banks and did not conflict with the monetary policy objectives of the countries concerned.

### 3.3.2 Major bodies involved in the system

The manager of the system, *the Association Bancaire pour l'Ecu*, ABE (ECU Banking Association, EBA) is a body formed under French law in September 1985 with its headquarters in Paris. Membership is open to commercial banks which have their head office or a branch in one of the EU countries and which demonstrate sufficient interest in the development of ECU transactions; those member banks of the EBA who fulfil certain criteria laid down in the EBA clearing rules may become clearing banks.

As an agent of the individual clearing banks, the Bank for International Settlements (BIS) acts as the settlement institution for the system. Each clearing bank agrees to maintain an ECU sight account and a clearing account with the BIS. The ECU sight account may only be used for the settlement of operations, does not bear interest and may never show a debit balance; as a result, the BIS does not assume any credit risk in the ECU Clearing and Settlement System.

S.W.I.F.T. acts as the netting centre for the system for calculating the net positions and providing the data support for the netting stage (see also Section 1.3).

### 3.3.3 Operating rules of the system

The netting stage lasts until 2 p.m. (Brussels time) every working day. During this period, clearing banks exchange payment orders in ECUs through the netting centre. Immediately after 2 p.m., the netting centre determines the preliminary credit or debit balances of each clearing bank, value the same day; it then reports all these balances to the BIS and notifies each clearing bank of its preliminary balance.

The borrowing and lending stage begins immediately after the netting stage. In this netting arrangement, where the sum of preliminary debit balances is necessarily equal to the sum of preliminary credit balances, the clearing banks in a creditor position must, in the second stage up to 3.15 p.m., lend funds to debtor banks in order to reduce their preliminary debit balances to an amount not exceeding ECU 1 million.<sup>16</sup>

Shortly after 3.15 p.m., the netting centre determines the final netting balances, notifies each ECU clearing bank of its own balance and reports all balances to the BIS. These final balances, which take account of all bilateral operations which the clearing banks have been able to conclude with each other between 2 p.m. and 3.15 p.m., must be confirmed to the BIS by each bank before 3.45 p.m.

If a clearing bank's netting balance continues to show a position of more than

<sup>16</sup> This remaining position is then covered during the settlement stage by the transfer of funds, up to ECU 1 million per account, that the BIS is entitled to organise under the terms of the standing transfer order it has received from each clearing bank.

ECU 1 million, the debtor clearing bank must, before 3.45 p.m., request the assistance of the BIS, with a view to borrowing/lending ECUs with the other clearing banks to permit the settlement of its final netting balance. Any sum thus transferred constitutes a loan between the banks in question, value the same working day and repayable the following working day. All these transactions bear interest at a fixed rate which is calculated every day by the BIS according to the "tomorrow/next" ECU interest rate, reported to it by the clearing banks on the previous day. At 3.45 p.m. the BIS is normally able to carry out the settlement operations by debiting or crediting the respective ECU sight accounts held in its books with the amounts necessary to square all the corresponding netting balances booked on the clearing accounts. If, after 3.45 p.m., a clearing bank is unable to cover its debit position, the EBA together with the BIS may, as far as possible, proceed with the operations authorised by the risk reduction measures

described below. If, however, cover cannot be produced, an "unwind" procedure occurs. The entire clearing for that day is then carried over to the following working day: all payments to and by the debtor bank are withdrawn from the day's clearing transactions and new balances calculated and added to the clearing for the following settlement day. This "next day" solution means that beneficiaries of payments would not have good funds until the completion of the clearing the next day. In the event that for any reason - presumably on technical grounds - the BIS is not able to receive notification of all final netting balances from the netting centre, the clearing may have to be delayed or postponed. To date a day's value has never been lost.

### 3.3.4 Volume of transactions

Table 3 shows the expansion of the private ECU Clearing and Settlement System in recent years. At the end of 1995, the system cleared some 6,832 transactions per day among the forty-five clearing banks for an amount of about ECU 44.2 billion.<sup>17</sup> In early 1996, two further banks joined the clearing.

<sup>17</sup> A peak was reached in January 1995 when the system cleared a total average value of ECU 56.1 billion per day.

**Table 3**

**Key statistics relating to the private ECU Clearing and Settlement System**  
(all figures relate to December)

Year	Number of clearing banks	Number of payments netted during the month	Average daily transactions	
			volume	value (ECU billions)
1986	7	33,869	1,882	-
1987	26	49,098	2,455	-
1988	33	69,024	3,287	-
1989	45	76,908	4,048	23.3
1990	45	97,176	5,115	28.7
1991	44	125,521	6,276	44.0
1992	44	142,916	6,496	41.5
1993	44	141,732	6,162	45.0
1994	45	132,599	6,314	48.5
1995	45	129,808	6,832	44.2

Source: ECU Banking Association

### 3.3.5 Risk reduction measures

As the private ECU Clearing and Settlement System is a closed circuit with no scope for injecting same-day liquidity into it after the cut-off time, each participant with a provisional net debit balance can in principle only square its position by borrowing the excess funds from participants with a net provisional credit balance. The successful completion of the clearing each day relies on the willingness of those banks in net credit positions to take on the additional credit risk that results from lending overnight to the banks with net debit positions.

As a first step towards strengthening the settlement arrangements, the BIS, at the request of the EBA, has with effect from 1st August 1991 implemented an "intermediation facility". Under this facility, in the event of a participant with a net credit position being totally opposed to lending its surplus to a participant with a net debit position, then that surplus will effectively be channelled through all the other clearing banks who will each on-lend up to a maximum of ECU 5 million to the "net debit" bank. Since February 1996 this arrangement can potentially cover a shortage of ECU 230 million (i.e.  $5 \times 46$ ).

Measures to strengthen the safety features of the settlement of ECU transactions were first considered in early 1990. The conclusions of the report of the Committee on Interbank Netting Schemes (the Lamfalussy Report), published in November 1990, provided additional incentives for their implementation. In January 1991, the Committee of Governors of the EC central banks established an Ad Hoc Working Group on EC Payment Systems, whose mandate included performing a thorough review of the ECU Clearing and Settlement System in the light of the Lamfalussy Report, and in co-operation with the BIS and the EBA. In January 1994, the EMI took over responsibility for the oversight of the ECU Clearing and Settlement System by virtue of Article 109f (2) of the Treaty on European Union.

Based on preliminary findings of the Ad Hoc Working Group, in September 1991 the Committee of Governors asked the EBA to implement without delay certain short-term measures to improve the system's compliance with the Lamfalussy minimum standards (see Glossary). These measures specifically involved the carrying-out of a legal and technical audit of the system and the implementation of a system of limits on bilateral and multilateral exposures and of a liquidity-sharing and loss-sharing agreement.

In June 1993, the clearing banks approved and adopted a series of resolutions endorsing the implementation of mandatory multilateral limits, as monitored ex post, on each bank's net debit and credit position. Under these provisions, breaches of these limits as at the preliminary netting at 2 p.m. are subject to sanctions. Moreover, the limit forms the basis of a liquidity-sharing and loss-sharing arrangement (called the Emergency Settlement Facility), such that the settlement of the clearing is guaranteed by the members themselves in the event of every clearing bank being within its debit and credit limits at 2 p.m. but one short bank being unable to borrow sufficient liquidity from other banks to cover its position in full. In addition to the clearing banks' liquidity and loss-sharing arrangements, certain EU central banks (the Bank of England, Banque de France and Banca d'Italia) have introduced collateralised liquidity facilities to operate alongside the BIS "intermediation facility" and further strengthen the end-of-day settlement arrangements. Their aim is to facilitate the recycling of surplus funds from net creditors to net debtors.

With a view to ensuring greater compliance with the minimum standards set out in the Report on Interbank Netting Schemes published by the BIS in November 1990, the EBA decided in March 1994 to introduce, as from mid-1996, a system of binding intraday limits which will control delivery of payments between two clearing banks within the

sender's net debit or the receiver's net credit limit. Queuing such payments will result in a managed level of exposure for the members of the system to each of the

individual banks, ensuring the liquidity and loss-sharing arrangements can apply at any time during the day as well as at the end of the day.

## 4. Settlement in the international securities market

### 4.1 The international securities market

#### 4.1.1 Market information

The international securities market consists of a number of segments which have their own characteristics. They include the international bond market for long-term debt instruments (eurobonds and foreign bonds<sup>18</sup>) and the euro-note market, where short-term paper such as commercial securities is marketed and which is a multi-currency market; by far the largest proportion of the stock of international bonds is denominated in US dollars with other currencies trailing well behind.

Since in many countries institutional investors are prohibited from buying unlisted securities, most international bonds are listed on established stock exchanges to improve their marketability. This is done, most commonly, on the Luxembourg Stock Exchange and the London Stock Exchange. Trading, however, is

normally carried out over-the-counter and conducted by various specialised dealer groups. One particular feature of the international securities market is that most of the securities (especially in the euromarkets) are in bearer form and are not fully dematerialised. In principle, the transfer of ownership thus involves the transfer of the securities by physical delivery. However, the possibility of depositing the bearer securities in a securities account with Cedel or Euroclear, the two major depositories and settlement organisations in the international securities market, means that the transfer of ownership can take place via book entries in these security accounts.

#### 4.1.2 Securities settlement systems

Euroclear and Cedel operate as international securities depositories. Both institutions also accept and settle transactions involving domestic securities. Their combined turnover in 1995 amounted to USD 27.4 trillion (ECU 21.5 trillion). Euroclear and Cedel provide both securities and cash accounts so that users can also allow the cash leg of securities transactions to be settled by these organisations. They do not hold the securities in custody themselves but rely on a worldwide network of depository banks. The custody services offered by the depositories include storing the issue in the vault, administration of coupon, dividend and redemption payments, related tax services, and the exercise of warrants, conversion and other options. To limit physical movements of securities and enhance security, each

<sup>18</sup> Foreign bonds are issued in domestic capital markets by non-resident borrowers and underwritten and sold by a syndicate composed of institutions located in the country in which the bonds are offered (which may, however, include subsidiaries of multinational financial institutions). Eurobonds are usually issued simultaneously in several capital markets and underwritten by an international syndicate (they are almost wholly exempt from disclosure and registration requirements and from withholding taxes). However, the distinction between eurobonds and foreign bonds has become increasingly blurred.

individual issue is deposited and immobilised with only one depository; in the case of eurobonds this is normally the paying agent for the issue. Typically, the deposited securities become fully fungible, which means that the owner no longer has title to a security with a particular registration number but receives a claim on the pool of securities held by the settlement organisations; the transfer of ownership takes place by book entry in the securities accounts with Euroclear and Cedel.

Apart from custody and settlement services, Euroclear and Cedel offer their customers various other services, including trade matching and confirmation, cash management and financing facilities, proprietary telecommunications systems and securities lending and borrowing programmes. Regarding funds transfer facilities, participants pay and receive funds in the different currencies accepted by the systems through each system's cash correspondent in the respective country of issue.

## 4.2 Euroclear

### 4.2.1 General overview

Euroclear Clearance System Société Coopérative (the "Cooperative") was established in 1987 by Euroclear Clearance System Public Limited Company ("ECSplc"), the owner of the System since 1972. Through a licensing agreement with ECSplc, the Cooperative oversees the activities of the Euroclear System.

All participants are offered shares in the Cooperative, a Belgian co-operative corporation. Of the 2,635 Euroclear participants at year-end 1995, 2,063 had become shareholders.

ECSplc is an independent corporation owned by 124 international institutions, all of which

are major users of the System. None of the institutions owns more than 3.9% of ECSplc shares.

The Cooperative is run by an independent Board of Directors, who set policy and determine the direction of the System.

In 1995, transactions valued at USD 25 trillion (ECU 20 trillion) were settled through the System, with the number of daily instructions averaging close to 40,000 and daily securities loans outstanding averaging USD 5.3 billion (ECU 4.2 billion) at end-1995.

The Cooperative has appointed Morgan Guarantee Trust Company of New York as operator of the System. A dedicated team from Morgan Guaranty's Brussels office runs the Euroclear System through the Euroclear Operations Centre. All Euroclear securities clearance and cash accounts are accounts with the operator.

Morgan Guarantee Brussels is fully regulated by the Belgian Banking Commission, the Federal Reserve Board and the State of New York Banking Department. In its capacity as operator of the Euroclear System, Morgan Guaranty Brussels is also authorised as a Service Company by the Securities and Investments Board under the UK Financial Services Act (1986).

### 4.2.2 Participants in the system

The Euroclear System has more than 2,600 participants world-wide, the vast majority of which are banks, broker-dealers and other institutions professionally engaged in managing new issues of securities, market-making, trading or holding the wide variety of securities accepted by the System. Admission criteria focus on the financial and operational capacity of applicant institutions.

### 4.2.3 Types of transactions handled

Over 70,000 different securities are accepted by the Euroclear System, which covers a broad range of internationally traded fixed and floating rate debt instruments, including foreign and domestic debt instruments, convertibles, warrants and equities. This includes domestic debt instruments from twenty-three countries and close to 12,000 equity securities from twenty markets.

Euroclear participants can confirm, clear and settle trades in more than thirty settlement currencies on a simultaneous delivery versus payment basis. In addition, they can settle trades with counterparties in Cedel and in more than twenty-five different domestic markets.

### 4.2.4 Transaction processing environment

Buyers and sellers of securities send their settlement instructions through one central point in Brussels, the Euroclear Operations Centre (EOC). Efficient, secure and reliable input and reporting communications media include EUCLID (a proprietary electronic communications system), S.W.I.F.T., telex and mail. The Euroclear operator also maintains a full backup centre at a location separate from EOC.

Participants provide EOC with instructions to receive securities if they are purchasers or to deliver securities if they are sellers. Such instructions are validated in real-time for processing. Invalid instructions are rejected immediately and reported as such to participants. EOC attempts to match a participant's valid receipt instruction with a counterparty participant's delivery instruction to ensure that the terms of the trade are identical. The matching process takes place in real-time throughout the day; valid instructions are submitted for matching as they are received. Information required for matching includes: (1) account numbers,

(2) the settlement date, (3) the quantity of securities, (4) the security code of the issue traded, and (5) the currency and cash countervalue.

Unmatched instructions remain in an inventory of valid instructions and continue to be put through the matching process until they either match or are cancelled. Participants can obtain daily reports of matched and unmatched instructions via ACE, which is a trade confirmation and matching procedure developed in 1987 with the support of the International Securities Market Association (ISMA).

### 4.2.5 Settlement procedures

#### *Delivery versus payment*

The Euroclear System achieves delivery versus payment (DVP) by "gross simultaneous settlements of securities and funds transfer" (BIS "model 1" classification). The System is based on the concept of book-entry settlement. 70% of the Euroclear turnover settles on its own books, 10% via "Bridge" transactions with Cedel and 20% settles externally.

#### *Internal settlements*

Transactions between Euroclear participants settle on a DVP basis on the books of EOC. On the settlement date, securities are transferred by book entry from the securities account of the seller to the securities account of the buyer, provided that settlement conditions are met. Simultaneously, cash is transferred from the account of the buyer to the account of the seller. Securities and cash transfers between buyer and seller accounts are final and irrevocable upon settlement.

*“Bridge” settlements*

Bridge transactions represent about 10% of the Euroclear turnover.

Transactions between Euroclear participants and Cedel participants can settle via the Bridge on a DVP basis (see Section 4.4).

For example, a delivery from a Euroclear participant to a counterparty in Cedel is proposed to Cedel by EOC, provided that Euroclear settlement conditions are met. Cedel then verifies whether its participant can buy the securities and feeds its acceptance back to EOC. At the moment the acceptance feedback is received, the provisional securities and cash, credits and debits, booked upon proposing the delivery, become final and irrevocable.

In order to obtain a receipt from a Cedel participant, EOC verifies whether the proposed delivery from Cedel meets Euroclear settlement conditions. The receipt becomes final and irrevocable when Cedel receives the acceptance feedback from EOC.

*External settlements via domestic market links*

Trades between a Euroclear participant and a counterparty in a domestic market are settled either directly or indirectly via an agent with domestic central securities depositories in more than twenty-five domestic markets. Trades settling via domestic market links settle on a DVP basis if DVP settlement is provided in the local market. Settlement in the Euroclear System becomes final and irrevocable only at the time settlement is declared final and irrevocable in the domestic market.

**4.2.6 Securities settlement processing**

Three Euroclear securities settlement processings take place: two during the night prior to the relevant value date for settlement,

and one daylight processing on the settlement date.

After each securities settlement processing, EOC provides participants with a report of settled and unsettled securities transactions and, at the beginning of each business day, with a report of positions resulting from the overnight processing.

The System uses a trade-by-trade settlement method and operates through simultaneous book-entry movements of cash and securities. Unexecuted transactions are continuously recycled during the securities settlement process in order to enable participants to settle as many matched transactions as possible. Participants may specify the priority which controls the order in which their instructions are processed. They may also segregate or link instructions as back-to back settlements.

Market liquidity and the settlement efficiency of the trade-by-trade settlement are optimised through a securities lending and borrowing programme which includes a broad range of financial instruments (see Section 4.2.8).

A technology platform is currently being developed that will enable the Euroclear System to process and settle transactions on a real-time basis. The project which will further improve settlement efficiency and instructions deadlines, will be managed in phases, with the first stage targeted for completion in 1997.

**4.2.7 Cash settlement**

Participants are entitled to open a cash account with Morgan Guaranty. This cash account is subdivided into thirty-four sub-accounts, one for each currency eligible for settlement in the Euroclear System.

The Euroclear System is a multi-currency system, allowing participants to execute basic

cash operations in any eligible currency:

- book transfers of funds between Euroclear participants;
- wire transfers by the debiting of a cash account for payment out of the System;
- pre-advices of funds to be received in the System;
- foreign exchange conversions; and
- confirmation of the crediting of funds received by a correspondent.

The bulk of the Euroclear payment activity is directly linked to the settlement of securities transactions, the majority of which are against payment and settle directly on the books of Euroclear. Custody activity generates payments as well: dividend, interest payments, and redemption proceeds are credited to the participants during the overnight processing for the value date (after assessment of the risk of non-payment by the issuer). Participants' available cash balances are updated throughout the day on the basis of the most recent information. At the beginning of each business day, following the overnight settlement process for that day, EOC provides participants with early morning reports of resulting cash positions. This allows for effective cash management in same-day currencies that represent more than 90% of the Euroclear activity.

In 1995, the equivalent of USD 25 trillion (ECU 20 trillion) in cash was exchanged through the Euroclear System.

#### **4.2.8 Risk management**

##### *Finality of securities and cash transfers*

As described above, internal and Bridge transactions settle on a DVP basis. Internal clearances become final and irrevocable upon settlement, while for Bridge transactions,

finality is declared upon receipt of the acceptance feedback by Cedel.

For external trades settling through domestic market links established by EOC, settlement will only take place on a DVP basis if DVP is provided by the domestic market. Moreover, finality of settlement in the domestic market will govern finality in the Euroclear System.

##### *Credit*

Euroclear participants can arrange flexible credit facilities with Morgan Guaranty to support the securities settlement process. The securities lending and borrowing programme, integrated into the securities settlement processing, ensures that borrowings correspond exactly to participants' needs, thereby eliminating the risk of over and under-borrowing. Borrowers in the programme are usually active traders such as market-makers or dealers. Lenders in the programme are mainly portfolio managers and custodians who are not active traders.

Buyers can use their credit facilities to finance their net purchases, allowing for settlement on a final and DVP basis. Use of such credit facilities often occurs on an intraday basis and bridges the delay between the settlement of the transaction in the overnight processing and the confirmation that the buyer's cash has been received by the Euroclear cash correspondent (most cash markets are closed at the time of the overnight settlement processing).

Also, when a participant buys securities from a counterpart in the Euroclear System in order to resell them to a counterparty in the local market, the finality of the purchase is immediate if credit facilities are available. However, the sale proceeds will be received later the same day upon settlement in the local market.

### *Securities lending*

Lenders of securities are assured of the return of their securities (or the cash equivalent) by a guarantee provided by Morgan Guaranty, in the infrequent event of a borrower failing to return the securities when required. Borrowers are screened from lenders and vice versa. Also, to protect against concentrated borrowings, either in a single issue or by a single participant, aggregate borrowings are limited to specified percentages of the outstanding issue. In addition, no participant may borrow more than a percentage of an entire issue, which varies according to the trading characteristics of the particular type of issue.

## **4.3 Cedel**

### **4.3.1 General overview**

Cedel (*Centrale de Livraison de Valeurs Mobilières*) was founded on 28th September 1970 to provide, in return for payment, the circulation, custody and management of securities (and precious metals).

On 1st January 1995, in order to increase the company's efficiency and effectiveness in the light of capital adequacy regulations, Cedel became Cedel Bank, and Cedel International was established as the parent company of the Cedel Group of companies. Today, Cedel International has a total of ninety-eight shareholders. The Cedel Group maintains representative offices in London, New York, Tokyo, Hong Kong and Dubai.

Cedel Bank is licensed as a universal bank by the Institut Monétaire Luxembourgeois (IML) and regulated in accordance with the requirements of all EU Directives. Cedel International is licensed as a professional depository of securities and is also supervised by the IML.

### **4.3.2 Participants in the system**

Membership is open essentially only to banks, broker-dealers, investment banks, central banks and central securities depositories. Members have to meet certain criteria which are considered when an application for membership is evaluated and credit standing is assessed. These criteria are essentially an institution's net worth, its legal structure, management reputation, and country risk. Today, Cedel Bank has customers from over 1930 groups from over seventy countries who are all professional financial institutions.

### **4.3.3 Types of transactions handled**

Over 79,000 securities are currently accepted by Cedel Bank for clearance. They include fixed-income bonds such as eurobonds, foreign bonds, domestic bonds and convertibles, money market instruments (including short and medium-term notes, commercial paper and certificates of deposits), as well as equities, depository receipts and warrants.

Cedel Bank operates a multi-currency system: thirty-four currencies are currently accepted by the system. Customers have discretion over the choice of currency for the settlement of obligations.

### **4.3.4 Transaction processing environment**

Communications media available to customers include the Cedel Bank Global Network, Cedel Bank communications links, the Cedcom 2000 workstation (Cedel Bank's software product), S.W.I.F.T. and telex. All communications media are subject to strict security and authorisation protocols.

Cedel Bank collects in a continuous basis cash and securities instructions sent to it by its customers through various communications media. Cedel Bank also collects confirmations

of payment and/or settlement and other settlement or payment-related information from its correspondents, depositories, and Euroclear. All unsettled instructions from customers, new messages from correspondents, depositories and Euroclear, and custody administration instructions input by Cedel Bank's operations department are processed in each processing cycle by Cedel Bank's computer-based system. The processing cycle settles transactions which qualify for settlement, posts entries to accounts, produces reports for customers and generates instructions to be sent to Cedel Bank's depositories and files to be transmitted to Euroclear.

#### 4.3.5 Settlement procedures

##### *Delivery versus payment*

Trades between counterparties which both have accounts with Cedel Bank are settled on a delivery versus payment basis, through the simultaneous book-entry transfer of securities and cash between the buyer and the seller ("model 1" system). Clearing and settlement of trades in securities is carried out by means of a computer-based book-entry system.

The settlement processing system selects which transactions to settle so as to minimise the number of failed transactions. The main prerequisites for a particular transaction to settle are:

- that the securities to be delivered are available to the delivering customer (on the customer's account or through the securities borrowing programme);
- that the funds required are available to the paying customer (sufficient cash credit balance or credit facility);
- that settlement would not cause the value of collateral available on the customer's account to become insufficient

to cover its outstanding secured credit obligations;

- that the instruction, if it involves securities, is either: (1) matched by a corresponding instruction from a Cedel Bank counterparty; (2) accepted by Euroclear (in the case of a delivery from Cedel Bank to Euroclear); (3) matched by a corresponding delivery proposed by Euroclear; (4) confirmed as settled by Cedel Bank's depository, in the case of an external transaction.

##### *Internal settlements*

Securities already in the system which are traded between Cedel Bank counterparties are settled, depending on the counterparties' instructions, either on a "free of payment" or on a "delivery versus payment" basis through the simultaneous book-entry transfer of securities and cash between the accounts of the buyer and the seller.

Total turnover for Cedel Bank in 1995 totalled USD 9,442 billion (ECU 7,402 billion), 46% of which comprised transactions settled within its own system, 27% with Euroclear customers and 27% with domestic counterparties.

##### *"Bridge" settlements*

Trades with counterparties in Euroclear are settled overnight via the electronic Bridge. The Bridge allows the transactions to settle between customers of Cedel Bank and Euroclear by means of crediting or debiting the account which each clearing and settlement system holds with the other (see Section 4.4).

*External settlements*

Trades with counterparties in domestic markets are referred to as external transactions and are settled through one of Cedel Bank's depositories, either a national central depository or a bank, depending on the market.

**4.3.6 Securities settlement processing**

On any business day, settlement can occur either during the overnight or the daytime processing. The overnight processing is the first for a given settlement date. It begins in the evening of the business day preceding the settlement date, and incorporates multiple file exchanges between Cedel Bank and Euroclear. The daytime processing constitutes an additional interface which is particularly suitable for the processing of both securities and funds transactions through domestic links, since the transmission of information to and from banks and clearing systems in domestic markets frequently synchronises better with the timing of daytime processing.

Internal transactions and external transactions (with a counterparty in a domestic market) are considered in both the overnight and the daytime processing, whereas transactions with a counterparty in Euroclear are only considered during the overnight processing. Internal or external securities transactions which fail during either settlement processing are reconsidered in the following one on the basis of modified instructions or provision of cover. Transactions with a counterparty in Euroclear which fail during the overnight processing are reconsidered in the following overnight processing on the basis of modified instructions or provision of cover.

The securities lending and borrowing programme is available in the overnight and daytime processing.

**4.3.7 Cash settlement**

The multi-currency system provides a cash account with thirty-four sub-accounts for different currencies.

Funds can only be transferred from an account if the credit balance of the account is sufficient. Book-entry transfers of funds from one Cedel Bank customer account to another are considered for settlement at the beginning of each settlement processing. Transfers of funds to a counterparty outside Cedel are executed through the respective cash correspondent banks of Cedel Bank for the relevant currency. Customers' accounts are only credited with incoming funds after receipt of confirmation that funds have been received by Cedel Bank's cash correspondents.

**4.3.8 Risk management***Finality of securities and cash transfers*

Settlement of a transaction becomes final at the time at which the debit and/or credit is booked by Cedel Bank on the customer's account, except in the case of bridge transactions, where settlement of proposed deliveries which have been accepted becomes final only when the delivering system operator receives the relevant feedback transmission from the other system operator. The cash and securities credits and debits entered by both system operators remain provisional until that moment; entries corresponding to accepted transactions then become final, whereas the other provisional entries are reversed.

Proceeds for redemptions and coupon payments on debt securities are generally credited to the customer's account in the overnight processing on the payment date; these credits can be reversed by Cedel Bank if it does not subsequently receive confirmation of receipt of the funds from the paying agent.

In the case of external deliveries, the securities are debited from the customer's account when Cedel Bank's instruction to its depository is generated; however, the moment at which settlement becomes final depends on the domestic link concerned.

#### *Credit*

Cedel Bank provides certain customers directly or indirectly with three types of credit facility against security which are monitored closely: Unconfirmed Funds Facilities (UFF), Technical Overdraft Facility (TOF), and Tripartite Financing Agreement (TFA).

Unconfirmed funds are amounts already due for payment into Cedel Bank's account, the receipt of which has not yet been confirmed to Cedel Bank by its cash correspondent or by its depository. At Cedel Bank's discretion, unconfirmed funds may be used for settlement purposes if the customer has sufficient collateral on its account to cover the resulting debit balance of its cash accounts. On the basis of a customer's financial standing, Cedel Bank determines the limit on each customer's UFF.

The Technical Overdraft Facility is a credit facility provided by Cedel Bank which can be used for purchasing securities but not for internal funds transfers or withdrawals. Most TOFs are collateralised and Cedel Bank may request the customer to provide a guarantor in addition to collateral. Credit extended through a TOF is available for a maximum of forty-eight hours.

A Tripartite Financing Agreement facility may be granted to a Cedel Bank customer by one of a limited number of TFA lending banks. TFAs provide longer-term financing than TOFs or UFFs and may be used for funds transfers and withdrawals. The risk of default by a borrower is borne by the TFA lending bank, not by Cedel Bank. Most TFAs are collateralised.

Cedel Bank is not exposed to any credit risk through its securities lending programme since it is not party to any of the securities loans, but only administers the programme and monitors the collateral.

The obligations of the borrowers towards the lenders are guaranteed by the Syndicate of Guarantors, consisting of prime banks, in whose favour collateral on the borrower's account must be pledged. Securities loans are allocated to borrowers in such a way as to maximise the number of dependent transactions that can be settled as a result of the loan.

#### **4.4 Euroclear - Cedel Bridge**

During the early years of settlement between Cedel Bank and Euroclear, transactions executed by a customer of Cedel Bank and a counterparty in Euroclear were settled by means of the physical delivery of securities between the two systems' depository banks for each trade. As the volume of transactions grew during the 1970s, this system became impractical and was replaced in 1980 by an electronic "Bridge", whereby each system opened an account with the other. Inter-system settlements were then settled once each day on a simple book-entry basis by debiting and crediting the appropriate accounts, thus minimising the need for the physical movements of securities.

In March 1992, the Bridge Agreement between Cedel Bank and Euroclear was revised in response to the considerable changes which had taken place in technology and in business volumes and patterns over the intervening twelve years. The main feature of this revision was the implementation of multiple overnight settlement batches and file exchanges in a time frame common to both systems.

According to the Bank for International Settlements Report on "Cross-Border Securities Settlements" published in March

1995, the new Bridge has facilitated the introduction of many improvements, including the following:

- a reduction in the time-lag between the proposal and acceptance of deliveries between the two systems. In the event of failed transactions or delays in settlement this significantly reduces replacement cost risk and liquidity risk;
- the possibility of settling back-to-back transactions involving two Bridge deliveries;
- an improvement in the cash management offered to customers as the delivery of reports takes place early in the morning on settlement day rather than in the evening;
- a common final deadline of 7.45 p.m. for the submission by customers of securities transfer instructions.

Cedel Bank and Euroclear automatically recycle unsettled Bridge transactions so that customers no longer have to re-enter these themselves, thus significantly reducing errors and late deliveries and payments.

The Bridge is based on an overnight series of four exchanges of proposed deliveries and acceptance feedback between the two systems. The overnight processing cycle between Cedel Bank and Euroclear consists of five settlement runs, of which three are carried out by Cedel Bank (the first, third and last) and two by Euroclear. After each settlement run, the system operator which has just been processing sends to the other a file of “proposed deliveries” (except after Cedel Bank’s last settlement run) and a feedback transmission (except after Cedel Bank’s first settlement run).

The daytime processing constitutes an additional interface which is particularly suitable for the processing of both securities and funds transactions through domestic links, since the transmission of information to and from banks and clearing systems in the domestic markets frequently synchronises better with the timing of the daytime processing. This allows the securities and cash provisions received from domestic links to be used for onward delivery to Euroclear and Cedel Bank counterparties with same-day value.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Annex 1  
Methodology for  
the  
statistical data

April 1996

## Standard methodology for the statistics of the Blue Book

### Table 1: Basic statistical data

<i>Population and exchange rate:</i>	Figures are averages for the year.
<i>Population and GDP:</i>	Figures are provided by EUROSTAT (this is particularly important for GDP figures, which are calculated in each EU country according to a specific methodology) and <i>exchange rates</i> are provided by the Statistics Division of the EMI on the basis of the daily figures in its database received from EUROSTAT.

### Table 2: Settlement media used by non-banks

<i>Notes and coins:</i>	In accordance with monetary statistics, <i>notes and coins</i> represent the value of cash in circulation in the economy. They exclude the value of notes and coins kept in vaults at central banks or at deposit-taking institutions mentioned in Table 5.
<i>Transferable deposits:</i>	These are deposits which can be used to make cashless payments using one of the instruments mentioned in Tables 14 and 15. They include deposits in foreign currencies unless these are included in M1; in the latter case, a line should be added below the M1 line to mention them.
<i>M1:</i>	Cash in circulation and sight deposits held by non-banks. This line does not need to be filled in by countries which no longer calculate this aggregate.
<i>Others:</i>	To be filled in only if M1 includes items other than “ <i>notes and coins</i> ” and “ <i>transferable deposits</i> ”.

### Table 3: Settlement media used by deposit-taking institutions

<i>Required reserves held at central bank:</i>	Deposits held at the central bank to fulfil minimum reserve requirements.
<i>Of which can be used as working balances:</i>	<ul style="list-style-type: none"> <li>■ if minimum reserves are required to be held as an average over a period of time, the whole required reserves are considered as working balances;</li> <li>■ in some countries only part of the required reserves can be used for payment purposes. This part is mentioned here.</li> </ul>
<i>Free reserves held at central bank:</i>	Deposits held at the central bank in excess of <i>required reserves held at central bank</i> .
<i>Transferable deposits at other institutions:</i>	Deposits held at other institutions (not the domestic central bank) which can be used to make payments.

**Table 4: Banknotes and coins***(end-of-year figures)*

*Total banknotes issued:* Value of banknotes which are part of the liabilities of the central bank.

*Notes and coins held by credit institutions:* Notes and coins in vaults of credit institutions and thus not in circulation (usually available from the bank account figures transmitted to banking supervisors).

*Notes and coins in circulation outside credit institutions:* = difference: *total banknotes and coins issued* less *notes and coins held by credit institutions* (should be identical to “notes and coins” in Table 2).

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**Table 5: Institutional framework***(end-of-year figures)*

*Columns 1 and 2:* Indicate the number of points of entry into the cashless payment system.

*Column 1:  
Number of institutions:* Any institution which executes cashless payments should be mentioned even if it does not hold deposits for customers (e.g. because the money transferred is brought-in cash, or debited from a sight account held at another institution).

*Column 2:  
Number of branches:* All branches of an institution; as a rule, the head office of the institution is counted as a branch if it offers payment services.

*Columns 3 and 4:* Indicates the number of accounts on which cashless payments (see definition in Tables 14 and 15) can be made.

*Column 3:  
Number of accounts:* The accounts which are mentioned here are those which:  
 ■ are held by deposit-taking institutions for non-deposit-taking institutions;  
 ■ can be debited directly using one of the instruments mentioned in Tables 14 and 15.

*Column 4:  
Value of accounts:* Aggregate amount of deposits held on accounts mentioned in Column 3. As a rule, the total of the first five lines of the last column is identical to “transferable deposits” in Table 2.

*Branches of foreign banks:* Branches or agencies of foreign banks. Banks which are foreign-owned, or subsidiaries of foreign banks are not included here.

*Of which based in EU countries:* Sub-item to *branches of foreign banks*, giving the number of branches located in Europe to take into account their specific situation within the single market.

**Table 6: Cash dispensers, ATMs and EFTPOS terminals***(end-of-year figures)*

As a rule, all items include systems operated by banks and by non-banks.

*Cash dispensers:* Electro-mechanical device allowing the authorised user to withdraw banknotes and, in some cases, coins.

*ATMs:* Electro-mechanical device allowing the authorised user to withdraw cash from his account and/or to access a varying range of other services such as balance enquiry, transfer of funds and acceptance of deposits. The ATM may be operated online (with real-time reference to an authorisation database) or offline.

*Number of networks:* A network of ATMs is defined as a group of ATMs managed by one or several service providers for a bank or group of banks. The customer of this bank/group of banks can use any ATM within this network without being charged additional fees.

*Number of machines:* As a rule, each terminal is counted as one machine.

*EFTPOS:* A terminal at a retail location which is designed to capture, and in some cases also transmit, payment information by electronic means.

*Number of points of sale:* As a rule, each location (e.g. shop) in which one or several terminals are installed is counted as one point of sale.

*Number of machines:* As a rule, each EFTPOS terminal is counted as one machine.

**Table 7: Number of payment cards in circulation***(end-of-year figures in thousands)*

A card which has several functions is counted in each relevant line (e.g. a eurocheque card which can be used to withdraw cash, to make payments and to guarantee cheques should be counted in each of the first three main items); therefore, as indicated in the footnote, the figures should not be added.

Travel and entertainment cards are mentioned in the relevant category.

Delayed debit cards are mentioned in the debit category.

*Cards with a cash function:* All cards enabling the holder to withdraw cash from a cash dispenser.

## Annex 1

*Cards with a debit/  
credit function:*

*Of which*

*Debit cards:* Card enabling the holder to have his purchases directly charged to funds on his account at a deposit-taking institution (may sometimes be combined with another function, e.g. that of a cash card or cheque guarantee card).

*Delayed debit cards:* Card issued by banks indicating that the holder may charge his account up to an authorised limit. It enables him to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

*Credit cards:* Card indicating that the holder has been granted a line of credit. It enables him to make purchases and/or draw cash up to a pre-arranged ceiling; the credit granted can be settled in full by the end of a specific period, or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.

*Cards with a cheque  
guarantee function:* Transactions with this card are, in connection with the use of a PIN, guaranteed by the issuing bank up to a specific amount.

*Retailer cards:* A card issued by non-banking institutions, to be used at specified retail outlets. The holder of the card is usually granted a line of credit.

*Multi-purpose  
prepaid cards:* A card "loaded" with a given value, paid for in advance, which can be used at the outlets of several service providers for a wide range of purposes, which has the potential to be used on a national or international scale but may sometimes be restricted to a certain area.

As a rule, only the number of valid cards in circulation is provided, not the number of cards issued, since this figure would not be very informative if empty or invalid cards were included.

### **Tables 8 and 9: Payment instructions handled by selected IFTS**

*IFTs:* Interbank Funds Transfer Systems in which most (or all) direct participants are credit institutions and which are used primarily to process cashless payments.

As a rule all IFTS are mentioned here, not only those managed by the central bank, but also those managed by private operators.

*Funds Transfer  
Systems (FTS):* A formal arrangement, based on private contract or statute law, with multiple membership, common rules and standardised arrangements, for the transmission and settlement of money obligations arising between the members.

**Table 10: Participants in securities settlement systems***(end-of-year figures)*

Securities settlement systems (SSS) are transfer systems which settle transfer instructions for both securities and funds.

As a rule, all SSS are mentioned here, not only those managed by the central bank, but also those managed by private operators.

Figures are provided system by system with categories of various participants (such as banks, stockbrokers, etc.) as sub-items.

*Column 2:* In some systems certain participants are allowed to maintain both their own securities accounts and customers' securities accounts, while other participants are not allowed to maintain customers' accounts. In this column, the number of participants allowed to maintain customers' accounts is specified.

*Column 3:* In most systems, all participants hold securities settlement accounts but only some of them hold cash settlement accounts with the central bank to settle their cash positions, while others settle funds indirectly through another participant. In this column, the number of participants allowed to hold cash settlement accounts is indicated.

**Tables 11 and 12: Transfer instructions handled by securities settlement systems***(volume and value of transactions)*

Figures are provided system by system, with categories of various securities (such as government securities, bonds, shares, CDs, futures, options, etc.) as sub-items. Should some of the sub-items not be available, the row is marked "n.a."; if the sub-system does not exist in the country, it is marked "-".

Transfer instructions comprise all transfer instructions entered in the system (including free deliveries). As regards options, all the contracts settled in the system are included.

As far as CDs are concerned, all CDs settled in the system are considered regardless of their issuers (banks, central bank, mortgage institutions).

With regard to the volume and value of transactions, each transaction is counted once (not twice for sale and purchase orders).

**Table 13: Nominal values registered by securities settlement systems**

Figures are provided system by system, with categories of various securities. They refer to the nominal value at the end of the year.

### **Tables 14 and 15: Indicators of use of various cashless payment instruments**

The objective of these tables is to estimate the volume and value of payment instruments used in the country. As a rule, figures concerning only a sample of banks or customers are projected to figures covering the whole volume and value of payment instruments used in the country.

“Payment” is defined in the Blue Book as the “satisfaction and discharge of an obligation by the debtor’s irrevocable provision of an unconditional claim on a third party acceptable to the creditor”. This definition excludes any funds transfer in which the originator and the beneficiary are the same institution or individual. Therefore, any instrument which is used by banks’ customers to obtain cash should not be counted (e.g. cheques used to obtain cash, or ATM withdrawals - although these operations might be included in Tables 8 and 9, whose focus is different). If possible, transfers to and from accounts held under the same name - either with the same institution (e.g. from a cheque account to a savings account), or between two institutions - are excluded.

Strictly speaking, “cashless” means without the involvement of cash. Such a narrow definition would exclude those money (postal) orders, which involve cash at one or both ends of the transaction, as well as the majority of travellers’ cheques, which are often paid in cash. It is not realistic to use such a narrow definition because it is very doubtful whether available statistics would permit a breakdown of the number of money orders or travellers’ cheques according to the way they are paid for or settled. Therefore, all payment instruments which involve cashless interbank settlement are included in the statistics.

The distinction between paper-based and paperless credit transfers is based on the interbank exchange: credit transfer orders which are exchanged on a paperless basis between banks are deemed to be paperless even if the originator and/or the beneficiary submitted or received a piece of paper.

In the case of cross-border payments, there is a need to avoid double-counting (i.e. in the country of the originator and in the country of the beneficiary). Since comparisons are likely to be made with total population, number of cardholders, etc., cross-border cashless payments are counted in the country of the originator.

Although payments made using retailer cards or prepaid cards should theoretically be included with cashless payments, data concerning these instruments are rarely available. EU central banks with information on these fields may include such payments under card payments, but should clearly identify them as sub-items of card payments.

According to the above principles, the following guidelines are followed:

- no distinction is made between payments in foreign and domestic currencies;
- no distinction is made between interbank items (bank A to bank B), inter-branch items (bank A branch to another bank A branch), or intra-branch items (bank A customer to another bank A customer at the same branch): all are included in the statistics;
- transfers to and from the account-holding institution and its customers (e.g. interest or fee payments) are excluded but, where available, are mentioned in a footnote;

- commercial bills are included if funds transfers can be made on the basis of these, without using another medium;
- funds transfers used to settle payment card balances are included (payment between the issuer and the user);
- travellers' cheques, eurocheques and bankers' drafts are included under cheques;
- money orders are included under credit transfers (if the volume is significant they could constitute a sub-item).

**Tables 16 and 17: S.W.I.F.T. tables**

These figures are provided by S.W.I.F.T.

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Annex 2  
Comparative tables

April 1996

**Table I****Notes and coins in circulation outside credit institutions***(end of year)*

	Total (ECU millions)		Value per inhabitant (ECU)		As a percentage of GDP		As a percentage of narrow money <sup>(1)</sup>	
	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	10,495	9,992	1,041	988	5.84%	5.20%	29.6%	27.1%
Denmark	3,396	3,838	654	737	2.95%	3.10%	n.a.	n.a.
Germany	109,459	117,363	1,348	1,441	6.72%	6.80%	29.2%	29.6%
Greece	5,633	5,861	543	563	7.34%	7.28%	56.3%	51.2%
Spain	43,711	45,084	1,118	1,152	10.69%	11.09%	24.1%	24.9%
France	38,052	38,308	660	671	3.56%	3.42%	15.5%	15.1%
Ireland	1,924	2,087	540	584	4.79%	4.77%	39.1%	37.2%
Italy	48,779	50,274	840	863	5.79%	5.86%	15.5%	16.0%
Luxembourg	403	396	1,012	981	3.72%	3.35%	18.7%	15.0%
Netherlands	17,282	17,651	1,130	1,148	6.49%	6.26%	25.1%	25.0%
Austria	9,349	9,866	1,170	1,229	6.00%	5.90%	38.1%	37.6%
Portugal	4,002	4,042	405	409	5.53%	5.47%	20.3%	20.6%
Finland	1,553	1,745	307	343	2.16%	2.13%	7.3%	7.0%
Sweden	7,329	7,489	844	853	4.65%	4.54%	n.a.	n.a.
United Kingdom	22,930	24,177	394	414	2.80%	2.81%	4.5%	4.6%
EU	324,297	338,173	880	915	5.57%	5.49%	n.a.	n.a.

(1) M1, except for the United Kingdom: M2.

**Table 2****Points of entry into the payment system***(end of year)*

	Number of institutions offering payment services <sup>(1)</sup>		Number of central bank branches <sup>(1)</sup>		Number of bank branches <sup>(1)</sup>		Number of post office branches <sup>(1)(2)</sup>		Others <sup>(1)</sup>		Total number of branches offering payment services <sup>(1)</sup>		Number of accounts on which payments can be made (per capita)	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	15	15	1.8	1.8	995	780	180	169	-	-	1,177	951	1.18	1.19
Denmark	41	40	0.2	0.2	491	471	246	245	-	-	737	716	1.82	1.75
Germany	48	46	2.3	2.2	561	600	257	2 <sup>(3)</sup>	-	-	820	604 <sup>(3)</sup>	0.97	0.97
Greece	3	3	9.2	9.1	159	141	n.a.	11	10	11	168	173	0.10	0.11
Spain	8	8	1.3	1.3	883	893	n.a.	n.a.	-	-	884	894	1.83	1.84
France	11	11	3.7	3.7	445	445	294	296	65	72	808	817	1.07	1.08
Ireland	12	12	0.3	0.3	225	255	n.a.	n.a.	83	57	n.a.	255	0.67	0.71
Italy	17	17	1.7	1.7	379	397	248	243	n.a.	n.a.	629	641	0.43	0.44
Luxembourg	558	560	0.0	0.0	972	996	0.0	0.0	n.a.	n.a.	972	996	n.a.	3.93
Netherlands	9	8	0.8	0.8	323	317	143	146	n.a.	n.a.	467	464	1.07	1.14
Austria	134	131	0.9	0.9	594	583	291	287	-	-	885	870	0.71	0.72
Portugal	27	26	1.2	1.2	366	379	99	100	n.a.	n.a.	465	479	1.81	1.85
Finland	70	70	1.4	0.8	514	422	190	188	-	-	705	611	2.64	2.54
Sweden	13	12	2.2	1.8	325	460	169	153	n.a.	n.a.	496	462	3.23	3.13
United Kingdom	10	10	0.1	0.1	225	219	343	339	97	95	665	653	2.27	2.28
EU <sup>(4)</sup>	24	24	2.0	1.9	472	479	n.a.	n.a.	n.a.	n.a.	728	670	1.28	1.29

(1) Per 1,000,000 inhabitants.

(2) If the post offices offer payment services.

(3) Excluding the 20,000 post office branches which are entrusted with the semi-cashless payment system on behalf the Postbank AG.

(4) Average without countries where data are not available.

**Table 3****Cash dispensers and ATMs**

	Number of machines per 1,000,000 inhabitants (end of year)		Number of transactions per capita		Average value per transaction (ECU)		Increase in the number of machines		Increase in the number of transactions		Increase in the value of transactions	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	280	313	11.5	12.0	98	100	157%	13%	31%	5%	38%	5%
Denmark	108	142	n.a.	n.a.	n.a.	n.a.	7%	32%	n.a.	n.a.	n.a.	n.a.
Germany	308	361	n.a.	11.5	n.a.	133	32%	18%	n.a.	n.a.	n.a.	n.a.
Greece	82	155	n.a.	3.9	n.a.	102	21%	90%	n.a.	n.a.	n.a.	n.a.
Spain	557	598	11.8	13.0	88	84	11%	8%	16%	11%	18%	13%
France	327	360	13.4	14.3	66	65	8%	10%	10%	7%	6%	4%
Ireland	220	242	15.6	15.8	63	71	4%	10%	4%	1%	11%	14%
Italy	262	321	4.0	4.5	168	165	9%	23%	15%	13%	18%	15%
Luxembourg	294	374	9.5	10.2	114	125	-3%	29%	16%	8%	14%	15%
Netherlands	292	325	20.5	23.9	82	82	13%	12%	19%	17%	24%	16%
Austria	324	383	7.3	7.9	134	137	24%	19%	8%	10%	11%	12%
Portugal	283	337	9.5	11.8	57	54	44%	19%	28%	23%	27%	23%
Finland	829	836	39.3	37.7	57	61	11%	1%	11%	15%	6%	5%
Sweden	255	260	28.3	30.7	87	88	1%	3%	13%	9%	20%	12%
United Kingdom	321	334	20.6	22.1	62	60	3%	4%	4%	8%	7%	3%
EU <sup>(1)</sup>	326	366	13.6	13.8	94	102	n.a.	12%	n.a.	n.a.	n.a.	n.a.

(1) Average without countries where data are not available.

**Table 4**  
**EFTPOS**

	Number of POS per 1,000,000 inhabitants (end of year)		Number of transactions per capita		Average value per transaction (ECU)		Increase in the number of POS		Increase in the number of transactions		Increase in the value of transactions	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	4,255	4,941	15.6	18.0	54	57	32%	17%	20%	15%	24%	20%
Denmark	4,197	4,624	25.9	31.1	42	43	-3%	11%	22%	21%	9%	23%
Germany	345	768	0.9	1.3	46	54	n.a.	123%	n.a.	51%	n.a.	74%
Greece	241	1,085	n.a.	0.75	n.a.	66	0%	452%	n.a.	n.a.	n.a.	n.a.
Spain	8,287	9,855	5.8	6.5	43	42	24%	19%	61%	11%	17%	17%
France	7,441	7,654	24.4	26.4	50	49	34%	2%	8%	8%	7%	5%
Ireland	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%
Italy	1,329	1,786	0.4	0.6	104	99	24%	35%	40%	47%	35%	46%
Luxembourg	8,696	9,071	22.1	29.2	66	69	n.a.	10%	7%	34%	-16%	37%
Netherlands	1,606	3,094	4.4	8.2	50	53	115%	94%	43%	88%	92%	97%
Austria	231	301	0.8	1.1	38	42	22%	32%	37%	33%	46%	46%
Portugal	2,790	3,311	7.6	9.1	32	32	77%	19%	69%	20%	47%	28%
Finland	8,291	9,434	34.2	38.4	34	37	8%	14%	-0.3%	13%	3%	15%
Sweden	3,054	2,908	7.2	8.8	57	68	87%	-4%	37%	22%	22%	46%
United Kingdom	4,640	5,997	n.a.	n.a.	n.a.	n.a.	23%	30%	n.a.	n.a.	n.a.	n.a.
EU <sup>(1)</sup>	3,564	4,255	8.0	8.9	57	59	n.a.	19%	n.a.	11%	n.a.	n.a.

(1) Average without countries where data are not available.

**Table 5****Use of payment cards***(end of year)*

	Number of cards per 1,000 inhabitants								Average number of			
	Cards with a cash function		Cards with a debit or a credit function		Cards with a cheque guarantee function		Retailer cards		Cash withdrawals per card with a cash function		Payments per card with a credit/debit function	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	825	881	836	881	482	461	99	108	14	14	20	20
Denmark	522	543	522	543	25	20	n.a.	n.a.	n.a.	n.a.	66	76
Germany	n.a.	n.a.	552	582	442	456	n.a.	55	n.a.	n.a.	7	7
Greece	n.a.	64	107	103	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	16	n.a.
Spain	833	826	833	826	-	-	n.a.	n.a.	14	16	7	8
France	380	400	374	390	3	n.a.	n.a.	n.a.	35	36	73	75
Ireland	883	941	247	273	246	232	n.a.	n.a.	n.a.	n.a.	23	23
Italy	194	213	280	313	29	30	n.a.	n.a.	21	21	5	6
Luxembourg	833	891	988	1,044	602	616	n.a.	n.a.	27	33	n.a.	36
Netherlands	857	909	82	82	117	84	n.a.	n.a.	24	26	n.a.	n.a.
Austria	405	437	465	501	299	289	24	28	18	18	5	6
Portugal	486	536	618	684	53	55	9	9	20	22	17	17
Finland	417	446	496	494	2	1	337	339	85	85	84	91
Sweden	592	687	1,309	1,375	n.a.	n.a.	913	1,038	43	45	6	6
United Kingdom	1,196	1,196	876	910	756	780	146	176	17	19	27	30
EU <sup>(1)</sup>	641	637	552	577	263	320	n.a.	n.a.	24	25	24	25

(1) Average without countries where data are not available.

**Table 6****Major Interbank Funds Transfer Systems in the European Union***(end-1994)*

<b>(I) LARGE-VALUE SYSTEMS</b>									Number of transactions (thousands)		Value of transactions (ECU billions)		Average value of transactions ( ECU millions)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Name of the system	1993	1994	1993	1994	1993	1994
DK	CB	RTT	RTGS	O	C	V	15.30	DN Inquiry and transfer system	379	347	3,324	3,202	8.77	9.23
DE	CB	RTT	N	O	C	V	12.30	EAF	10,892	12,748	66,762	75,282	6.13	5.91
DE	CB	RTT	RTGS	O	D	F	14.30	Eiliger Zahlungsverkehr	3,359	3,995	9,745	11,831	2.90	2.96
ES	CB	RTT	GS	O	C	F	14.00	STMD	881	890	17,474	17,521	19.83	19.69
ES	B	ACH	N	O	C	F	10.30	Madrid Clearing House	1,780	1,753	9,288	8,510	5.22	4.85
FR	CB	RTT	N	RM	C	F	13.00	SAGITTAIRE	3,900	4,100	16,394	16,837	4.20	4.11
IE	B	RTT	GS	RM	C	S	15.00	Special Presentations	9	7	10	11	1.11	1.57
IE	CB	M	GS	RM	C	S	16.00	Daily Interbank Settlement	150	153	1,163	1,075	7.75	7.03
IT	CB	RTT	N	O	C	F	14.00	SIPS	3,111	3,526	9,936	13,547	3.19	3.84
IT	CB	RTT	RTGS	O	C	V	17.00	BISS	43	43	44	57	1.02	1.33
IT	CB	RTT	N	O	C	V	16.00	Electronic Memoranda	1,896	2,083	9,270	9,390	4.89	4.51
NL	CB	RTT	RTGS	O	C	V	15.30	Central Bank system	426	403	4,275	4,254	10.04	10.56
NL	CB	ACH	N	O	C	F	11.30	8007 S.W.I.F.T.	1,919	2,020	4,142	4,698	2.16	2.33
AT	B	RTT	RTGS	RM	C	F	13.00	EBK	720	890	399	465	0.55	0.52
FI	CB	RTT	RTGS	RM	C	F	16.30	BOF System	115	105	994	1,027	8.64	9.78
SE	CB	RTT	RTGS	RM	C	F	16.15	RIX	78	84	4,487	4,359	57.53	51.89
UK	B	M	N	RM	C	V	15.50	Town Clearing*	70	48	1,370	878	19.57	18.29
UK	B	RTT	N	RM	D	V	15.45	CHAPS**	10,989	11,652	30,166	32,301	2.75	2.77
EU	B	RTT	N	RM	C	F	14.00	ECU Clearing and Settlement System	1,507	1,573	12,137	12,625	8.05	8.03

(1) Country.

(2) Owner/manager: B = banks; CB = central banks.

(3) Processing method: M = manual; ACH = Automated Clearing House (offline); RTT = Real-Time Transmission.

(4) N = multilateral netting; BN = bilateral netting; RTGS = real-time gross settlement; GS = other gross settlement.

(5) O = open membership (any bank can apply) or RM = restricted membership (subject to criteria).

(6) Geographical access to the system: C = centralised (one processing centre only) or D = decentralised.

(7) Prices charged to participants: F = full costs ( including investments); V = variable costs; S = symbolic costs (below variable cost).

(8) Closing time for same-day transactions.

\* Town Clearing ceased operations in February 1995.

\*\* RTGS from 1996 Q2.

**Table 6***(continued)*

<b>(2) SYSTEMS WHICH PROCESS LARGE-VALUE AND RETAIL TRANSACTIONS</b>									Number of transactions (thousands)		Value of transactions (ECU billions)		Average value of transactions (ECU thousands)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Name of the system	1993	1994	1993	1994	1993	1994
BE	CB	(a)	N	O	C	F	13.30	CEC	740,250	784,330	539	618	1	1
BE	CB	M	N	O	D	S	14.30	Clearing House of Belgium (excl. CEC)	22,520	15,880	7,387	8,511	328	536
DE	CB	M	GS	O	D	N	12.00	Conventional local credit transfer system	53,063	30,296	4,537	3,933	86	130
DE	CB	M	N	O	D	N	13.00	Daily local clearing	416,397	430,614	19,872	15,279	48	35
GR	B	M	N	O	D	V	16.00	Athens Clearing Office	15,462	14,611	377	439	24	30
FR	CB	M	GS	O	D	N	15.30	Banque de France	37,600	34,300	6,685	6,340	178	185
IT	CB	M	N	O	D	V	13.30	Local Clearing	253,189	240,676	2,510	2,223	10	9
LU	B	M	N	O	C	F	10.30	Clearing House	6,015	6,286	21	20	3	3
PT	CB	M	N	RM	D	N	14.00	Traditional Clearing	13,100	12,100	796	900	61	74
FI	B	(b)	BN	O	D	F	14.30	The Banks' Clearing System	356,800	373,982	250	301	1	1

(1) Country.

(2) Owner/manager: B = banks; CB = central banks.

(3) Processing method: M = manual; ACH = Automated Clearing House (offline); RTT = Real-Time Transmission.

(4) N = multilateral netting; BN = bilateral netting; RTGS = real-time gross settlement; GS = other gross settlement.

(5) O = open membership (any bank can apply) or RM = restricted membership (subject to criteria).

(6) Geographical access to the system: C = centralised (one processing centre only) or D = decentralised.

(7) Prices charged to participants: F = full costs (including investments); V = variable costs; S = symbolic costs (below variable cost); N = no costs.

(8) Closing time for same-day transactions.

(a) ACH and RTT.

(b) Batch processing and transmission.

**Table 6**

(continued)

<b>(3) RETAIL SYSTEMS</b>									Number of transactions (millions)		Value of transactions (ECU billions)		Average value of transactions (ECU)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Name of the system	1993	1994	1993	1994	1993	1994
DK	CB	ACH	N	O	C/D	S	9.00	DN Retail clearing	460	519	336	375	730	723
DE	CB	(c)	GS	O	D	V	NO	Machine-optical voucher reading procedure (MAOBE)	394	248	1,453	1,199	3,688	4,835
DE	CB	ACH	GS	O	D	V	NO	Paperless exchange of data media (DTA)	2,220	2,107	1,037	1,237	467	587
GR	B	ACH	N	O	C	F	19.00	DIAS	n.a.	2	n.a.	4	n.a.	1,982
ES	B	M	N	O	C	F	NO	Clearing Houses	181	110	299	225	1,652	2,045
ES	CB	RTT	BN	RM	C	V	NO	SNCE	432	516	547	578	1,266	1,120
FR	B/CB	M	N	O	D	N	11.00/ 15.00	Clearing Houses	3,677	3,659	23,635	22,879	6,428	6,253
FR	CB	ACH	N	RM	D	F	11.00	Computer Clearing Centres	1,468	636	1,015	526	691	827
FR	CB	ACH	N	O	D	V	NO	CREIC	253	260	21	22	83	85
FR	B	ACH	N	RM	D	F	10.30	National system for payment by cards	1,554	1,677	77	82	50	49
FR	B	RTT	BN	RM	D	F	13.30	Interbank Teleclearing System (SIT)	765	1,792	244	829	319	463
IE	B	(d)	N	RM	C	F	NO	Dublin Bankers' Clearing	147	151	217	395	1,476	2,616
IE	CB	M	N	RM	C	S	NO	The Central Exchange	4	5	9	12	2,093	2,553
IT	CB	ACH	N	O	C	F	NO	Retail sub-system	451	490	267	353	592	720
NL	B	ACH	N	O	C	F	11.30	Interpay (former BankGiro System)	1,131	1,225	1,015	1,017	897	830
PT	B	RTT	N	RM	C	V	NO	Telecompensação	216	424	262	254	1,213	599
SE	B	ACH	N	O	C	F	NO	Bank Giro System	210	231	205	224	976	970
UK	B	ACH	N	RM	C	F	NO	BACS (e)	1,904	2,058	1,071	1,213	563	589
UK	B	M	N	RM	D	F	NO	Cheque and Credit Clearings (e)	2,263	2,224	1,490	1,507	658	678

(1) Country.

(2) Owner/manager: B = banks, CB = central banks.

(3) Processing method: M = manual; ACH = Automated Clearing House (offline); RTT = Real-Time Transmission.

(4) N = multilateral netting; BN = bilateral netting; RTGS = real-time gross settlement; GS = other gross settlement.

(5) O = open membership (any bank can apply) or RM = restricted membership (subject to criteria).

(6) Geographical access to the system: C = centralised (one processing centre only) or D = decentralised.

(7) Prices charged to participants: F = full costs (including investments);

V = variable costs; S = symbolic costs (below variable cost); N = no costs.

(8) Closing time for same-day transactions: NO = no same-day transactions.

(c) ACH for paper-based instruments.

(d) M and ACH.

(e) Figures exclude Northern Ireland and Scotland.

**Table 7****Use of cashless payment instruments***(total number of transactions, in millions)*

	Cheques		Payments by cards		Credit transfers		Direct debits		Others		TOTAL	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	139	124	169	191	590	646	89	100	-	-	987	1,061
Denmark	118	108	178	214	n.a.	n.a.	69	75	-	-	n.a.	n.a.
Germany	934	903	294	351	5,253	5,572	4,287	4,607	-	-	10,768	11,433
Greece	n.a.	n.a.	18	28	n.a.	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	217	209	227	253	79	86	696	758	122	114	1,341	1,420
France	4,909	4,824	1,565	1,672	1,538	1,613	1,058	1,205	154	155	9,224	9,469
Ireland	164	156	21	23	71	73	31	32	-	-	287	284
Italy	767	707	86	107	921	962	91	98	199	191	2,064	2,065
Luxembourg	n.a.	3	n.a.	16	n.a.	30	n.a.	2	-	-	n.a.	51
Netherlands	181	145	92	193	1,484	1,560	480	531	-	-	2,237	2,429
Austria	40	36	17	20	402	432	188	188	1	1	648	677
Portugal	259	256	104	114	30	42	28	43	-	-	421	455
Finland	7	6	212	229	403	434	15	18	-	-	637	687
Sweden	51	n.a.	68	85	589	605	40	45	-	-	748	735
United Kingdom	2,886	2,802	1,397	1,606	1,368	1,402	1,046	1,148	-	-	6,697	6,958
EU <sup>(1)</sup>	10,627	10,279	4,448	5,102	12,728	13,490	8,118	8,850	476	461	36,059	37,723

(1) Sum without countries where data are not available.

**Table 8****Use of cashless payment instruments***(number of instruments per inhabitant)*

	Cheques		Payments by cards		Credit transfers		Direct debits		Others		TOTAL	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	14	12	17	19	59	64	9	10	-	-	98	105
Denmark	23	21	34	41	n.a.	n.a.	13	14	-	-	n.a.	n.a.
Germany	12	11	4	4	65	68	53	57	-	-	134	140
Greece	n.a.	n.a.	2	3	n.a.	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	6	5	6	6	2	2	18	19	3	3	35	36
France	85	84	27	29	27	28	18	21	3	3	160	165
Ireland	46	44	6	6	20	20	9	9	-	-	81	80
Italy	13	12	1	2	16	17	2	2	3	3	35	36
Luxembourg	n.a.	7	n.a.	40	n.a.	75	n.a.	5	-	-	n.a.	127
Netherlands	12	9	6	13	97	101	31	35	-	-	146	158
Austria	5	4	2	2	50	54	24	23	-	-	81	83
Portugal	26	26	11	12	3	4	3	4	0	0	43	46
Finland	1	1	42	45	80	85	3	4	-	-	126	135
Sweden	6	n.a.	8	10	68	69	5	5	-	-	86	n.a.
United Kingdom	50	48	24	28	24	24	18	20	-	-	116	120
EU <sup>(1)</sup>	29	29	12	14	36	37	23	24	3	3	103	107

(1) Average without countries where data are not available.

**Table 9****Use of cashless payment instruments***(as a percentage of total number of transactions)*

	Cheques		Payments by cards		Credit transfers		Direct debits		Others	
	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994
Belgium	14.1%	11.7%	17.1%	18.0%	59.8%	60.9%	9.0%	9.4%	-	-
Denmark	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Germany	8.7%	7.9%	2.7%	3.1%	48.8%	48.7%	39.8%	40.3%	-	-
Greece	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	16.2%	14.7%	16.9%	17.8%	5.9%	6.0%	51.9%	53.4%	9.1%	8.0%
France	53.2%	50.9%	17.0%	17.7%	16.7%	17.0%	11.5%	12.7%	1.7%	1.6%
Ireland	57.1%	54.9%	7.3%	8.1%	24.7%	25.7%	10.8%	11.3%	-	-
Italy	37.2%	34.2%	4.2%	5.2%	44.6%	46.7%	4.4%	4.7%	9.6%	9.2%
Luxembourg	n.a.	5.9%	n.a.	31.4%	n.a.	58.8%	n.a.	3.9%	n.a.	-
Netherlands	8.1%	6.0%	4.1%	7.9%	66.3%	64.2%	21.5%	21.9%	-	-
Austria	6.2%	5.3%	2.6%	3.0%	62.0%	63.8%	29.0%	27.8%	-	-
Portugal	61.4%	56.1%	24.7%	25.0%	7.2%	9.3%	6.7%	9.5%	-	-
Finland	1.1%	0.9%	33.3%	33.3%	63.3%	63.2%	2.4%	2.6%	-	-
Sweden	6.8%	n.a.	9.1%	11.6%	78.7%	82.3%	5.3%	6.1%	-	-
United Kingdom	43.1%	40.3%	20.9%	23.1%	20.4%	20.1%	15.6%	16.5%	-	-
EU <sup>(1)</sup>	29.2%	26.9%	12.3%	13.5%	35.2%	35.6%	22.5%	23.4%	1.2%	1.1%

(1) Without countries where data are not available.

**Table 10****Features of selected securities settlement systems in the European Union**

COUNTRY	BE		DK	DE		ES		
Name of the system	NBB Clearing	CIK	VP	BOSCA <sup>(1)</sup>	DKV	SACDE	SCLV	ESPACLEAR
Type of securities <sup>(2)</sup>	G, O	S	G, B, S, O	G, B, O	G, S, B	G, C	S, B	B
Owner/manager <sup>(3)</sup>	CB	B	VP	CB	SE	CB	SE	SE
Number of participants	198	206	228	2,625	605	297	107	116
<i>of which direct participants</i>	<i>198</i>	<i>206</i>	<i>197</i>	<i>2,625</i>	<i>600</i>	<i>297</i>	<i>107</i>	<i>114</i>
Settlement of cash leg <sup>(4)</sup>	N	N	N	GS	N, RTGS	GS	N	N
Securities settlement (delivery)	N	Y	N	RTGS, GS	RTGS, GS	GS	GS	GS
Delivery lag	T+2, T+3 <sup>(5)</sup>	T+3 <sup>(6)</sup>	T+3	T	T+0 - 40	T	T+5	T+1
DVP mechanism <sup>(7)</sup>	DVP 3	DVP 3	DVP 3	DVP 1	DVP 1+2	DVP 1	DVP 2	DVP 2
Intraday finality <sup>(8)</sup>	N	N	Y	Y	Y	N	N	N
Central securities depository	NBB	CIK	VP	DKV	DKV	SACDE	SCLV	ESPACLEAR
Cash settlement agent <sup>(9)</sup>	CB	CB	CB, B	CB	CB	STMD (BE)	STMD (BE)	STMD (BE)
Number of transactions (thousands)	188	900	3,900	n.a.	25,200	6,690	4,500	11.6
Value of transactions (ECU millions)	1,667,793	13,963	2,327,000	n.a. <sup>(10)</sup>	4,941,000	18,121,601	126,883	18,112
Ratio of value of transactions to GDP (at annual rate)	8.7	0.07	18.9		2.86	44.6	0.3	0.04

See footnotes on page 733.

**Table 10***(continued)*

COUNTRY	GR	FR		IE	IT	NL		AT
Name of the system	SCS <sup>(11)</sup>	SATURNE	RELIT	GSO	LDT	Necigef	Clearing- instituut DNB	DS System
Type of securities <sup>(2)</sup>	G	G, O	B, G, O	G	G, S, B, O	G, S, B	C, O	G, C, B, C, O
Owner/manager <sup>(3)</sup>	CB	SICOVAM SA/ CB	SICOVAM SA	CB	CB	CB, B, SE	CB	B
Number of participants	86	352	257	46	311	53	80	113
<i>of which direct participants</i>	86	352	257	46	311	53	80	113
Settlement of cash leg <sup>(4)</sup>	N	N	N	N	N	RTGS	N	N
Securities settlement (delivery)	Y	GS	GS	GS	N	RTGS	N	GS
Delivery lag	T	From T to T+100	From T to T+30	T+1	T+3 G, B T+5 S, O	T+3	T, T+3	T+0 - 60
DVP mechanism <sup>(7)</sup>	DVP 3	DVP 2	DVP 2	DVP 2/3	DVP 3	DVP 1	DVP 3	DVP 2
Intraday finality <sup>(8)</sup>	N	N	N	n.a.	N	Y	Y	Y
Central securities depository	SCS	CB for G	SICOVAM SA	GSO	BI-CAT G MONTETITOLI S, B, O	Necigef	CB	OeKB
Cash settlement agent <sup>(9)</sup>	CB	CB	CB	CB	CB	CB, B	CB	B
Number of transactions (thousands)	-	222	15,000	29	14,127	1,145	2	140
Value of transactions (ECU millions)	-	171,168,400	237,002,400	99,962	6,551,691	n.a.	36,599	131,376
Ratio of value of transactions to GDP (at annual rate)	-	3.52	4.88		7.6	n.a.	0.13	

See footnotes on page 733.

**Table 10***(continued)*

COUNTRY	PT		FI				SE	UK	
Name of the system	INTERBOLSA	SISTEM	HMMC	HSE	SOM	FOEX	VP	CGO	CMO
Type of securities <sup>(2)</sup>	TB, CBS <sup>(12)</sup>	B, S	G, C, O	S, B, O	O	O	G, S, B, C	G+O	G, C, O, B
Owner/manager <sup>(3)</sup>	CB	INTERBOLSA	CB, B, O	B, O	B, O	B, O	B, O	CB	CB
Number of participants	112	55	22	24	27	16	n.a.	n.a.	200
<i>of which direct participants</i>	<i>112</i>	<i>55</i>	<i>17</i>	<i>24</i>	<i>27</i>	<i>16</i>	<i>48</i>	<i>295</i>	<i>61</i>
Settlement of cash leg <sup>(4)</sup>	RTGS	N	RTGS, N	N	N	N	N, RTGS	N	N
Securities settlement (delivery)	RTGS/ INTERBOLSA	N	RTGS, N	GS	GS	N, GS	GS, RTGS	GS	GS
Delivery lag	10/15	T+4	T+2	T+4	T+4	T+4	T+2, T+3, RTGS T	T-T+1 <sup>(13)</sup>	T <sup>(13)</sup>
DVP mechanism <sup>(7)</sup>	DVP 1	DVP 3	DVP 1, DVP 3	DVP 2	-	-	DVP 2/3/ DVP 1	DVP 2	DVP 2
Intraday finality <sup>(8)</sup>	Y	N	Y	Y	N	N	Y	Y	Y
Central securities depository	CB/ INTERBOLSA	INTERBOLSA	HMMC	Central Share Register	SOM	FOEX	VPC	n.a.	CMO
Cash settlement agent <sup>(9)</sup>	CB	CB	CB	CB	B	B	CB	CB	CB
Number of transactions (thousands)	18.2	566.2	44.5	339.3	1,034.6	47.4	3,044	384	143
Value of transactions (ECU millions)	140,504	25,845	312,365	11,595	14,782	3,844	5,094,000	9,842,000	1,642,000
Ratio of value of transactions to GDP (at annual rate)	1.88	0.35	3.8	0.14	0.18	0.05	29.7	11.5	1.9

See footnotes on page 733.

**Table 10***(continued)*

COUNTRY	UK	
	ESO	TALISMAN
Name of the system	ESO	TALISMAN
Type of securities <sup>(2)</sup>	G, O, B	G, S
Owner/manager <sup>(3)</sup>	CB	SE
No. of participants	24	n.a.
<i>of which direct participants</i>	24	334
Settlement of cash leg <sup>(4)</sup>	N	N
Securities settlement (delivery)	GS	GS
Delivery lag	T-T + 365 <sup>(14)</sup>	T+5
DVP mechanism <sup>(7)</sup>	DVP 2	DVP 2
Intraday finality <sup>(8)</sup>	Y	N
Central Securities Depository	EUROCLEAR CEDEL	n.a.
Cash settlement agent <sup>(9)</sup>	B	B
Number of transactions (thousands)	5	4,798
Value of transactions (ECU millions)	25,000	393,000
Ratio of value of transactions to GDP (at annual rate)	0.03	0.5

Footnotes to Table 10:

- (1) For monetary policy and payment operations only; the Deutsche Bundesbank acts as an intermediate custodian.
- (2) B = bonds; C = CDs; G = government securities; S = shares; O = others.
- (3) B = banks; CB = central banks; SE = stock exchange; O = others.
- (4) GS = gross settlement, N = net; RTGS = real-time gross settlement.
- (5) T+2 for Treasury bills, T+3 for OLOs (long-term government bonds).
- (6) The seller keeps the initiative of delivering securities.
- (7) DVP schemes as defined by the G-10 group:  
DVP 1: In model 1, transfer instructions for both securities and funds are settled on a trade-by-trade basis, with final transfer of the securities from the seller to the buyer (delivery) occurring at the same time as final transfer of the funds from the buyer to the seller (payment).  
DVP 2: In model 2, securities transfer instructions are settled on a gross basis with final transfer of securities from the seller to the buyer (delivery) occurring throughout the processing cycle, but funds transfer instructions are settled on a net basis, with final transfer of funds from the buyer to the seller (payment) occurring at the end of the processing cycle.  
DVP 3: In model 3, transfer instructions for both securities and funds are settled on a net basis, with final transfers of both securities and funds occurring at the end of the processing cycle.
- (8) Y = yes; N = no.
- (9) B = banks; CB = central banks; SE = stock exchange; O = others.
- (10) Value of deposited securities is about DEM 460 billion.
- (11) The system has been operating since mid-1995.
- (12) Treasury bills and central bank issued securities.
- (13) CGO and CMO are independent of the trading environment. They both settle on the day that instructions are input. For CGO, this is normally T or T+1, and for CMO normally T.
- (14) ESO accepts instructions for forward settlement.

**Table 11**

**Geographical breakdown of S.W.I.F.T. message flows**  
(in 1994)

	Messages sent			Messages received		
	Total (thousands)	To domestic users (% of total)	To other EU countries (% of total)	Total (thousands)	From domestic users (% of total)	From other EU countries (% of total)
Belgium	21,234	18.40%	54.19%	18,910	20.66%	55.04%
Denmark	6,587	15.22%	51.88%	5,912	16.96%	54.27%
Germany	38,188	16.52%	40.45%	51,012	12.37%	48.78%
Greece	2,559	22.53%	48.01%	2,599	22.18%	48.21%
Spain	12,564	24.56%	47.36%	12,158	25.38%	50.04%
France	36,495	31.39%	40.90%	33,447	34.25%	38.88%
Ireland	2,001	20.72%	51.92%	2,207	18.79%	59.12%
Italy	24,682	17.16%	48.98%	25,067	16.90%	50.06%
Luxembourg	11,334	17.23%	54.86%	9,611	20.32%	49.09%
Austria	11,725	23.02%	47.87%	9,521	28.35%	42.08%
Netherlands	15,254	11.48%	53.73%	14,538	12.04%	54.08%
Portugal	3,579	12.04%	65.76%	3,340	12.90%	64.26%
Finland	3,951	13.23%	54.61%	2,806	18.63%	50.63%
Sweden	8,701	13.95%	53.32%	7,021	17.29%	49.97%
United Kingdom	60,967	23.22%	33.29%	55,180	25.65%	33.92%
Total EU	198,854	27.01%	57.87%	179,258	27.79%	58.39%
Total non-EU	258,277	14.72%	32.17%	264,769	14.36%	34.36%
Total all countries	258,476	17.71%	38.25%	444,027	17.71%	39.77%

**Table 12****S.W.I.F.T. traffic: intra-EU message flows***(in 1994, number of messages, in thousands)*

From \ To	AT	BE	DK	FI	FR	DE	GR	IE	IT	LU	NL	PT	ES	SE	UK	Total EU	Non-EU	All countries
Belgium	205	3,907	219	84	2,050	1,930	96	83	1,039	974	1,770	164	488	219	2,188	15,416	5,820	21,236
Denmark	71	252	1,003	101	232	895	26	32	217	153	194	53	100	443	649	4,421	2,167	6,588
Germany	1,628	1,128	648	220	1,964	6,310	347	163	2,192	716	1,595	271	902	532	3,141	21,757	16,430	38,187
Greece	30	65	22	8	122	346	576	6	225	11	71	9	42	28	245	1,806	754	2,560
Spain	101	456	95	40	1,073	1,072	37	51	820	133	257	370	3,086	106	1,338	9,035	3,528	12,563
France	276	1,816	220	93	11,458	3,082	122	117	2,514	656	1,015	404	1,212	234	3,164	26,383	10,112	36,495
Ireland	12	50	26	7	77	161	7	415	68	17	51	13	36	20	493	1,453	548	2,001
Italy	744	810	215	67	2,124	2,912	162	73	4,235	654	545	170	750	188	2,677	16,326	8,357	24,683
Luxembourg	103	1,523	135	41	794	1,411	13	20	775	1,953	290	57	159	124	773	8,171	3,163	11,334
Netherlands	187	1,437	176	63	747	2,588	61	58	551	204	1,751	109	286	175	1,554	9,947	5,306	15,253
Austria	2,699	208	86	42	300	2,973	51	17	812	102	220	39	122	101	542	8,314	3,413	11,727
Portugal	30	144	37	17	355	381	11	13	257	42	98	431	535	44	388	2,783	794	3,577
Finland	49	110	138	523	118	534	10	11	124	46	107	33	62	408	408	2,681	1,271	3,952
Sweden	104	267	566	343	284	1,045	34	28	248	135	227	71	129	1,214	1,159	5,854	2,848	8,702
United Kingdom	467	2,141	622	293	2,768	5,554	278	633	2,707	876	1,422	385	1,259	888	14,154	34,447	26,519	60,966
Total EU	6,706	14,314	4,208	1,942	24,466	31,194	1,831	1,720	16,784	6,672	9,613	2,579	9,168	4,724	32,873	168,794	91,030	259,824
Total non-EU	2,815	4,595	1,701	863	8,987	19,818	770	487	8,283	2,940	4,925	763	2,988	2,299	22,307	84,541	173,734	258,275
Total all countries	9,521	18,909	5,909	2,805	33,453	51,012	2,601	2,207	25,067	9,612	14,538	3,342	12,156	7,023	55,180	253,335	264,764	518,099

Source: S.W.I.F.T.

**Table 13**

**S.W.I.F.T. members, sub-members and participants**  
(end-1994)

	Number of S.W.I.F.T. members and their affiliated sub-members				Number of users of S.W.I.F.T. network					
	S.W.I.F.T. members	Their affiliated sub-members			Members	Sub-members			Participants	Total number of users
		In EU countries	In non-EU countries	Total worldwide		Affil. to mbs in EU	Affil. to mbs non-EU	Total		
Belgium	34	25	18	43	34	20	16	36	3	73
Denmark	30	11	8	19	30	4	1	5	0	35
Germany	149	84	73	157	149	45	43	88	3	240
Greece	22	6	7	13	22	12	6	18	0	40
Spain	52	50	40	90	52	50	13	63	0	115
France	103	79	112	191	103	54	39	93	4	200
Ireland	11	5	7	12	11	13	5	18	9	38
Italy	186	54	42	96	186	20	12	32	0	218
Luxembourg	26	3	2	5	26	79	35	114	0	140
Netherlands	27	31	71	102	27	12	16	28	0	55
Austria	62	9	13	22	62	10	5	15	0	77
Portugal	26	14	13	27	26	10	3	13	0	39
Finland	10	7	7	14	10	3	1	4	0	14
Sweden	8	18	14	32	8	8	1	9	0	17
United Kingdom	59	36	110	146	59	92	136	228	57	344
Total EU	805	432	537	969	805	432	332	764	76	1,645
Total non-EU	1,607	332	722	1,054	1,607	537	722	1,259	112	2,978
Total all countries	2,412	764	1,259	2,023	2,412	969	1,054	2,023	188	4,623

Source: S.W.I.F.T

**Table 14****Relative share of EU countries in S.W.I.F.T. traffic, membership and shareholding***(in 1994)*

	Share of messages		Share of total members	Share of equity holding		
	sent	received		users	quantity	percentage
Belgium	4.10%	3.65%	1.40%	1.77%	3,258	3.73%
Denmark	1.27%	1.14%	1.24%	0.24%	1,395	1.60%
Germany	7.37%	9.84%	6.17%	4.34%	7,750	8.86%
Greece	0.49%	0.50%	0.91%	0.88%	356	0.41%
Spain	2.43%	2.35%	2.15%	3.11%	2,306	2.64%
France	7.04%	6.46%	4.27%	4.74%	7,903	9.04%
Ireland	0.39%	0.43%	0.45%	0.88%	336	0.38%
Italy	4.76%	4.84%	7.71%	1.58%	5,303	6.06%
Luxembourg	2.19%	1.86%	1.07%	5.62%	859	0.98%
Netherlands	2.94%	2.81%	1.12%	1.38%	3,655	4.18%
Austria	2.26%	1.84%	2.57%	0.74%	2,259	2.58%
Portugal	0.69%	0.64%	1.07%	0.64%	799	0.91%
Finland	0.76%	0.54%	0.41%	0.19%	870	0.99%
Sweden	1.68%	1.36%	0.33%	0.44%	1,734	1.98%
United Kingdom	11.78%	10.64%	2.44%	11.25%	6,745	7.71%
Total EU	50.15%	48.90%	33.31%	37.80%	45,528	52.05%
Total non-EU	49.85%	51.10%	66.69%	62.20%	41,915	47.95%
	100.00%	100.00%	100.00%	100.00%	87,443	100.00%

Source: S.W.I.F.T

EUROPEAN MONETARY INSTITUTE

PAYMENT SYSTEMS IN THE EUROPEAN UNION

Annex 3

Glossary

## Glossary

**Advisory netting:** see position netting.

**Assured payment system (APS):** an arrangement in an exchange-for-value system under which completion of timely settlement of a payment instruction is supported by an irrevocable and unconditional commitment from a third party (typically a bank, syndicate of banks or clearing house). See exchange-for-value settlement system.

**Automated clearing house (ACH):** an electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunication networks, and handled by a data-processing centre. See also clearing.

**Automated teller machine (ATM):** an electro-mechanical device that permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits. ATMs may be operated either online with real-time access to an authorisation database or offline.

**Back-to-back transaction:** a chain of securities transactions among three or more counterparties involving the purchase and sale of a single security, for settlement on a single date. The most simple back-to-back trade is a pair of transactions in which one party agrees to purchase securities from a second party and then agrees to sell them to a third party.

**Bank draft:** a draft drawn by a bank on itself. The draft is purchased by the payer and sent to the payee, who presents it to his bank for payment. That bank presents it to the payer's bank for reimbursement.

**Batch:** the transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete intervals of time.

**Beneficial ownership/interest:** the entitlement to receive some or all of the benefits of ownership of a security or other financial instrument (e.g. income, voting rights, power to transfer). Beneficial ownership is usually distinguished from "legal ownership" of a security or financial instrument. See legal ownership.

**Bilateral net settlement system:** a settlement system in which participants' bilateral net settlement positions are settled between every bilateral combination of participants. See also net credit or debit position.

**Bilateral netting:** an arrangement between two parties to net their bilateral obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. See netting, multilateral netting, net settlement.

**Bill of exchange:** a written order from one party (the drawer) to another (the drawee) to pay a specified sum on demand or on a specified date to the drawer or to a third party specified by the drawer. Widely used to finance trade and, when discounted with a financial institution, to obtain credit. See also draft.

**Book-entry system:** an accounting system that permits the transfer of claims (e.g. securities) without the physical movement of paper documents or certificates. See also dematerialisation, immobilisation.

**Bulk funds transfer system:** see retail funds transfer system.

**Call money:** a loan contract which is automatically renewed every day unless the lender or the borrower indicates that it wishes the funds to be returned within a short period of time.

**Capital risk:** see principal risk.

**Caps:** a risk management arrangement whereby limits are placed on the positions that participants in an interbank funds transfer system can incur during the business day; they may be set by each individual participant or by the body governing the transfer system; they can be set in multilateral net, bilateral net or (less commonly) gross terms and can be either a credit cap or a debit cap; for example, bilateral net credit caps, set by an individual participant, will constitute a limit on the credit exposure that that participant will accept vis-à-vis each other participant; in contrast, sender net debit caps, which may for example be set by the governing body of the clearing system based on a particular formula, limit the aggregate value of transfers that an individual participant may send to all other participants over and above its incoming transfers. Sender net debit limits may be either collateralised or uncollateralised.

**Card:** see cash card, cheque guarantee card, chip card, credit card, debit card, delayed debit card, prepaid card, retailer card, travel and entertainment card.

**Cash card:** a card for use only in ATMs or cash dispensers (often, other cards also have a cash function that permits the holder to withdraw cash).

**Cash dispenser:** an electro-mechanical device that permits the withdrawal, typically using machine-readable plastic cards, of banknotes (currency) and, in some cases, coins. See also automated teller machine (ATM).

**Cashier's cheque:** see bank draft.

**Central bank liquidity facility:** a standing credit facility that can be used by certain designated account holders (e.g. banks) at the central bank. In some cases, the facility can be used automatically at the initiative of the account holder, while in other cases the central bank may retain some degree of discretion. The loans typically take the form of advances or overdrafts on an account holder's current account which may be secured by a pledge of securities (also known as lombard loans in some European countries), of traditional rediscounting of bills or of repurchase agreements.

**Central securities depository:** a facility for holding securities which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (i.e. so that they exist only as electronic records). In addition to safekeeping, a central securities depository may incorporate comparison, clearing and settlement functions.

**Chaining:** a method used in certain transfer systems (mostly for securities) for processing instructions. It involves the manipulation of the sequence in which transfer instructions are processed to increase the number or value of transfers that may be settled with available funds and/or securities balances (or available credit or securities lending lines).

**Cheque:** a written order from one party (the drawer) to another (the drawee, normally a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer. Cheques are widely used for settling debts and withdrawing money from banks. See also bill of exchange.

**Cheque guarantee card:** a card issued as part of a cheque guarantee system. This function may be combined with other functions in the same card, e.g. those of a cash card or debit card. See also cheque guarantee system.

**Cheque guarantee system:** a system to guarantee cheques, typically up to a specified amount, that have been validated by the merchant either on the basis of a card issued to the cheque writer or through a central database accessible to merchants. Validated cheques are guaranteed by the issuer of the guarantee card, the drawee bank or the system operator.

**Chip card:** also known as an IC (integrated circuit) card or smart card. A card containing one or more computer chips or integrated circuits for identification, data storage or special-purpose processing used to validate personal identification numbers (PINs), authorise purchases, verify account balances and store personal records. In some cases, the memory in the card is updated every time the card is used, e.g. an account balance is updated.

**Clearing/Clearance:** the process of transmitting, reconciling and, in some cases, confirming payment orders or security transfer instructions prior to settlement, possibly including netting of instructions and the establishment of final positions for settlement. In the context of securities markets this process is often referred to as clearance. Sometimes the terms are used (imprecisely) to include settlement.

**Clearing house:** a central location or central processing mechanism through which financial institutions agree to exchange payment instructions or other financial obligations (e.g. securities). The institutions settle for items exchanged at a designated time based on the rules and procedures of the clearing house. In some cases, the clearing house may assume significant counterparty, financial or risk management responsibilities for the clearing system. See clearing/clearance, clearing system.

**Clearing system:** a set of procedures whereby financial institutions present and exchange data and/or documents relating to funds or securities transfers to other financial institutions. The procedures often also include a mechanism for the calculation of participants' bilateral and/or multilateral net positions with a view to facilitating the settlement of their obligations on a net or net net basis. See also netting.

**Close-out netting:** a special form of netting which occurs following some predefined event such as default. Close-out netting is intended to reduce exposures on open contracts if one party meets certain conditions specified by the contract (e.g. becomes subject to insolvency procedures) before the settlement date (also referred to as default netting, open contract netting or replacement contract netting).

**Confirmation:** a particular connotation of this widely used term is the process whereby a market participant notifies its counterparties or customers of the details of a trade and, typically, allows them time to affirm or question the trade.

**Correspondent banking:** an arrangement under which one bank provides payment and other services to another bank. Payments through correspondents are often executed through reciprocal accounts (so-called nostro and loro accounts), to which standing credit lines may be attached. Correspondent banking services are primarily provided across international boundaries but are also known as agency relationships in some domestic contexts. A loro account is the term used by a correspondent to describe an account held on behalf of a foreign bank; the foreign bank would in turn regard this account as its nostro account.

**Counterparty:** the opposite party to a financial transaction, such as a securities trade or swap agreement.

**Credit caps:** see caps.

**Credit card:** a card indicating that the holder has been granted a line of credit. It enables the holder to make purchases and/or withdraw cash up to a prearranged ceiling; the credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.

**Credit card company:** a company which owns the trademark of a particular credit card, and may also provide a number of marketing, processing or other services to its members using the card services.

**Credit risk/exposure:** the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value settlement systems, the risk is generally defined to include replacement cost risk and principal risk.

**Credit transfer:** a payment order or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system.

**Credit transfer system (or giro system):** a funds transfer system through which credit transfer (or giro) orders and the related information and funds may be transmitted for the purpose of executing credit transfers (or bank/postal giros).

**CSD:** see central securities depository.

**Custody:** the safekeeping and administration of securities and financial instruments on behalf of others.

**Daylight credit (or daylight overdraft, daylight exposure, intraday credit):** credit extended for a period of less than one business day. Daylight credit may be extended by central banks to even out mismatches in payments settlements. In a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day.

**Debit caps:** see caps.

**Debit card:** a card enabling the holder to have purchases directly charged to funds on an account at a deposit-taking institution (this may sometimes be combined with another function, e.g. that of a cash card or cheque guarantee card).

**Debit transfer system (or debit collection system):** a funds transfer system in which debit collection orders made or authorised by the payer move from the bank of the payee to the bank of the payer and result in a charge (debit) to the account of the payer; for example, cheque-based systems are typical debit transfer systems.

**Debt book-entry system:** a computerised system for the issue and registration of debt securities in book-entry form. See also book-entry system, share book-entry system.

**Default:** the failure to complete a funds or securities transfer according to its terms for reasons that are not technical or temporary, usually as a result of bankruptcy. Default is usually distinguished from a “failed transaction”.

**Delayed debit card:** a card issued by banks indicating that the holder may charge an account up to an authorised limit. It enables purchases to be made but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

**Deletion:** a mechanism whereby some or all transfers to/from a defaulting participant are excluded from the settlement process. In a netting scheme, other participants’ bilateral and/or multilateral net positions are recalculated. See unwinding.

**Delivery:** the final transfer of a security or financial instrument.

**Delivery versus payment system (or DVP, delivery against payment):** a mechanism in an exchange-for-value settlement system that ensures that the final transfer of one asset occurs if and only if the final transfer of (an) other asset(s) occurs. Assets could include monetary assets (such as foreign exchange), securities or other financial instruments. See exchange-for-value settlement system, final transfer.

**DVP schemes as defined by the G-10 group:** In model 1, transfer instructions for both securities and funds are settled on a trade-by-trade basis, with final transfer of the securities from the seller to the buyer (delivery) occurring at the same time as final transfer of the funds from the buyer to the seller (payment). In model 2, securities transfer instructions are settled on a gross basis with final transfer of securities from the seller to the buyer (delivery) occurring throughout the processing cycle, but funds transfer instructions are settled on a net basis, with final transfer of funds from the buyer to the seller (payment) occurring at the end of the processing cycle. In model 3, transfer instructions for both securities and funds are settled on a net basis, with final transfers of both securities and funds occurring at the end of the processing cycle.

**Dematerialisation:** the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.

**Depository:** an agent with the primary role of recording securities either physically or electronically and keeping records of the ownership of these securities.

**Direct debit:** a pre-authorised debit on the payer's bank account initiated by the payee.

**Direct participant in an IFTS:** a participant in an Interbank Funds Transfer System (IFTS) who is responsible to the settlement agent (or to all other direct participants) for the settlement of its own payments, those of its customers, and those of the indirect participants on whose behalf it is settling.

**Discharge:** the release from a legal obligation imposed by contract or law.

**Draft:** a written order from one party (the drawer) to another (the drawee) to pay a party identified on the order (payee) or the bearer a specified sum, either on demand (sight draft) or on a specified date (time draft). See bank draft, bill of exchange, cheque.

**EFTPOS:** see point of sale (POS).

**Electronic data interchange (EDI):** the electronic exchange between commercial entities (in some cases also public administrations), in a standard format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments. EDI messages are sent through public data transmission networks or banking system channels. Any movement of funds initiated by EDI is reflected in payment instructions flowing through the banking system. EDIFACT, a United Nations body, has established standards for electronic data interchange.

**Electronic purse:** a reloadable multi-purpose prepaid card which may be used for small retail or other payments instead of coins. See multi-purpose prepaid card.

**End-of-day gross settlement systems:** funds transfer systems in which payment orders are received one by one by the settlement agent during the business day, but in which the final settlement takes place at the end of the day on a one-by-one or aggregate gross basis. This definition also applies to gross settlement systems in which payments are settled in real time but remain revocable until the end of the day.

**Exchange-for-value settlement system:** system which involves the exchange of assets, such as money, foreign exchange, securities or other financial instruments, in order to discharge settlement obligations. These systems may use one or more funds transfer systems in order to satisfy the payment obligations that are generated. The links between the exchange of assets and the payment system(s) may be manual or electronic. See delivery versus payment system.

**Face-to-face payment:** a payment carried out by the exchange of instruments between the payer and the payee in the same physical location.

**Failed transaction:** a transaction (e.g. a funds or securities transfer) that does not settle on time, usually for technical or temporary reasons.

**Final (finality):** irrevocable and unconditional.

**Final settlement:** a settlement which is irrevocable and unconditional.

**Final transfer:** an irrevocable and unconditional transfer which effects a discharge of the obligation to make the transfer. The terms “delivery” and “payment” are each defined to include a final transfer.

**Foreign exchange settlement risk:** the risk that one party to a foreign exchange transaction will pay the currency it sold but not receive the currency it bought. This is also called cross-currency settlement risk or principal risk; it is also referred to as Herstatt risk, although this is an inappropriate term given the differing circumstances in which this risk has materialised.

**Funds Transfer System (FTS):** a formal arrangement, based on private contract or statute law, with multiple membership, common rules and standardised arrangements, for the transmission and settlement of money obligations arising between the members. See Interbank Funds Transfer System.

**Fungibility:** a concept that characterises the method of holding securities by a CSD or other financial intermediary in which each of a number of issues of physical or dematerialised securities are held in separate fungible pools. No owner has the right to any particular physical or dematerialised security in a particular pool, but has a right to such an amount of physical or dematerialised securities as shown in its account with a CSD or other financial intermediary.

**Giro system:** see credit transfer system.

**Gridlock:** a situation that can arise in a funds or securities transfer system in which the failure of some transfer instructions to be executed (because the necessary funds or securities balances are unavailable) prevents a substantial number of other instructions from other participants from being executed. See also failed transaction, queuing, systemic risk.

**Gross settlement system:** a transfer system in which the settlement of funds or securities transfers occurs individually on an order-by-order basis according to the rules and procedures of the system, i.e. without netting debits against credits. See net settlement system, real-time gross settlement.

**Haircut:** the difference between the market value of a security and its collateral value. Haircuts are taken by a lender of funds in order to protect the lender, should the need arise to liquidate the collateral, from losses owing to declines in the market value of the security. See margin.

**Home banking:** banking services which a retail customer of a financial institution can access using a telephone, television set, terminal or personal computer as a telecommunication link to the institution's computer centre.

**IC card:** see chip card.

**Immobilisation:** the placement of certificated securities and financial instruments in a central securities depository to facilitate book-entry transfers.

**Imprinter:** a mechanical device used to reproduce the name and account number of a cardholder on a paper sales slip. See also imprinter voucher.

**Imprinter voucher:** in card transactions, a sales slip to be signed by the customer on which the name and card number of the customer are imprinted. See also imprinter.

**Indirect participant in an IFTS:** a participant in an IFTS which does not, for whatever reason, settle its own payments on a gross or net payment basis and, therefore, settles them through a direct participant. See direct participant in an IFTS.

**Interbank Funds Transfer System (IFTS):** a funds transfer system in which most (or all) direct participants are credit institutions. See Funds Transfer System (FTS).

**Interlinking:** within the TARGET system, Interlinking provides common procedures and the infrastructure which allow payment orders to move from one domestic RTGS system to another domestic RTGS system. See TARGET system.

**International central securities depository (ICSD):** a central securities depository which clears and settles international securities or cross-border transactions in domestic securities. At the moment, there are two ICSD located in EU countries, Cedel and Euroclear.

**Intraday credit:** see daylight credit.

**Irrevocable and unconditional transfer:** a transfer which cannot be revoked by the transferor and is unconditional.

**Issuer:** the entity which is obligated on a security or other financial instrument. For example, a corporation or government having the authority to issue and sell a security; or a bank that approves a letter of credit. Issuer is sometimes used to refer to a financial institution that issues credit or debit cards.

**Large-value funds transfer system:** a funds transfer system through which large-value and high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Although, as a rule, no minimum value is set for the payments they carry, the average size of payments passed through such systems is usually relatively large. Large-value funds transfer systems are sometimes known as wholesale funds transfer systems.

**Large-value payments:** payments, generally of very large amounts, which are mainly exchanged between banks or between participants in the financial markets and usually require urgent and timely settlement.

**Legal ownership:** the recognition in law as the owner of a security or other financial instrument.

**Letter of credit (L/C):** a promise by a bank or other issuer to a third party to make a payment on behalf of a customer in accordance with specified conditions. Letters of credit are frequently used in international trade to make funds available in a foreign location.

**Limited-purpose prepaid card:** a prepaid card which can be used for a limited number of well-defined purposes. Its use is often restricted to a number of well-identified points of sale within a well-identified location (e.g. a building, corporation or university). In the case of single-purpose prepaid cards, the card issuer and the service provider may be identical (e.g. cards used in public telephones). See prepaid card.

**Liquidity risk:** the risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified time thereafter.

**Loss-sharing rule (or loss-sharing agreement):** an agreement between participants in a transfer system or clearing house arrangement regarding the allocation of any loss arising when one or more participants fail to fulfil their obligation: the arrangement stipulates how the loss will be shared among the parties concerned in the event that the agreement is activated.

**Magnetic ink character recognition (MICR):** a technique, using special MICR machine-readable characters, by which documents (i.e. cheques, credit transfers, direct debits) are read by machines for electronic processing. See optical character recognition (OCR).

**Margin:** the term margin has at least two meanings. In the futures/commodity markets, a margin is a good faith deposit (of money, securities or other financial instruments) required by the futures clearing system to ensure performance. In the equities markets, a margin is a sum of money deposited by a customer when borrowing money from a broker to purchase shares. The money deposited with the broker is the difference between the purchase value of the shares and the collateral value of the shares. See haircut.

**Marking to market:** the practice of revaluing securities and financial instruments using current market prices. In some cases unsettled contracts to purchase and sell securities are marked to market and the counterparty with an as yet unrealised loss on the contract is required to transfer funds or securities equal to the value of the loss to the other counterparty.

**Matching (or comparison checking):** the process used by market participants before settlement of a transaction to ensure that they agree with respect to the terms of the transaction.

**Minimum standards of the Lamfalussy report (Lamfalussy standards):** the six minimum standards for the design and operation of cross-border and multi-currency netting schemes or systems.

- I Netting systems should have a well-founded legal basis under all relevant jurisdictions.
- II Netting scheme participants should have a clear understanding of the impact of the particular scheme on each of the financial risks affected by the netting process.

- III Multilateral netting systems should have clearly defined procedures for the management of credit risks and liquidity risks which specify the respective responsibilities of the netting provider and the participants. These procedures should also ensure that all parties have both the incentives and the capabilities to manage and contain each of the risks they bear and that limits are placed on the maximum level of credit exposure that can be produced by each participant.
- IV Multilateral netting systems should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single net debit position.
- V Multilateral netting systems should have objective and publicly disclosed criteria for admission which permit fair and open access.
- VI All netting schemes should ensure the operational reliability of technical systems and the availability of backup facilities capable of completing daily processing requirements.

**Money order:** an instrument used to remit money to the named payee, often used by persons who do not have a cheque account relationship with a financial institution, to pay bills or transfer money to another person or to a company. There are three parties to a money order: the remitter (payer), the payee and the drawee. Drawees are usually financial institutions or post offices. Payees can either cash their money orders or present them to their bank for collection.

**Multilateral net settlement position:** the sum of the value of all the transfers a participant in a net settlement system has received during a certain period of time less the value of the transfers made by the participant to all other participants. If the sum is positive, the participant is in a multilateral net credit position; if the sum is negative, the participant is in a multilateral net debit position.

**Multilateral net settlement system:** a settlement system in which each settling participant settles (typically by means of a single payment or receipt) the multilateral net settlement position which results from the transfers made and received by it, for its own account and on behalf of its customers or non-settling participants for which it is acting. See direct participant in an IFTS, multilateral net settlement position, multilateral netting.

**Multilateral netting:** an arrangement among three or more parties to net their obligations. The obligations covered by the arrangement may arise from financial contracts, transfers or both. The multilateral netting of payment obligations normally takes place in the context of a multilateral net settlement system. See bilateral netting, multilateral net settlement position, multilateral net settlement system.

**Multi-purpose prepaid card:** a prepaid card which can be used at the outlets of several service providers for a wide range of purposes, which has the potential to be used on a national or international scale but may sometimes be restricted to a certain area. See electronic purse, prepaid card.

**Net credit or net debit position:** a participant's net credit or net debit position in a netting system is the sum of the value of all the transfers it has received up to a particular point in time less the value of all the transfers it has sent. If the difference is positive, the participant is in a net credit position; if the difference is negative, the participant is in a net debit position. The net credit or net debit position at settlement time is called the net settlement position. These net positions may be calculated on a bilateral or multilateral basis.

**Net debit cap:** see caps, net credit or net debit position.

**Net settlement:** the settlement of a number of obligations or transfers between or among counterparties on a net basis. See netting.

**Net settlement system:** a funds transfer system whose settlement operations are completed on a bilateral or multilateral net basis.

**Netting:** an agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions. Netting may take several forms which have varying degrees of legal enforceability in the event of default of one of the parties. See also bilateral netting, multilateral netting, novation, position netting, substitution.

**Netting by novation:** netting by novation agreements provide for individual forward-value contractual commitments (e.g. foreign exchange contracts) to be discharged at the time of their confirmation and replaced by new obligations forming part of a single agreement. Amounts due under a discharged contract will be added to running balances due between the parties in each currency at each future value date.

**Nominee:** a person or entity named by another to act on his behalf.

**Novation:** the satisfaction and discharge of existing contractual obligations by means of their replacement by new obligations (whose effect, for example, is to replace gross with net payment obligations). The parties to the new obligations may be the same as those to the existing obligations or, in the context of some clearing house arrangements, there may additionally be substitution of parties. See substitution.

**Obligation:** a duty imposed by contract or law. Obligation is also used to describe a security or other financial instrument, such as a bond or promissory note, which contains the issuer's undertaking to pay the owner.

**Offline:** in the context of payment and settlement systems, this term may refer to the transmission of transfer instructions by users, through such means as voice, written or telefaxed instructions, that must subsequently be input into a transfer processing system. The term may also refer to the storage of data by a transfer processing system on media such as magnetic tape or disk such that the user may not have direct and immediate access to the data. See online.

**Online:** in the context of payment and settlement systems, this term may refer to the transmission of transfer instructions by users, through such electronic means as computer-to-computer interfaces or electronic terminals, that are entered into a transfer processing system by automated means. The term may also refer to the storage of data by a transfer processing system on a computer database such that the user has direct access to the data (frequently in real time) through input/output devices such as terminals. See offline.

**Open offer netting:** “netting by open offer” describes a contractual means by which a third party, such as a clearing house, becomes party to a transaction agreed by two separate entities. The third party extends an “open offer” to those entities, with the effect that if they agree the terms of a transaction which satisfies certain pre-agreed conditions, the third party automatically and immediately becomes interposed in that transaction. Two separate, equal and opposite contractual obligations are created, between the clearing house and one party, and between the clearing house and the other entity. If all pre-agreed conditions are met, at no stage does a direct contractual obligation exist between the two entities.

**Operational safe custody accounts:** securities accounts run by the central bank in which credit institutions can place securities deemed suitable for the backing of central bank operations. The securities held on these accounts are finally deposited with the CSD under the name of the NCB, so that the transfer into a safe custody account results in a transfer between the bank’s and the NCB’s account with the CSD. The securities deposited with the NCB are generally pledged to the NCB as collateral for (interest-bearing) overnight and (interest-free) intraday lombard loans. They can also be used for open market transactions (repos) based on a general authorisation given to the NCB to acquire securities.

**Optical character recognition (OCR):** a technique, using special OCR machine-readable characters, by which documents (e.g. cheques, credit transfers, direct debits) are read by machines for electronic processing. See magnetic ink character recognition (MICR).

**Overnight money (or day-to-day money):** a loan with a maturity of one business day.

**Oversight of payment systems:** a central bank task, principally intended to promote the smooth functioning of payment systems and to protect the financial system from possible “domino effects” which may occur when one or more participants in the payment system incur credit or liquidity problems. Payment systems oversight aims at a given system (e.g. a funds transfer system) rather than individual participants.

**Paperless credit transfers:** credit transfers that do not involve the exchange of paper documents between banks. Other credit transfers are referred to as being paper-based.

**Participant in/Member of an FTS:** a party which participates in a transfer system. This generic term refers to an institution which is identified by a transfer system (e.g. by a bank identification number) and is allowed to send payment orders directly to the system or which is directly bound by the rules governing that transfer system. See direct participant in an IFTS, indirect participant in an IFTS.

**Payment:** the payer’s transfer of a monetary claim on a party acceptable to the payee. Typically, claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.

**Payment lag:** the time-lag between the initiation of a payment order and its final settlement.

**Payment order (or payment instruction):** an order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee. The order may relate either to a credit transfer or to a debit transfer.

**Payment system:** a payment system consists of a set of instruments, banking procedures and, typically, interbank funds transfer systems that facilitate the circulation of money.

**Payment versus payment (PVP):** a mechanism in a foreign exchange settlement system which ensures that a final transfer of one currency occurs if and only if a final transfer of the other currency or currencies takes place.

**PIN (personal identification number):** a numeric code which the cardholder may need to quote for verification of identity. In electronic transactions, it is seen as the equivalent of a signature.

**Point of sale (POS):** this term refers to the use of payment cards at a retail location (point of sale). The payment information is captured either by paper vouchers or by electronic terminals, which, in some cases, are also designed to transmit the information. Where this is so, the arrangement may be referred to as “electronic funds transfer at the point of sale” (EFTPOS).

**Position netting (or advisory netting):** the netting of instructions in respect of obligations between two or more parties which neither satisfies nor discharges those original individual obligations. This is also referred to as payment netting in the case of payment instructions.

**Prepaid card:** a card which contains real purchasing power, for which the customer has paid in advance to the issuer of the card. See limited-purpose prepaid card and multi-purpose prepaid card.

**Principal risk:** the credit risk that a party will lose the full value involved in a transaction. In the settlement process, this term is typically associated with exchange-for-value transactions when there is a lag between the final settlement of the various legs of a transaction (i.e. the absence of delivery versus payment). Principal risk that arises from the settlement of foreign exchange transactions is sometimes called cross-currency settlement risk. See credit risk.

**Provisional transfer:** a conditional transfer in which one or more parties retain the right by law or agreement to revoke the transfer.

**Queuing:** a risk management arrangement whereby transfer orders are held pending by the originator/deliverer or by the system until sufficient cover is available on the originator's/deliverer's clearing account or under the limits set against the payer; in some cases, cover may include unused credit lines or available collateral. See also caps.

**Real-time gross settlement (RTGS) system:** a gross settlement system in which processing and settlement take place in real time (continuously).

**Real-time transmission, processing or settlement:** the transmission, processing or settlement of a funds or securities transfer instruction on an individual basis immediately after the time it is initiated.

**Receiver finality:** an analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the receiving participant in a transfer system to make final funds available to its beneficiary customer on the value date. See final settlement.

**Registration:** the listing of ownership of securities in the records of the issuer or its transfer agent/registrar.

**Remote access to a CSD:** the facility in a securities settlement system (SSS) in one country ("home country") to become a direct participant in a CSD established in another country ("host country") and, for that purpose, to have a securities account in its own name with the CSD in the host country. See securities settlement system.

**Remote access to an IFTS:** the facility for a credit institution established in one country ("home country") to become a direct participant in an interbank funds transfer system (IFTTS) established in another country ("host country") and, for that purpose, to have a settlement account in its own name with the central bank in the host country, if necessary, without having established a branch in the host country.

**Remote participant:** a participant in a transfer system which has neither its head office nor any of its branches located in the country where the transfer system is based.

**Remote payment:** a payment carried out through the sending of payment orders or payment instruments (e.g. by mail). Contrast with face-to-face payment.

**Replacement cost risk:** the risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date. This failure may leave the solvent party with an unhedged or open market position or deny the solvent party unrealised gains on the position. The resulting exposure is the cost of replacing, at current market prices, the original transaction. See also credit risk.

**Repurchase agreement (repo):** a sale and repurchase agreement. An arrangement by which a person with a long securities position sells them to a counterparty while simultaneously obtaining the right and obligation to repurchase them at a specific price on a future date or on demand. Such an agreement is used by persons with a long position in securities, but short on cash with which to obtain financing - similar to a secured borrowing, except that ownership of securities is not retained.

**Retail funds transfer system:** a funds transfer system which handles a large volume of payments of relatively low value in such forms as cheques, credit transfers, direct debits, ATM and EFTPOS transactions.

**Retail payments:** this term describes all payments which are not covered in the definition of large-value payments. Retail payments are mainly consumer payments of relatively low value and low urgency.

**Retailer card:** a card issued by non-banking institutions, to be used in specified stores. The holder of the card has usually been granted a line of credit.

**Reverse repo:** a purchase and resale agreement. An arrangement by which a person with a short securities position purchases them from a counterparty while simultaneously obtaining the right and obligation to resell them at a specific price on a future date or on demand. Such an agreement is used by persons with a short position in securities, but a long position on cash to obtain securities - similar to secured lending, except that ownership of securities is transferred.

**Same-day funds:** money balances that the recipient has a right to transfer or withdraw from an account on the day of receipt.

**Securities depository (book-entry system):** see central securities depository.

**Securities settlement system (SSS):** a system which permits the transfer of securities: either free of payment (free delivery), for example in the case of pledge; or against payment. Settlement of securities occurs on securities deposit accounts held with the CSD (both private CSDs or an NCB acting as a CSD) or with the central bank (safe custody operational accounts). In the latter case, the central bank acts as the intermediate custodian of the securities. The final custodian is normally a CSD. Settlement of cash occurs in an Interbank Funds Transfer System (IFTS), through a settlement agent.

**Sender finality:** an analytical rather than operational or legal term used to describe the point at which an unconditional obligation arises on the part of the initiating participant in a funds transfer system to make final payment to the receiving participant on the value date. See final settlement.

**Settlement:** an act that discharges obligations in respect of funds or securities transfers between two or more parties. See final settlement, gross settlement system, net settlement, net settlement system.

**Settlement agent:** an institution that manages the settlement process (e.g. the determination of settlement positions, the monitoring of the exchange of payments, etc.) for transfer systems or other arrangements that require settlement. See final settlement, settlement, settlement institution(s), multilateral net settlement system.

**Settlement finality:** see final settlement.

**Settlement institution(s):** the institution(s) across whose books transfers between participants take place in order to achieve settlement within a settlement system. See settlement agent, multilateral net settlement system, bilateral net settlement system.

**Settlement lag:** in an exchange-for-value process, the time-lag between entering into a trade/bargain and its discharge by the final exchange of a financial asset for payment. See payment lag.

**Settlement risk:** a general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.

**Settlement system:** a system used to facilitate the settlement of transfers of funds or financial instruments.

**Share book-entry system:** a computerised system for the issue and registration of equity securities in book-entry form. See also book-entry system, debt book-entry system.

**Standing order:** an instruction from a customer to a bank to make a regular payment of a fixed amount to a named creditor.

**Substitution:** the substitution of one party for another in respect of an obligation. In a netting and settlement context the term typically refers to the process of amending a contract between two parties so that a third party is interposed as counterparty to each of the two parties and the original contract between the two parties is satisfied and discharged. See novation.

**S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication):** a co-operative organisation created and owned by banks that operates a network which facilitates the exchange of payment and other financial messages between financial institutions (including broker-dealers and securities companies) throughout the world. A S.W.I.F.T. payment message is an instruction to transfer funds; the exchange of funds (settlement) subsequently takes place over a payment system or through correspondent banking relationships.

**Systemic risk:** the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.

**TARGET (Trans-European Automated Real-time Gross settlement Express Transfer) system:** the TARGET system is defined as a payment system composed of one RTGS system in each of the countries which participate in Stage Three of EMU and the European Central Bank (ECB) payment mechanism. RTGS systems of non-participating countries may also be connected, provided that they are able to process the euro alongside their national currency. The domestic RTGS systems and the ECB payment mechanism are interconnected according to common procedures ("Interlinking") to allow cross-border transfers throughout the European Union to move from one system to another system. See Interlinking.

**Telematics:** the combined use of data-processing and data-transmission techniques.

**Teller's cheque:** see bank draft.

**Tiering arrangement:** an arrangement which may exist in a funds or securities transfer system whereby participants in one category require the services of participants in another category to exchange and/or settle their transactions. See direct participant in an IFTS and indirect participant in an IFTS.

**Trade date:** the date on which a trade/bargain is struck.

**Trade-for-trade (gross) settlement:** the settlement of individual transactions between counterparties. See gross settlement system.

**Trade netting:** a consolidation and offsetting of individual trades into net amounts of securities and money due between trading partners or among members of a clearing system. A netting of trades which is not legally enforceable is a position netting.

**Transfer:** operationally, the sending (or movement) of funds or securities or of a right relating to funds or securities from one party to another party by: (1) the conveyance of physical instruments/money; (2) accounting entries on the books of a financial intermediary; or (3) accounting entries processed through a funds and/or securities transfer system. The act of transfer affects the legal rights of the transferor, transferee and possibly third parties in relation to the money balance, security or other financial instrument being transferred.

**Transfer system:** a generic term covering funds transfer systems and exchange-for-value systems.

**Travel and entertainment card:** a card issued by non-banks indicating that the holder has been granted a line of credit. It enables the holder to make purchases but does not offer extended credit, the full amount of the debt incurred having to be settled at the end of a specified period. The holder is usually charged an annual fee.

**Truncation:** a procedure in which the physical movement of paper payment instruments (e.g. paid cheques or credit transfers) within a bank, between banks or between a bank and its customer is curtailed or eliminated, being replaced, in whole or in part, by electronic records of their content for further processing and transmission.

**Ultimate settlement:** this term is sometimes used to denote final settlement in central bank money.

**Unwinding (or settlement unwind):** a procedure followed in certain clearing and settlement systems in which transfers of securities or funds are settled on a net basis, at the end of the processing cycle, with all transfers provisional until all participants have discharged their settlement obligations. If a participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system and the settlement obligations from the remaining transfers are then recalculated. Such a procedure has the effect of transferring liquidity pressures and possibly losses from the failure to settle to other participants, and may, in an extreme case, result in significant and unpredictable systemic risks.

**Variation margin (or mark-to-market payments):** the amount which is paid by a counterparty to reduce replacement cost exposures resulting from changes in market prices, following the revaluation of securities or financial instruments that are the subject of unsettled trades.

**Wholesale funds transfer system:** see large-value funds transfer system.

**Zero-hour clause:** a provision in the bankruptcy laws of some countries which may retroactively render transactions of a closed institution ineffective after 0.00 a.m. on the date the institution is ordered to be closed.



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Annex 4

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members

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