



EUROPEAN CENTRAL BANK

REVIEW OF THE INTERNATIONAL ROLE OF THE EURO

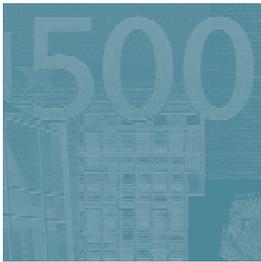
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EUROPEAN CENTRAL BANK



REVIEW OF THE INTERNATIONAL ROLE OF THE EURO

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Address

Kaiserstrasse 29
60311 Frankfurt am Main, Germany

Postal address

Postfach 16 03 19
60066 Frankfurt am Main, Germany

Telephone

+49 69 1344 0

Website

<http://www.ecb.int>

Fax

+49 69 1344 6000

Telex

411 144 ecb d

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FOREWORD

This report is the fifth review of the international role of the euro. As with previous issues, it reflects the ongoing efforts of the ECB to monitor and analyse the role played by the euro in global markets and in countries outside the euro area. In so doing, the review not only provides information on the extent of the international use of the euro, i.e. its use by market participants and authorities outside the euro area, but also sheds light on the factors driving developments in the international use of the euro.

This review, which focuses on developments between mid-2004 and mid-2005, confirms a number of findings that had already been identified in previous years. The euro has continued to gradually expand some aspects of its role as an international currency, while in other facets it has continued to show a significant degree of stability. In particular, during the period under review the use of the euro in international debt securities continued to increase gradually. In other markets, such as international loan and deposits and global foreign exchange, the use of the euro continued to exhibit a substantial degree of stability. In addition, the review confirms the strong

institutional and regional pattern that continues to characterise the internationalisation of the euro. Further evidence of this pattern is provided by the analysis of the factors underpinning the increase in the use of the euro in international trade, which is the subject of the “special focus” section of the review.

Developments in the international use of the euro are the outcome of decisions taken by market participants. The ECB will continue its monitoring of the international role of the euro and will provide regular information to the public on related developments in the international financial arena.



Jean-Claude Trichet

President of the European Central Bank

EXECUTIVE SUMMARY

This is the fifth review of the international role of the euro. Like previous issues, it examines the role of the euro in global markets and countries outside the euro area, and aims to enhance the Eurosystem's understanding of the current state of the internationalisation of the euro by identifying the main developments and underlying trends.

The review builds on the continued efforts of the European System of Central Banks (ESCB) to develop the statistical coverage and analysis of the international use of the euro. In this regard, the review provides a "special focus" section on the use of the euro in international trade, which is largely based on the data collection efforts that the ESCB has made in recent years in this area. The special focus addresses the question of what factors could lie behind the increase in the use of the euro in international trade, particularly among a number of EU countries and acceding and accession countries, which was reported in previous issues of this review. In addition to this analysis, the review also provides information on how the structure of the oil markets can affect the use of currencies in these markets.

The period under review extends from mid-2004 to mid-2005. Where appropriate, the review also takes stock of the first six years since the introduction of the euro, drawing comparisons between the situation at the beginning of 2005 and that which characterised the international role of the euro at the beginning of 1999. The main findings of the review can be summarised as follows:

INTERNATIONAL DEBT MARKETS

As a result of buoyant international issuance of euro-denominated debt during the review period, the share of the euro in the stock of international debt securities rose gradually to 31.5%. Despite some prominent issues by Asian and Latin American borrowers, the regional pattern of the international issuance

of euro-denominated bonds did not change materially during the review period. Notwithstanding an increase in the share of sovereign issuance in international euro-denominated debt, private sector issuers resident in the United Kingdom and the United States remain the most significant issuers of international euro-denominated bonds and notes. With regard to the demand for international euro-denominated securities, the available evidence continues to suggest that these issues have been targeted mainly at European investors. Nevertheless, some evidence would appear to indicate that there has been increased interest from Asian and, to a lesser extent, North American investors.

INTERNATIONAL LOAN AND DEPOSIT MARKETS

During the review period, the share of the euro in international loans and deposit markets remained broadly stable. Loans by non-euro area banks, mainly by banks resident in the United Kingdom, to non-bank borrowers in the euro area continued to be denominated mainly in euro. The share of the euro in loans made by euro area banks to non-bank borrowers outside the euro area remained somewhat lower. With respect to loan transactions carried out entirely outside the euro area, the role of the euro has increased slightly from a very low base. As regards deposits, more than one-half of international deposits, either by euro area non-banks in banks outside the euro area or by non-bank residents outside the euro area in euro area banks, continue to be denominated in euro. The share of the euro in deposits held by non-euro area non-banks in banks outside their home country has remained small although it increased somewhat during the review period.

FOREIGN EXCHANGE MARKETS

Evidence from foreign exchange trades settled via Continuous Linked Settlement (CLS) suggests that during the period under review the share of the euro in daily settlements

remained broadly stable at around 43%, compared to 44% during the previous twelve-month period. This compares with a share for the US dollar of 90%, unchanged from the previous review period, and a share for the Japanese yen of 20%, down from 22% in the previous period.¹ This high degree of stability has to be interpreted against the background of an expansion in the number of currencies traded within CLS and the overall increase in turnover within that system.

THE USE OF THE EURO IN INTERNATIONAL TRADE

The increase in the use of the euro in international trade has been one of the key characteristics of the international role of the euro in recent years. Following the continued efforts of the ESCB to increase the amount of information available on the use of the euro in international trade by a number of EU Member States, this review provides further evidence of the increase in such use of the euro in 2004 for a number of Member States. In other countries, however, the use of the euro appears to have levelled off when compared to 2003.

In order to understand the factors behind the use of the euro, the ECB launched a research project largely based on the dataset compiled by the ESCB. While the results of this research have to be seen as tentative given the still limited availability of data, analysis of the results suggests that the euro is used as a vehicle currency (defined as the use of the euro among non-euro area trading partners) mainly in countries with institutional links to the EU. In addition, the use of the euro in international trade does not exhibit some of the patterns that have traditionally been associated with vehicle currencies, such as strong use by countries that mainly export raw materials and commodities. Overall, the results emphasise the importance of institutional factors in explaining developments in the use of the euro in international trade. In this regard, analysis of the results would appear to confirm the

regional pattern that characterises other aspects of the internationalisation of the euro.

THIRD COUNTRIES

The role of the euro as an anchor currency has increased due to several changes of monetary and exchange rate regimes in third countries. In the period under review, the main exchange rate regime changes involving the euro as an anchor currency took place in three new Member States which entered ERM II (Cyprus, Latvia and Malta). In addition, as an EU acceding country, Romania strengthened the reference role of the euro in its intervention policy while formally adopting an inflation targeting framework. In EU neighbouring regions, Russia introduced a reference basket for the daily management of its exchange rate which includes the euro along with the US dollar. Israel, on the other hand, formally introduced inflation targeting, abandoning the exchange rate band around a basket of currencies, including the euro. As regards other regions, China announced in July that it would operate a managed floating exchange rate policy based on market supply and demand with reference to a basket that includes the euro as one of its main components.

According to revised IMF figures, the share of euro-denominated assets in global foreign exchange reserves fell slightly from 25.3% at the end of 2003 to 24.9% at the end of 2004. In developing countries, the share of the euro in official foreign exchange reserves increased somewhat from 28.9% to 29.2%. However, it is difficult to draw inferences about global trends in the currency composition of official reserves from these data since major reserve accumulators, most notably in Asia, are no longer covered.

As far as the role of the euro as an intervention currency is concerned, it appears that several

¹ The sum of currency percentage shares adds up to 200% as both currencies involved in the settlement of a foreign exchange trade are counted individually.

central banks in EU neighbouring countries continued during the review period to intervene by using the euro as the intervention currency. In particular, this applies to some new Member States and EU acceding and accession countries. More recently there have been indications that, for the first time, the Bank of Russia has intervened in the rouble/euro market.

With regard to the private use of the euro as a parallel currency, shipments of euro banknotes by banks to destinations outside the euro area have started to stabilise. However, transfers of euro banknotes to and from the euro area could also take place through channels other than MFIs. The share of euro-denominated deposits, on the other hand, increased in most new Member States and EU acceding and accession countries. In addition, the share of euro-denominated deposits increased in some CIS and Middle East countries.

CONCLUSIONS

In the period under review, the euro continued to expand some facets of its role as an international currency while in other market segments a levelling-off has been observed. In particular, the use of the euro in international debt securities, as an anchor and intervention currency and as a deposit currency in third countries has continued to increase gradually. In markets such as international loan and deposits and global foreign exchange, and in international trade, the use of the euro has exhibited a substantial degree of stability. In line with the conclusions drawn in previous reports, this review finds the internationalisation of the euro to be characterised by a strong institutional and regional pattern.

Key data

	This review (latest data available)	Previous review
<i>Share of the euro in:</i>		
– narrowly defined stock of international debt securities ¹⁾	2005 Q2: 31.5%	2004 Q2: 30.7%
– cross-border loans from non-euro area banks to non-bank borrowers outside the euro area ¹⁾	2005 Q1: 6.2%	2004 Q1: 4.9%
– cross-border deposits of non-euro area non-banks in banks outside their country of residence excluding the euro area ¹⁾	2005 Q1: 8.4%	2004 Q1: 7.7%
– daily foreign exchange trading (settled by CLS) ²⁾	30 June 2005: 43%	30 June 2004: 44%
– settlement/invoicing of exports of goods to non-euro area residents of a number of euro area countries	2004: 44% to 63%	2003: 47% to 63%
– settlement/invoicing of imports of goods from non-euro area residents of a number of euro area countries	2004: 41% to 61%	2003: 40% to 60%
– share of the euro in global foreign exchange reserves (as per new IMF methodology)	end-2004: 24.9%	end-2003: 25.3%
Cumulative net shipments of euro banknotes to destinations outside the euro area	June 2005: €55 billion	June 2004: €46 billion

1) At constant 1994 Q1 exchange rates.

2) Given the convention to account for both sides of each trade in foreign exchange markets, percentages add up to 200%, meaning that the euro's actual share in total turnover is half the percentage reported in this key data sheet.

INTRODUCTION

As on previous occasions, this report on the use of the euro outside the euro area has two objectives. It aims, first, at informing about developments in the period from mid-2004 to mid-2005 and, second, at enhancing the Eurosystem's understanding of the factors that underpin the international role of the euro.

The structure of the review also remains broadly unchanged. Section A focuses on *global markets* that constitute the environment for the euro as an international currency. The review makes use of a number of diverse data sources, ranging from the Bank for International Settlements (BIS) to market sources that will be familiar to readers of previous reviews and that have been found to be helpful in providing a statistical framework for analysing the use of the euro. In this regard, the key objective of Section A is to inform about developments in the use of the euro in these markets. As in previous reviews, it deals with international debt markets, international loan and deposit markets, foreign exchange markets and international trade.² For the first time, newly collected data on the currency breakdown of debt securities in the euro area balance of payments and international investment position are presented in the review.

While the regular sections of the report are mainly aimed at enhancing the available information, the special focus section allows for a longer and more in-depth analysis of a particular issue, in this case the factors behind the use of the euro in international trade. This special focus makes a contribution to the empirical literature on the determinants of the use of currencies in international trade as it benefits from the largest cross-section country database thus far available.³

Section B turns to the role of the euro in *third countries*, focusing, first, on authorities' choice of the euro as anchor, reserve or intervention currency in their exchange rate policies and, second, on the choice of private agents to use the euro as a parallel currency, in

the form of cash holdings or foreign currency deposits. Within this section, and in addition to its regular coverage, the review also includes boxes with details of recent changes to the publicly available data from the International Monetary Fund (IMF) on the currency composition of foreign exchange reserves, the changes announced to the Russian monetary and exchange rate framework, and updated results from a survey on the use of the euro in central, south-east and eastern Europe carried out by the Oesterreichische Nationalbank.

2 Throughout the review, the data are presented with the currency denomination of their original source. Moreover, the review does not study international equities, statistical coverage of which is more limited.

3 Comments and suggestions submitted by Eurosystem staff regarding the special focus are gratefully acknowledged.



A THE EURO IN GLOBAL MARKETS

I THE EURO IN INTERNATIONAL DEBT MARKETS

This section reviews the role of the euro in international debt markets, which comprise instruments with both long-term maturities (bonds and notes) and short-term maturities (money market instruments).⁴ As in previous years, the focus of the analysis is on the so-called “narrow” definition of international securities, which comprises only issues in a currency other than the currency of the country in which the borrower resides (see Box 1 for a discussion of alternative definitions of “international” issuance).⁵ With a view to analysing the main developments in the

international debt securities market from mid-2004 to mid-2005, sub-section 1.1 reviews supply trends for debt securities as a whole, sub-section 1.2 covers trends across the various financing instruments and sub-section 1.3 presents the evidence available on demand.

4 Bonds and notes have a maturity at issuance of more than one year, while money market instruments have a maturity at issuance of up to one year.

5 For further discussion of various analytical concepts with respect to proper measurement of the international roles of currencies in debt securities markets, see Detken, C. and P. Hartmann (2000).

Box 1

ALTERNATIVE DEFINITIONS OF THE “INTERNATIONAL” ISSUANCE OF DEBT SECURITIES

For the sake of clarity and simplicity, a single “narrow” concept of international issuance of debt securities (i.e. bonds and notes, as well as money market instruments) is used throughout this review. That “narrow” measure of international issuance is defined as issuance in a currency other than the currency of the country in which the borrower resides.

Other possible definitions of an international bond exist and the ECB has in fact made reference in the past to these alternative measures (see ECB, 2002 and 2001). In particular, the “broad” measure adds to the “narrow” measure the issuance of debt securities denominated in the home currency of the borrower, provided that this issuance is targeted at the international financial market. While it is a measure of the total supply of debt securities available to a non-resident investor, the “broad” measure also includes bonds for which both the issuer and investors originate in the euro area, even if they were initially targeted at non-euro area investors. The “global” measure of debt securities adds to the “broad” measure all domestic issues targeted at the domestic market. It is a measure of the total supply in the world of debt securities denominated in a given currency, be it domestic or international. For illustrative purposes, the table hereafter reports the latest evidence available on these two alternative measures.

Alternative measures of debt securities supply and major currencies’ shares

(first quarter of 2005, values at current exchange rates)

	Amounts outstanding (USD billions)	Shares (%)		
		Euro	US dollar	Japanese yen
“Narrow” measure, excluding home currency issuance	5,940	33.1	41.4	7.6
“Broad” measure, including home currency issuance	14,117	46.4	36.9	3.8
“Global” measure, including domestic issuance	58,051	27.3	42.2	16.2

Sources: BIS and ECB calculations.

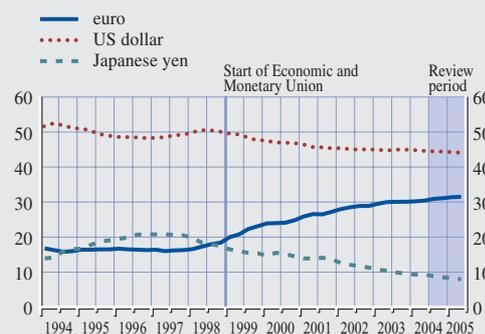
I.1 OVERALL TRENDS IN INTERNATIONAL DEBT SECURITIES SUPPLY

Net issuance of euro-denominated debt securities by non-euro area residents amounted to close to USD 277 billion between the third quarter of 2004 and the second quarter of 2005, i.e. to about 34% more than in the same period a year ago (see Table 1).⁶ According to the ECB's narrow measure (see Box 1), euro-denominated net issuance exceeded the corresponding figure for other major currencies in the third quarter of 2004 and during the first quarter of 2005. This may to some extent be due to valuation effects. While quarterly issuance of international debt securities remained fairly volatile, it appears that, on average during the review period, non-euro area residents tended to broaden their investor base by issuing more (or reducing redemptions of) euro-denominated debt.⁷ This phenomenon appears to have been mainly driven by corporate issuers based in the United Kingdom and the United States (see Table 1, and Table 4 which reports the largest issuers over the review period in gross terms).

As a result of these developments, the share of the euro in the stock of international debt securities, measured at constant exchange rates, rose slightly from 30.7% in June 2004 to 31.5% (see Chart 1).⁸ The share of the US dollar declined moderately from 44.8 % in June 2004 to 44%, while that of the Japanese yen fell from 9.3% in June 2004 to 8%.

Chart 1 Stock of international debt securities: currency shares

(bonds, notes and money market instruments, excluding home currency issuance, as a percentage of the total amount outstanding and at 1994 Q1 exchange rates)



Sources: BIS and ECB.

I.2 SPECIFIC TRENDS ACROSS FINANCING INSTRUMENTS

In the short-term international debt securities market, the currency shares remained broadly stable. When measured at current exchange rates, thus to some extent reflecting valuation

⁶ Net issuance of debt securities is defined as gross issuance minus repayments.

⁷ The effort of corporate issuers to broaden their investor base, as approximated by the volume of deposits in a certain region, has been found to be a statistically significant determinant of the currency choice in international bond issuance in a panel data set including around 7,500 issues in the period from 1999 to 2003. See ECB (2005) for details. See also Geis, A., A. Mehl and S. Wredenberg (2004).

⁸ As has already been explained in ECB (2002), currency shares related to debt securities data are (i) derived at constant 1994 Q1 exchange rates for stock data and (ii) at current exchange rates for flow data. Although correcting for exchange rate valuation effects may imply some imprecision, the currency valuation effect for stock data has been deemed too important to be neglected, as most stock variables cannot be adjusted by market participants in the face of exchange rate movements.

Table 1 Net issuance of international debt securities

(narrow measure, i.e. excluding home currency issuance, USD billions)

	Pro memoria: 2003 Q3-2004 Q2 ¹⁾	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2004 Q3-2005 Q2 (total issuance)
Euro	51.6	86.7	60.7	82.7	46.9	277.0
US dollar	69.6	52.3	65.5	62.9	50.3	231.0
Japanese yen	0.8	2.1	-5.8	4.7	-10.2	-9.2
Total (incl. other currencies)	153.1	175.9	139.4	205.0	124.2	644.5

Sources: BIS and ECB calculations.

1) Average quarterly amount.

Table 2 Major currencies' shares in gross issuance of short-term international debt securities

(narrow measure, i.e. excluding home currency issuance, as a percentage of the total amount issued)

	Pro memoria: 2003 Q3-2004 Q2 ¹⁾	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2004 Q3-2005 Q2 ¹⁾ (total issuance) ²⁾
Euro	34.9	36.8	36.5	37.7	37.1	37.0 (525.3)
US dollar	40.6	40.7	41.0	37.7	39.0	39.6 (561.1)
Japanese yen	2.7	1.9	1.7	2.5	2.2	2.1 (29.7)
Total (incl. other currencies)	100.0	100.0	100.0	100.0	100.0	100.0 (1,418)

Sources: BIS and ECB calculations.

Note: Shares at current exchange rates.

1) Average quarterly percentage.

2) Amounts in USD billions.

effects, the euro's share increased to 37.1% of total gross issuance of international money market instruments in the second quarter of 2005, up from 35.5% in the second quarter of 2004 (see Table 2). For the review period as a whole, the share of the euro in gross issuance of international short-term securities stood on average at around 37%, which corresponds to a gross amount of euro-denominated issues of roughly USD 525 billion (compared with USD 405 billion in the previous year). By contrast, the US dollar's share in gross issuance of international money market instruments continued to decline, reaching 39% in the second quarter of 2005 and an average of 39.6% during the whole review period, compared with an average of 40.6% during the previous review period. Likewise, the Japanese yen's share in gross issues of international money market instruments continued to decrease, reaching 1.7% in the

fourth quarter of 2004. However, the Japanese yen's share then recovered somewhat to stand at 2.2% in the second quarter of 2005.

In the long-term segment, when measured at current exchange rates and, thus, to some extent possibly reflecting valuation effects, the share of the euro in international issuance of bonds and notes stood at 34.9% in the second quarter of 2005 (see Table 3). Across quarters, the share of the euro in international gross issues of bonds and notes was more volatile than in the case of short-term securities. International issuance of euro-denominated bonds and notes was particularly high in the third quarter of 2004 when euro-denominated issues accounted for close to 39% of all international bonds and notes issued, the highest share recorded thus far. In the first half of 2005 around USD 278 billion worth of euro-denominated international bonds and notes

Table 3 Major currencies' shares in gross issuance of long-term international debt securities

(narrow measure, i.e. excluding home currency issuance, as a percentage of the total amount issued)

	Pro memoria: 2003 Q3-2004 Q2 ¹⁾	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2004 Q3-2005 Q2 ¹⁾ (total issuance) ²⁾
Euro	31.7	38.7	33.8	34.5	34.9	35.5 (515.5)
US dollar	43.4	37.6	41.7	38.8	39.2	39.3 (571.9)
Japanese yen	7.0	5.5	6.9	6.3	6.3	6.3 (91)
Total (incl. other currencies)	100.0	100.0	100.0	100.0	100.0	100.0 (1,456)

Sources: BIS and ECB calculations.

Note: Shares at current exchange rates.

1) Average quarterly percentage.

2) Amounts in USD billions.

Table 4 List of top 40 non-euro area issuers of euro-denominated bonds

Issuer (total amount issued in period under review, EUR millions)			
HSBC	(8,200)	Granite 2005-1	(2,798)
General Electric	(8,035)	Landsbanki Islands hf	(2,720)
HBOS	(7,562)	SEB	(2,520)
Citigroup	(6,450)	Nordea Bank	(2,500)
Poland	(5,750)	Bank of America	(2,410)
Barclays Bank PLC	(5,737)	Aire Valley	(2,338)
Danske Bank A/S	(5,297)	Commonwealth Bank of Australia	(2,300)
Royal Bank of Scotland Group	(4,975)	Turkey	(2,250)
Merrill Lynch & Co Inc	(4,450)	Lehman Brothers	(2,225)
SPINTAB	(4,425)	Alliance & Leicester PLC	(2,200)
Nationwide Building Society	(4,305)	DnB NOR ASA	(2,100)
General Motors Acceptance Corp	(4,100)	FIH Erhvervsbank A/S	(2,050)
Goldman Sachs	(3,940)	Morgan Stanley	(2,025)
UBS	(3,524)	Hungary	(2,000)
Northern Rock PLC	(3,300)	JP Morgan	(1,950)
Abbey National	(3,275)	Islandsbanki hf	(1,930)
Kaupthing Bunadarbanki hf	(3,215)	St George Bank Ltd	(1,900)
National Australia Bank Ltd	(3,150)	Pemex	(1,850)
Svenska Handelsbanken AB	(2,910)	PERMANENT FINANCING 7	(1,846)
ANZ Banking Group	(2,800)	Denmark	(1,800)
		Memo item:	
		European Investment Bank	(18,519)

Sources: Thomson Financial-Thomson ONE-Banker Deals and ECB calculations.

Note: Non-euro area issuers whose parent companies are resident in the euro area are not reported in this list. The EIB is included in this list as a memo item as it is also included in the BIS data reported in Tables 1 to 3.

were issued, compared with USD 312 billion issued in US dollars during the same period.

Notwithstanding an increase in the share of sovereign issuance in international euro-denominated debt, the majority of non-euro area issuers of euro-denominated bonds and notes were from the private sector, accounting for around 84% of total issuance in the period under review. Within the group of private sector issuers, the share of financial institutions in total issuance rose from 73% in the last review period to 75%, while the corresponding share of corporate issuers declined from 13% to 9%.

A regional breakdown of euro-denominated bonds and notes confirms that the majority of non-euro area issuers were resident in the United Kingdom or the United States. In the period under review, they accounted for 44% and 15% respectively of total international issuance of bonds and notes in euro. Compared with previous review periods, the share of UK residents continued its upward trend, rising

from 41% in the last review period, while the share of US residents continued to decline, falling from 21% in the last review period.

Internationally active banks based in the United Kingdom (such as HSBC, Barclays Bank and the Royal Bank of Scotland), investment banks based in the United States (for example Merrill Lynch and Goldman Sachs) and multinational corporations (such as General Electric) were among the largest issuers of euro-denominated bonds.

Corporate and sovereign issuers based in the new EU Member States and emerging market economies also issued sizable euro-denominated bonds. For instance, the governments of Poland, Turkey and Hungary floated fairly large sovereign issues, each exceeding a cumulated volume of €2 billion over the review period. Euro-denominated bonds issued by Latin American issuers (such as PEMEX and the Republic of Venezuela) and Asian issuers (for example the Korean

Development Bank and the Peoples Republic of China) and with an average size of around €1 billion were also well received in international capital markets. However, the regional pattern of international issuance of euro-denominated bonds did not change materially during the review period as Asian and Latin American issuers accounted for only 7% and 1% respectively of international euro-denominated issuance.

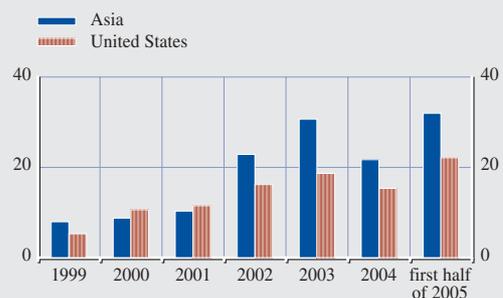
1.3 EVIDENCE AVAILABLE ON DEMAND TRENDS

As in previous years, an analysis of the location of issuance and of the investor base helps explain the main characteristics of the demand for euro-denominated bonds issued by non-euro area residents. A review of the available evidence appears to confirm that euro-denominated bonds issued by non-euro area residents have been targeted mainly at European investors. Nevertheless, after levelling off slightly in 2004, there was an increased interest from Asian and, to a lesser extent, North American investors in euro-denominated issues in the period under review (see Chart 2).⁹

Despite the increased participation by US-based investors in euro-denominated bond issues, the share of the euro in bond funds in North America (the United States and Canada) remains negligible. Evidence from data on bond portfolios surveyed in the eMaxx database by Lipper, a financial information provider, suggests that the euro's share in North America increased only slightly to 0.7% of bonds under management (see Table 5).¹⁰ In absolute terms, surveyed bond holdings in euro in North America only amounted to USD 34 billion in June 2005, up from USD 28 billion in June 2004. However, as stressed in previous reviews, market participants suggest that US-based investors mostly manage their portfolios invested in euro from the City of London. The share of the euro in the portfolios of funds in non-euro area Europe declined to 26.2%, down from 32.1% in June 2004. However, given the

Chart 2 Euro-denominated bonds issued by non-euro area residents: frequency of Asian and US investors' primary market participation

(as a percentage of the total number of bond issues for which information is available)



Sources: Thomson Financial-Thomson ONE Banker-Deals, International Financing Review (various issues) and ECB calculations.

Note: Based on information reported by the International Financing Review on 1042 bond issues. Includes any Asian/US investment irrespective of its size.

limited coverage of the eMaxx database, inferences from these data should be treated with some caution.¹¹

Additional evidence from *The Economist's* quarterly portfolio polls suggests that the share of euro-denominated bonds in the portfolios of major global asset managers increased slightly in the second quarter of 2005 to 30%, up from 27% in June 2004.¹²

Newly available data collected by the Eurosystem on the currency composition of the euro area's portfolio investment confirm that

⁹ While the data seem to support the view of a recently rising interest of Asian investors in euro-denominated issues, they could also reveal a relative increase in information reported by the *International Financing Review* on investments by Asian accounts on the primary market.

¹⁰ The evidence presented on demand trends may to some extent reflect valuation effects.

¹¹ The eMaxx database reports holdings of debt securities managed by a number of mutual funds, pension funds and insurance companies. These holdings are available on a security-by-security basis. The geographical coverage is mainly focused on the United States, Canada and Europe and the degree of coverage of portfolios may not necessarily be the same throughout time. Data refer to euro-denominated bonds issued by non-euro area residents and euro area residents alike.

¹² *The Economist* polls on a quarterly basis eight to nine major global asset managers, including one to two from the euro area. The polls include questions regarding the currency distribution of bond holdings.

Table 5 Currency breakdown of funds under management according to the eMaxx database

(based on most recent filings; end-of-period percentages)

	Euro	US dollar	Japanese yen	Others
Funds under management in the United States and Canada				
December 1999	0.2	97.0	0.8	2.0
December 2000	0.3	97.8	0.8	1.1
December 2001	0.4	97.1	0.8	1.7
December 2002	0.4	97.4	0.7	1.5
December 2003	0.6	97.3	0.7	1.4
June 2004	0.6	97.1	0.8	1.5
December 2004	0.5	96.9	0.9	1.6
June 2005	0.7	97.3	0.8	1.2
Funds under management in non-euro area Europe¹⁾				
December 1999	15.9	26.8	0.7	56.6
December 2000	25.3	23.0	1.4	50.3
December 2001	30.8	17.3	2.9	49.1
December 2002	35.5	21.1	3.0	40.3
December 2003	33.8	18.9	3.1	44.2
June 2004	32.1	18.2	2.3	47.4
December 2004	28.2	15.9	2.3	53.6
June 2005	26.2	23.6	2.9	47.3

Sources: Lipper, a Reuters company, and ECB calculations. Data may be subject to revisions.

1) Denmark, Monaco, Norway, Sweden, Switzerland, Liechtenstein and the United Kingdom.

euro-denominated bonds issued by non-euro area residents have been targeted mainly at euro area investors. Indeed, at the end of 2004 the total value of euro-denominated assets issued by non-residents and held by euro area residents was €958 billion (see Box 2). As the amount outstanding of international euro-denominated debt securities (narrow measure) at the end of 2004 was €1,453 billion, this

suggests that more than one-half of international euro-denominated securities are held by euro area residents.¹³

¹³ Due to the fact that the aggregate portfolio investment figures for the euro area are reported at market value and the amount outstanding of international euro-denominated securities is reported in nominal terms, these figures are not directly comparable. However, the comparison does illustrate the order of magnitude of these aggregates.

Box 2

CURRENCY BREAKDOWN OF DEBT SECURITIES IN THE EURO AREA BALANCE OF PAYMENTS/INTERNATIONAL INVESTMENT POSITION

In 2005 the Eurosystem collected, for the first time, data on the currency breakdown of debt securities in the portfolio investment account of the euro area balance of payments (b.o.p.) and international investment position (i.i.p.).

On the asset side, i.i.p. data show that the holdings of euro-denominated debt securities (mainly bonds and notes) issued by non-residents of the euro area and held by euro area residents reached €958 billion at the end of 2004, i.e. 54.9% of the total holdings of “foreign” securities. Transactions in the second half of 2004 showed net purchases in foreign debt securities in the portfolios of euro area investors by €117 billion, consisting predominantly of foreign-denominated securities.

Debt securities issued by non-euro area residents

(EUR billions, outstanding amounts at end-2004)

	Outstanding amounts			Shares (%)	
	All currencies	Euro	Other currencies	Euro	Other currencies
Total (nominal value)	33,061	1,453	31,608	4.4	95.6
Held by euro area residents (market value)	1,745	958	788	54.9	45.1

Sources: ECB, BIS and ECB calculations.

As regards euro area liabilities, the i.i.p. data recently collected indicate that €1,586 billion of securities issued by euro area residents and denominated in euro (and therefore regarded as “domestic”, from the point of view of their issuance) were held by non-euro area residents at the end of 2004. This aggregate, measured at market value, may be compared in broad terms (due to differences in valuation methods) with the outstanding amount of euro-denominated debt securities issued by euro area residents as at the same date, i.e. €8,570 billion. Furthermore, the i.i.p. data also indicate that 70.5% of the euro area debt securities held by non-euro area investors were denominated in euro at the end of 2004. In the second half of 2004 non-euro area resident investors purchased €68 billion of euro area debt securities, two thirds of which were denominated in euro.

Debt securities issued by euro area residents

(EUR billions, outstanding amounts at end-2004)

	Outstanding amounts			Shares (%)	
	All currencies	Euro	Other currencies	Euro	Other currencies
Total (nominal value)	9,408	8,570	837	91.1	8.9
Held by non-euro area residents (market value)	2,251	1,586	665	70.5	29.5

Source: ECB.

1.4 STOCKS OF INTERNATIONAL DEBT SECURITIES, BROKEN DOWN BY CURRENCY AND REGION

As in the last review, a more detailed stocktaking exercise presents an overview of the currency composition of the stock of international debt securities (according to the narrow measure, measured at constant exchange rates), broken down into the regions in which the issuers reside (see Table 6).¹⁴ In line with previous findings, European entities remain the largest issuers of international debt securities, accounting for USD 2,501 billion, or around 47%, of the total stock of international debt

securities in the second quarter of 2005. Compared with the end of the last review period, this constitutes a slight increase of about three percentage points. Outside Europe, issuance by entities resident in offshore centres, by US residents and by international organisations continue to account for the second, third and fourth largest stock of issues respectively.

As reported in sub-section 1.1, euro-denominated international issues accounted for around 31% of the total stock of international issues in the second quarter of

¹⁴ It is worth noting that the total figures reported in the last row of Table 6 correspond to those shown in Chart 1.

2005. The largest stock of international debt securities in euro continues to be accounted for by Denmark, Sweden and the United Kingdom. Compared with the second quarter of 2004, the share of the euro in the combined stock of international debt securities issued by residents in those three countries rose by close to three and a half percentage points to around 56%. Similarly, the share of the euro in the stock of international debt securities issued in the new Member States increased by almost two percentage points to about 75%. In contrast to developments in the pre-in countries and the new Member States, the share of the euro in non-EU Europe has declined. And as far as other regions are concerned, the

share of the euro in the stock of international debt securities in the Asia-Pacific region increased by around three percentage points. Most notably, the share of the euro increased by 4.5 percentage points to 36.5% in Japan. In the Middle East and offshore centres, the share of the euro declined by close to four and two percentage points respectively. In other regions of the world, including international organisations, the share of euro remained broadly stable with changes from the second quarter of 2004 being less than or equal to one percentage point.

Overall, despite some gradual changes taking place mainly in Asia, the regional breakdown

Table 6 Currencies' shares in the stock of outstanding international debt securities in selected regions

(narrow measure, i.e. excluding home currency issuance, as a percentage of the total amount outstanding and at constant 1994 Q1 exchange rates)

	Total amount outstanding		of which denominated in:							
			US dollar		Euro		Japanese yen		Other currencies	
	All currencies (USD billions)		(%)	(Percent. point change vis-à-vis)	(%)	(Percent. point change vis-à-vis)	(%)	(Percent. point change vis-à-vis)	(%)	(Percent. point change vis-à-vis)
	2005 Q2	2004 Q2	2005 Q2	2004 Q2	2005 Q2	2004 Q2	2005 Q2	2004 Q2	2005 Q2	2004 Q2
Africa	21	22	60.2	-2.6	28.4	2.2	10.7	0.4	0.7	0.0
Asia and Pacific	470	398	65.9	-3.1	19.6	2.9	4.7	-0.7	9.7	0.9
<i>of which:</i>										
Japan	55	54	57.4	-1.6	36.5	4.5	...	...	6.0	-2.9
Europe	2,501	2,077	42.6	-2.0	31.0	2.6	7.9	-1.1	18.5	0.5
<i>of which:</i>										
Euro area	1,066	916	52.7	-0.2	...	...	12.3	-1.3	35.0	1.5
Pre-Ins ¹⁾	1,196	968	34.2	-2.8	56.1	3.5	4.4	-0.9	5.3	0.2
New Member States	65	46	13.7	-1.9	75.3	1.8	5.6	-1.4	5.4	1.5
EU25	2,328	1,929	42.1	-2.0	30.9	2.8	8.0	-1.2	18.9	0.4
Non-EU developed Europe ²⁾	109	85	30.0	-1.1	41.5	-0.2	8.6	-0.6	19.9	1.9
Non-EU developing Europe	65	63	81.7	2.0	16.5	-1.6	1.7	-0.5	0.0	0.0
International Organisations	506	492	35.4	-2.0	28.4	0.8	7.3	-0.3	28.9	1.5
Latin America	288	310	80.2	1.9	17.3	-0.6	1.6	-1.3	0.9	0.0
Middle East	57	47	79.6	5.2	18.9	-3.7	1.2	-1.4	0.3	-0.1
North America	726	688	22.8	0.3	49.7	-0.6	9.5	-1.1	18.0	1.5
<i>of which:</i>										
Canada	223	215	74.3	2.2	11.8	-0.6	4.8	-0.8	9.0	-0.7
United States	504	473	...	...	66.5	-1.1	11.6	-1.3	21.9	2.3
Offshore centres	697	676	44.8	3.7	30.3	-1.7	16.0	-2.0	8.9	0.0
Total	5,267	4,708	44.1	-0.7	31.3	1.1	8.5	-1.2	16.1	0.9

Sources: BIS, ECB calculations.

1) Denmark, Sweden and the United Kingdom.

2) Iceland, Norway, Switzerland and European microstates.

continues to provide further evidence for the geographical pattern of the international role of the euro, which can also be found in other market segments and in the use of the euro by third countries: the internationalisation of the single currency is still strongly focused on the euro area's neighbouring regions, in particular non-euro area EU Member States, and mature market economies.

2 THE EURO IN INTERNATIONAL LOAN AND DEPOSIT MARKETS

This year's review continues to deepen the reporting on non-securitised financial instruments by describing developments in the use of the euro by non-euro area residents in international loan and deposit markets. The data presented exclude interbank activity, given that the currency choice in interbank markets may reflect other factors than those corresponding to loans to/deposits by non-bank borrowers/depositors.

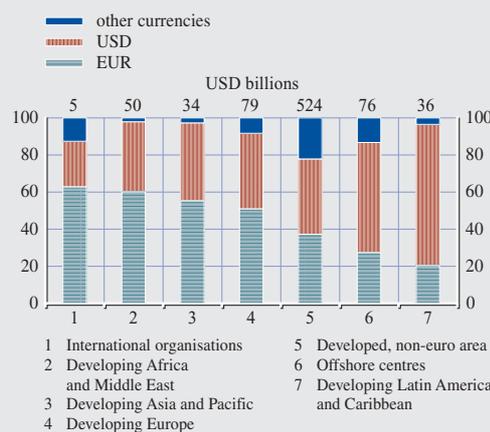
Compared with the last review, the format of the presentation has been changed (see Chart 4) in order to facilitate comparison of the role of the euro at three levels, namely activity between euro area banks and non-bank agents outside the euro area, activity between euro area non-banks and banks outside the euro area and activity entirely outside the euro area between banks and non-bank agents. For both loans and deposits, data for the currency composition as of the first quarter of 2005 is presented for all three levels of activity.¹⁵ Finally, the use of the euro as the currency of denomination of bank deposits in BIS reporting banks by oil-exporting countries is analysed in Box 3.

2.1 THE ROLE OF THE EURO IN INTERNATIONAL LOAN MARKETS

The total stock of loans granted by euro area banks to non-bank borrowers outside the euro area amounted to around USD 806 billion in the first quarter of 2005 (see Chart 4, upper panel, left diagram).¹⁶ The share of the euro, measured at constant 1994 Q1 exchange rates, while continuing to exhibit a high degree of stability over time, has increased slightly to 39% in the first quarter of 2005, up from 38% in the first quarter of 2004. Broadly in line with previous findings, a look at the regional destination of loans reveals a similar pattern to that observed in the case of international debt securities. Non-bank entities in developed countries outside the euro area constitute the main borrowers from euro area banks, with an outstanding amount of USD 524 billion in the

Chart 3 Loans made by euro area banks to non-bank borrowers outside the euro area: currency shares by region

(as a percentage of the total amount outstanding by region in 2005 Q1 and at current exchange rates)



Sources: BIS and ECB calculations.

first quarter of 2005, around 65% of such loans.¹⁷ For these borrowers, the share of the euro in the denomination of loans granted by euro area banks rose somewhat to 37% in the first quarter of 2005, up from 36% in the first quarter of 2004 (see Chart 3).

In emerging market countries, in line with the evidence presented in the last review, the euro was the main currency of denomination of loans granted by euro area banks to non-bank borrowers in developing countries in Africa and the Middle East, Asia and the Pacific and in Europe, with a share above 50% in the first

¹⁵ Data for the international loan market are available from the BIS one quarter later than data for debt securities. In contrast to the presentation in the last review, the reported currency shares include countries for which a currency breakdown for some of the activities in the international loan and deposit market as described above is not available.

¹⁶ Throughout this section, BIS data are used since they are available by currency with a breakdown of the destinations of loans and deposits. Similar figures, without the regional breakdown outside the euro area, are reported in the ECB's Monthly Bulletin (e.g. loans by euro area MFIs to non-euro area residents amounted to €1,580 billion at the end of the first quarter of 2005 – see Table 2.8.3 in the statistical section of the Monthly Bulletin).

¹⁷ According to the BIS classification, developed countries include (in addition to euro area countries) Andorra, Australia, Canada, Denmark, Iceland, Japan, Liechtenstein, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, the United States and Vatican City.

quarter of 2005 (see Chart 3). By contrast, lending by euro area banks to Latin America and the Caribbean, as well as to offshore centres, took place mainly in US dollars.

Focusing on individual countries, non-bank entities from the United Kingdom and the United States are the largest borrowers from euro area banks, and together continued to account for around half of the amount of such loans (about USD 240 billion and USD 179 billion respectively) in the first quarter of 2005. As regards euro-denominated loans only, non-bank borrowers from the United Kingdom continued to be by far the largest borrowers from euro area banks, with a share of around 46% in the first quarter of 2005.

During the review period, loans made by non-euro area banks to non-bank borrowers in the euro area (see Chart 4, upper panel, right diagram) continued to be predominantly denominated in euro. In the first quarter of 2005 the euro's share stood at 56% while loans denominated in US dollars accounted for 27% of the total amount of loans outstanding. Other currencies, including the Japanese yen, had a combined share of 17% (see Chart 4). In line with previous findings, the largest non-euro area lenders to non-bank borrowers in the euro area are UK banks, which accounted for about 69% of the USD 427 billion worth of loans outstanding in the first quarter of 2005. During the review period UK banks also continued to be the largest lenders of euro to non-bank borrowers in the euro area, accounting for about 76% of the USD 182 billion worth of euro-denominated loans outstanding in the first quarter of 2005.

With regard to loans made outside the euro area by banks to non-banks (see Chart 4, upper panel, lower left diagram), the euro accounts for 7% of total lending entirely outside the euro area.¹⁸ In line with previous evidence, the largest lenders to non-bank borrowers outside the euro area are UK banks and offshore financial centres, accounting for about one-half and one-third respectively of the USD

2,098 billion worth of loans outstanding in the first quarter of 2005. UK banks are also the largest lenders of euro outside the euro area, accounting for more than 77% of the USD 143 billion worth of such loans outstanding in the fourth quarter of 2004.

2.2 THE ROLE OF THE EURO IN INTERNATIONAL DEPOSIT MARKETS

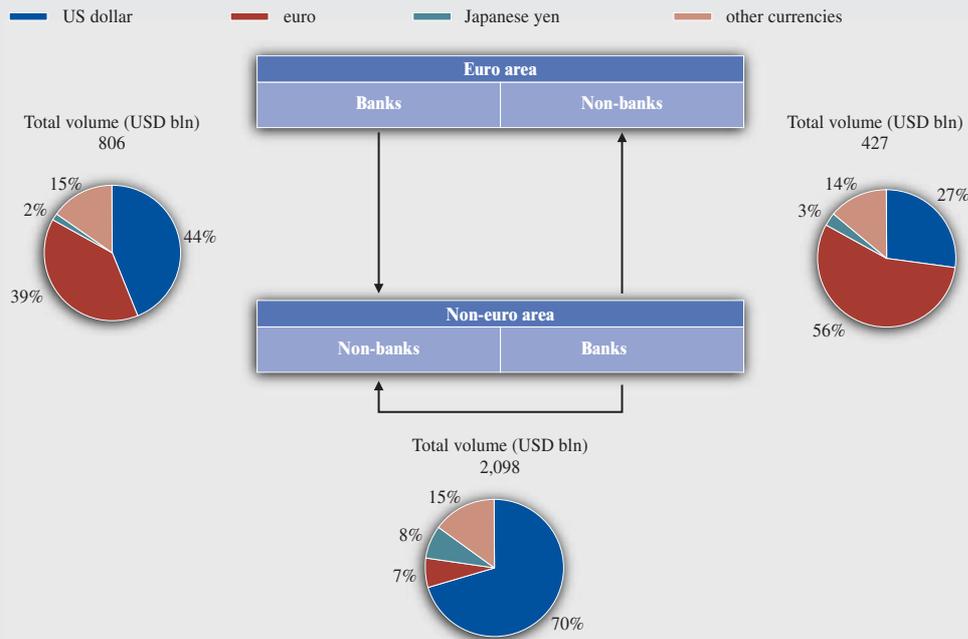
The stock of deposits in euro area banks made by non-banks outside the euro area amounted to USD 916 billion in the first quarter of 2005 (see Chart 4, lower panel, left diagram). The euro is the most widely used currency of denomination of deposits by non-euro area non-banks with banks in the euro area, accounting for USD 478 billion or around 51% of the total deposits in the first quarter of 2005. Of the total stock of such deposits, around 65% or USD 600 billion were held by residents of developed countries other than those in the euro area. From a geographical perspective, and in line with previous findings, the largest share of deposits was held by residents in the United Kingdom, followed by those in offshore financial centres, accounting for around one-third and one-fifth respectively of all deposits by non-euro area non-banks with euro area banks in the first quarter of 2005. Deposits held by US non-banks remained in third place with around one-fifth of all such deposits. Looking at euro-denominated deposits only, the largest share was also held by residents in the United Kingdom, which accounted for 51% of euro-denominated deposits held with euro area banks by non-euro area non-banks in the first quarter of 2005. As was broadly the case in previous years, residents in offshore financial centres accounted for around 18% of such deposits. By contrast, the

¹⁸ Any comparison with the shares of other currencies as reported in Chart 4 should be made bearing in mind the fact that lending by, for example, US banks to non-US residents is included while, in line with the narrow definition of the international use of the euro used throughout the review, lending by euro area banks to non-euro area residents is excluded. Likewise, lending to US residents is included while lending to euro area residents is excluded. The same applies to the data on international deposits shown in Chart 4.

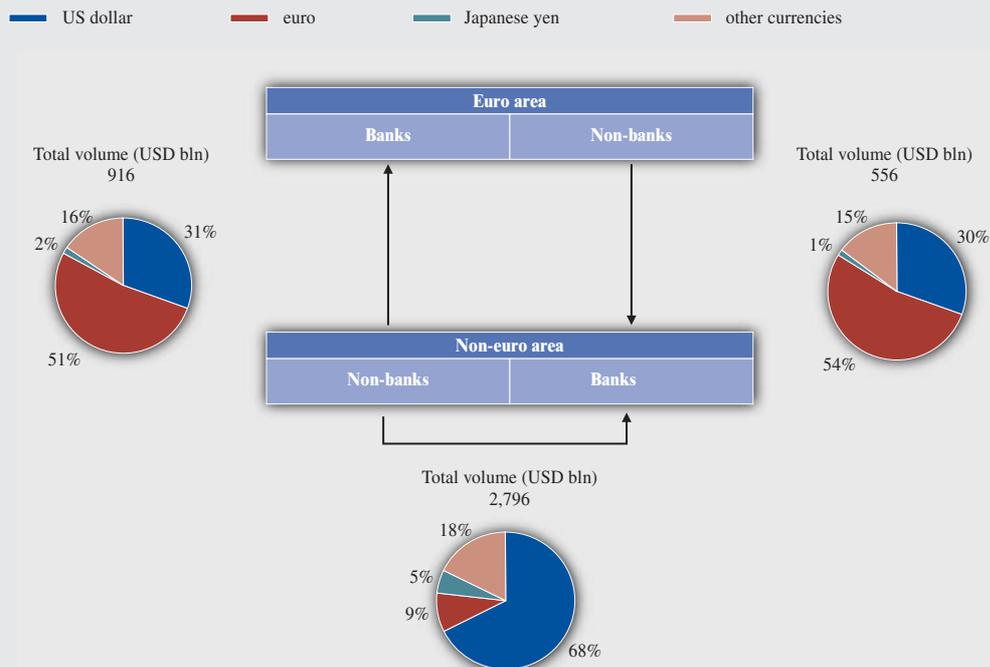
Chart 4 Euro share in international loan and deposit markets

(first quarter of 2005, values at current exchange rates)

Cross-border loans between euro area and non-euro area entities



Cross-border deposits between euro area and non-euro area entities



Sources: BIS and ECB calculations.
Note: Excluding interbank loans and deposits.

Table 7 The share of the euro in international loan and deposit markets

(as a percentage of the total amount outstanding and at constant 1994 Q1 exchange rates)

	Loans by euro area banks to non-bank borrowers outside the euro area	Loans by non-euro area banks to non-bank borrowers in the euro area	Loans made outside the euro area by banks to non-banks	Deposits in euro area banks made by non-banks outside the euro area	Deposits in banks outside the euro area by euro area non-banks	Deposits held by non-euro area non-banks outside their home country
March 2002	36.2	48.0	5.3	47.2	55.5	8.4
March 2003	37.6	50.1	6.5	51.2	55.5	8.8
March 2004	37.9	54.1	4.9	51.1	54.2	7.7
March 2005	37.4	54.1	6.2	50.6	51.5	8.4

Sources: BIS and ECB calculations.

share of US entities in such deposits was much lower at around 9%.

The stock of deposits of euro area non-banks in banks outside the euro area amounted to USD 556 billion in the first quarter of 2005 (see Chart 4, lower panel, right diagram). Of this amount, around 54% were denominated in euro. About 73% of all deposits denominated in euro by euro area non-banks and held in banks outside the euro area are held with UK banks.

The total stock of deposits held by non-euro area non-banks in banks outside their home country, excluding the euro area, amounted to around USD 2,796 billion in the first quarter of 2005 (see Chart 4, lower panel, lower left diagram). The amount of such cross-border deposits that is denominated in euro remains relatively small, standing at around USD 257 billion in the first quarter of 2005. From a geographical perspective, the largest share of these cross-border deposits in the first quarter of 2005 was

held with banks in offshore financial centres, accounting for around 44% of the total, followed by those held with UK banks (around 33% of the total). Looking at euro-denominated deposits only, the largest shares were held with UK banks (around 48% of all euro-denominated cross-border deposits), financial offshore financial centres (around 25%) and banks in Switzerland (around 21%).

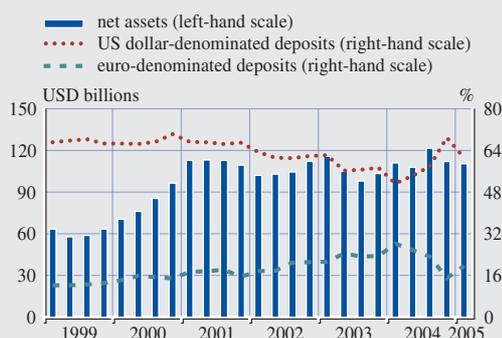
When measured at constant exchange rates, the share of the euro in all segments of international loan and deposit markets has been characterised by a high degree of stability, with changes being of the order of around one percentage point or less (see Table 7).

Notwithstanding the considerable degree of stability of the share of the euro in aggregated international loan and deposit markets, some changes may be taking place at the country level, in particular with respect to oil-exporting economies (see Box 3).

Box 3**THE ROLE OF THE EURO IN THE RECYCLING OF OIL REVENUES**

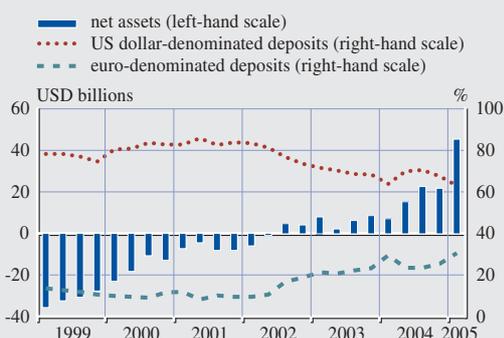
Oil price increases and rising production volumes since 2003 have fuelled oil export revenues in most oil-producing countries, in particular Russia, the world's second largest oil exporter, and the members of the Organisation of the Petroleum Exporting Countries (OPEC). Combined OPEC and Russian revenues are estimated to have increased from USD 250 billion in 2002 to around USD 600 billion at the end of 2005. This transfer of wealth may induce, among others,

Chart A OPEC's net assets and the currency share of its deposits



Sources: BIS and ECB calculations.
Note: Last observation refers to the first quarter of 2005.

Chart B Russia's net assets and the currency share of its deposits



Sources: BIS and ECB calculations.
Note: Last observation refers to the first quarter of 2005.

the recycling of oil revenues by the oil-exporting countries in global financial markets through deposits with international banks and/or purchases of foreign equity and debt securities.

Traditionally, and in particular in the early 1980s in the aftermath of the second oil-price shock, the OPEC economies invested mainly in US assets and markets and maintained banking deposits almost exclusively in US dollars. However, since the most recent surge in oil prices in 2003, the oil-exporting countries have seemed to diversify, to a certain extent, their portfolio allocation into both US dollar and euro-denominated assets, despite the fact that crude oil contracts are still traded predominantly in US dollars. For example, the OPEC economies and Russia together have invested almost €8 billion in German equity and debt securities since the beginning of 2003, compared with €41 billion in US securities.¹ Moreover, since the beginning of 2005, OPEC holdings of US Treasury securities have declined by 14% in spite of the continued upward trend in oil prices and the appreciation of the US dollar vis-à-vis the euro. These figures could be indicative of the broader desire of the oil-exporting countries to recycle additional oil export revenues in assets denominated in other currencies, including the euro.

The increasing role of the euro in both OPEC and Russia becomes particularly clear when looking at banking statistics as reported by the BIS. During past periods of high oil prices, OPEC member states used to deposit their export earnings with international banks, almost exclusively denominated in US dollars. More specifically, OPEC economies deposited a considerable proportion of their additional oil export revenues with international financial institutions after the surge in oil prices in 1999. However, this did not occur, at least not to the same extent, during the most recent cycle which started in 2003 (see Chart A).²

Yet, in terms of currency denomination, the OPEC economies gradually increased the share of euro-denominated deposits from 11% at the beginning of 1999 to over 28% at the end of the first quarter of 2004. This was accompanied by a steady fall in the share of US dollar-denominated deposits. Since 2004, however, and despite the rather strong appreciation of the euro during

1 Sources: Deutsche Bundesbank and US Department of the Treasury.

2 See BIS Quarterly Review (December 2004), pp. 25-27. Net assets refer to the difference between OPEC's assets and liabilities vis-à-vis BIS reporting banks and are a measure of the net channelling of funds into the international banking system.

that year, the OPEC economies have gradually shifted their deposits back into US dollars, increasing the corresponding share from a low of 51% at the end of the first quarter of 2004 to 61% a year later. This development coincided with a similar, in terms of magnitude, decline in the share of deposits held in euro, which accounted for 20% at the end of the first quarter of 2005.³

Net deposits by Russia, as opposed to OPEC, did not only change in currency decomposition, but have also increased strongly during the most recent oil price increases (see Chart B). Russia even turned into and remained a net creditor to BIS reporting banks in the aftermath of the first surge in oil prices in 1999. Moreover, the share of euro-denominated assets has almost tripled, rising from 11% in mid-2002 to 31% at the end of the first quarter of 2005. This rather sharp increase during the past three years also reflects, to a certain extent, the strong appreciation of the euro vis-à-vis the US dollar and the growing role of the euro as a reserve currency held by the Russian monetary authorities. Nevertheless, rising oil export revenues have contributed strongly to the underlying increase in net deposits and, hence, to the gradual shift away from the US dollar towards euro-denominated deposits.

³ In its December 2005 Quarterly Review, the BIS comes broadly to the same conclusions, when measuring the deposits of OPEC countries at BIS banks at constant exchange rates until the second quarter of 2005.

3 THE EURO IN FOREIGN EXCHANGE MARKETS

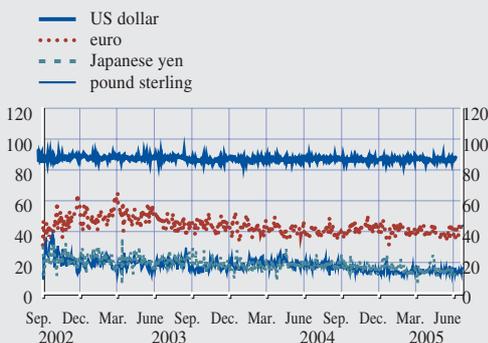
Based on the data on the settlement of foreign exchange transactions provided by the Continuous Linked Settlement (CLS) system, the role of the euro in the foreign exchange markets remained broadly unchanged.¹⁹ In July 2005 CLS Bank settled on average over 200,000 transactions with a gross value equivalent to USD 2,000 billion per day.²⁰ CLS Bank now settles transactions in 15 currencies.²¹

In the period under review, i.e. July 2004 to June 2005, the euro remained the second most widely settled currency by CLS, accounting for an average of around 43% of daily settlements. The US dollar accounted, on average, for around 90% of all daily transactions. This figure, which is unchanged from that of the previous review period, emphasises the use of the US dollar as a vehicle currency.²² The corresponding share of the Japanese yen decreased from 22% to 20%. Compared to the previous review, these shares exhibit a substantial degree of stability (see Chart 5). This is all the more significant given the potential impact related to valuation effects and to the increased number of currencies settled in CLS.

Since the last issue of this review the BIS has also published the final results of the latest BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, which was conducted in April 2004 (see BIS 2004 and ECB 2004). This survey is particularly useful since its coverage, in terms of both currencies and market participants, is broader than that of the CLS. The final results confirm the preliminary results reported in the last issue of this review and reported here again for convenience. At the global level, the 2004 Triennial Survey showed a strong increase in the activity of traditional foreign exchange markets, up from an overall average daily turnover of USD 1,200 billion in 2001 to USD 1,880 billion in 2004.²³ The euro was the second most actively traded currency in foreign exchange markets worldwide, after the

Chart 5 Settlement CLS system: currency breakdown¹⁾

(as a percentage²⁾ of total transactions settled)



Sources: CLS and ECB calculations.

1) Only days when CHF, EUR, GBP, JPY and USD are traded actively are considered.

2) The sum of currency percentage shares adds up to 200% as both currencies involved in the settlement of a foreign exchange trade are counted individually.

US dollar and ahead of the Japanese yen. The euro was involved in 37% of all foreign exchange transactions, a slight decrease of less than 1 percentage point when compared with

19 CLS was created in 1997 at the initiative of a group of major foreign exchange market participants, known as the G20 banks, to address the problem of foreign exchange settlement risk on the basis of the payment-versus-payment principle. According to this principle, the two legs of a transaction are settled simultaneously, and in such a way that the one cannot occur without the other, i.e. the final transfer of one currency occurs only if a final transfer of the other currency takes place.

20 The value of settled transactions amounts to double the value of trades because every trade involves two settlement legs, one in each currency. Thus, CLS settled an average of 100,000 trades a day with a total value equivalent to USD 1,000 billion.

21 Settlements by CLS take place in euro, US dollar, Japanese yen, pound sterling, Australian dollar, Canadian dollar, Danish krone, Norwegian krone, Singapore dollar, Swedish krona, Swiss franc, Hong Kong dollar, Korean won, New Zealand dollar and South African rand.

22 A vehicle currency (B) is defined as a currency that is used in the foreign exchange market as a means of exchanging two other currencies, so that currencies A and C are not exchanged directly (A against C) but via B in two transactions (A against B and B against C). In foreign exchange markets, most transactions between relatively illiquid currencies are effected via vehicle currencies due to lower transaction costs and in order to avoid excess intraday volatility.

23 Traditional foreign exchange instruments refer to spot transactions, outright forwards and foreign exchange swaps. Average daily activity in the over-the-counter derivatives markets increased even more, from USD 575 billion in 2001 to USD 1,403 billion in 2004.

the 2001 figure.²⁴ This can be seen as a stabilisation after the sharp decline observed between 1998 and 2001, following the elimination of intra-euro area foreign exchange trading after the introduction of the euro.²⁵ Therefore, the 2004 BIS Triennial Survey also confirms that the US dollar remains the predominant vehicle currency. Globally, the euro continued to be traded predominantly against the US dollar. 76% of all global activity involving the euro was in trading vis-à-vis the US dollar. The US dollar/euro currency pair also remained that most actively traded, accounting for 28% of global turnover, although its share was slightly down from the 30% registered in 2001.

24 This figure is calculated after adjustment for both local and cross-border double-counting, which arises because transactions are reported by both the seller and the buyer. It should be noted that individual currencies are involved in one settlement leg of a foreign exchange trade and another currency is involved in the second settlement leg of the trade. Thus, the sum of currency percentages adds up to 200%.

25 In 1998 the combined share of the legacy currencies accounted for 53% of global foreign exchange turnover.

4 THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES

This section presents updated information regarding the role of the euro in international trade, a topic which is also dealt with in greater depth in the special focus. As was the case in 2004, the purpose here is therefore to provide the actual data that have been collected by the European System of Central Banks (ESCB) on the currency breakdown of invoicing or settlement in foreign trade for a number of EU countries.²⁶

4.1 THE ROLE OF THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES BY SELECTED EURO AREA COUNTRIES

The use of the euro as a currency for the settlement or invoicing of international trade transactions by selected euro area countries has shown a notable increase in recent years. This trend appears to have continued in 2004, although in a number of cases there appears to have been a levelling-off or even a slight decrease in the share of the euro.

Concerning exports, in 2004 the share of the euro in extra-euro area exports increased for both goods and services in most euro area

countries for which data are available (see Table 8). According to the data available, notable increases were observed in the shares of exports denominated in euro by Luxembourg (goods) and by Belgium and Portugal (services). In fact the use of the euro in exports of services is now broadly comparable to its use in exports of goods, a characteristic that is in contrast to previous years when the use of the euro was more prevalent in exports of goods. One exception to this increasing trend in the use of the euro was Greece, the only euro area country where the share of the euro in exports of both goods and services decreased in 2004. This may be explained by the traditionally high exposure of Greece's exports to the maritime transportation sector, which is characterised by a high use of the US dollar.

²⁶ Two counterparts may agree that trade is invoiced in a given currency, but settled in another currency. Therefore, data reported according to the currency of invoicing (i.e. the currency of denomination of contracts) and data reported according to the currency of settlement (i.e. the currency in which the corresponding payments are made through the banking system) may differ. While academic literature mainly focuses on invoicing as a determinant of the pricing behaviour of international corporations, available data refer to the settlement currency in many cases.

Table 8 Share of the euro as a settlement/invoicing currency in extra-euro area exports of goods and services of selected euro area countries

(as a percentage of the total)

	Goods				Services			
	2001	2002	2003	2004	2001	2002	2003	2004
Belgium ¹⁾	46.7	53.5	55.3	57.7	...	63.8	70.3	71.2
France ²⁾	47.1	51.0	52.7	52.7	40.0	40.3	42.4	40.2
Germany	...	49.0	63.0	61.1	...	...	...	...
Greece	23.5	39.3	47.3	44.3	11.3	13.3	16.3	14.1
Italy	52.7	54.1	58.2	59.7	50.7	57.0	62.1	68.0
Luxembourg	...	51.5	52.7	62.7	...	40.4	43.0	42.6
Portugal	43.5	48.4	54.6	57.6	37.4	44.1	48.6	54.9
Spain	52.0	57.5	61.7	62.6	52.9	59.5	64.1	64.5

Sources: National central banks and ECB calculations.

Notes: (...) stands for "not available". Data for 2001 include trade settled in euro and in legacy currencies. Data refer to the use of the euro as a settlement currency, except for Germany, which refer to invoicing. For Germany, data on trade in goods reflect the average value of data collected in surveys carried out in the first and third quarters of 2002, 2003 and 2004 on behalf of the Deutsche Bundesbank. Data on services for Belgium, Italy and Luxembourg include travel, whereas travel is excluded for France, Greece, Portugal and Spain.

1) Data for 2001 refer to Belgium and Luxembourg.

2) Data for goods for 2004 are an estimate based on 2003 data.

Table 9 Share of the euro as a settlement/invoicing currency in extra-euro area imports of goods and services of selected euro area countries

(as a percentage of the total)

	Goods				Services			
	2001	2002	2003	2004	2001	2002	2003	2004
Belgium ¹⁾	47.2	53.6	57.7	55.5	...	60.1	65.6	68.6
France ²⁾	44.4	46.9	45.3	45.3	43.3	44.0	46.6	48.3
Germany	...	48.0	55.2	52.8	...	...	...	...
Greece	29.3	35.8	39.6	40.6	15.3	16.8	20.1	22.7
Italy	40.8	44.2	44.5	44.5	49.9	56.1	67.1	68.9
Luxembourg	...	31.6	41.6	49.4	...	28.5	36.0	30.5
Portugal	53.6	57.5	59.2	58.8	55.6	65.5	69.4	72.2
Spain	49.7	55.9	61.1	61.1	45.1	48.7	54.2	56.8

Sources: National central banks and ECB calculations.

Notes: (...) stands for "not available". Data for 2001 include trade settled in euro and in legacy currencies. Data refer to the use of the euro as a settlement currency, except for Germany, which refer to invoicing. For Germany, data on trade in goods reflect the average value of data collected in surveys carried out in the first and third quarters of 2002, 2003 and 2004 on behalf of the Deutsche Bundesbank. Data on services for Belgium, Italy and Luxembourg include travel, whereas travel is excluded for France, Greece, Portugal and Spain.

1) Data for 2001 refer to Belgium and Luxembourg.

2) Data for goods for 2004 are an estimate based on 2003 data.

Concerning imports, as reported in Table 9, the share of the euro has seen a higher degree of stability in 2004 compared with 2003. In this case, the exception is the large increase in the use of the euro in Luxembourg's imports of goods. Overall, the use of the euro in the imports of euro area countries remains lower than in the case of exports, although with some exceptions such as Portugal (with regard to both goods and services).

4.2 THE ROLE OF THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES BY THIRD COUNTRIES

The evidence presented below on the currency breakdown of international trade for non-euro area EU countries and EU acceding countries has been compiled by the national central banks of the ESCB. Data for other non-EU countries has been compiled from publicly available sources and through bilateral requests from the ECB to other central banks.

Available evidence regarding exports suggests that the share of the euro has increased in most of the new Member States between 2003 and 2004, continuing a trend already seen in

previous years (see Table 10). In many cases, the share of exports settled or invoiced in euro has continued to greatly exceed that of trade with the euro area – an issue which is explored in greater detail in the special focus of this review. The use of the euro in the exports of the EU acceding and accession countries has been relatively stable, with Croatia exhibiting a slight decrease. Elsewhere, the Former Yugoslav Republic of Macedonia has seen the largest increase in the use of the euro in its exports, reaching a level surpassed only by Slovenia and Hungary.

Turning to available evidence on imports, we can also observe slight increases in the share of the euro recorded for most new Member States (see Table 11). Elsewhere, the EU acceding and accession countries have seen a levelling-off in the relative use of the euro for imports.

Table 10 Share of the euro in exports of selected non-euro area countries

(percentage of total exports)

	Exports invoiced in euro				Exports to the euro area			
	2001	2002	2003	2004	2001	2002	2003	2004
Non-euro area EU countries								
Cyprus	...	...	30	32	19	22	23	28
Czech Republic ¹⁾	69	68	70	72	62	61	63	62
Denmark	33	36	35	34	44	43	44	44
Estonia ¹⁾	...	65	70	72	41	37	39	40
Hungary ²⁾	79	83	85	...	69	66	65	62
Latvia	41	48	42	48	30	29	30	25
Lithuania	28	37	47	50	26	26	27	30
Poland	57	60	65	69	59	58	58	56
Slovenia	85	87	87	88	58	55	55	53
United Kingdom	23	21	...	...	54	55	53	52
EU acceding and accession countries								
Bulgaria	48	52	61	62	51	52	53	51
Croatia	63	69	72	69	51	49	52	49
Romania	56	59	64	66	62	61	60	58
Turkey	...	47	49	49	43	41	42	41
Other European countries								
FYR Macedonia	...	66	67	76	46	44	40	38
Ukraine	3	5	6	8	16	16	17	17
Other countries								
Australia ³⁾	1	1	1	1	7	7	6	7
Indonesia	2	2	2	1	11	11	11	10
Japan	8	9	10	...	12	11	12	12
Pakistan	2	4	7	...	19	19	20	21
South Korea	1	6	8	...	10	10	10	11
Thailand	3	3	3	...	12	11	11	11

Sources: IMF, national sources. Data for Turkey and the Former Yugoslav Republic of Macedonia have been kindly provided by the Turkish Undersecretariat of the Ministry for Foreign Trade and by the State Statistical Office of the Republic of Macedonia respectively.

Note: (...) stands for "not available". Data for Malta, Slovakia and Sweden are not available.

1) 2004 data for the Czech Republic and Estonia refer to the first quarter of 2004 as a result of changes in the way data are collected from May 2004 onwards.

2) In 2004, the methodology of compiling the geographical breakdown of exports has changed. The impact on the data regarding exports to the euro area is low.

3) Share of the euro only, excluding all legacy currencies.

Table II Share of the euro in imports of selected non-euro area countries

(percentage of total exports)

	Imports invoiced in euro				Imports from the euro area			
	2001	2002	2003	2004	2001	2002	2003	2004
Non-euro area EU countries								
Cyprus	...	...	45	53	40	43	45	53
Czech Republic ¹⁾	67	67	68	69	57	56	55	54
Denmark	35	37	32	33	50	51	50	49
Estonia ¹⁾	...	59	61	62	39	41	40	47
Hungary ²⁾	71	73	72	...	53	51	51	58
Latvia	41	39	50	53	40	41	39	34
Lithuania	38	48	53	55	35	35	35	36
Poland	57	60	60	62	53	53	53	52
Slovenia	79	83	82	83	64	64	64	70
United Kingdom	19	27	...	...	49	53	52	50
EU acceding and accession countries								
Bulgaria	55	60	63	64	45	46	45	44
Croatia	73	77	78	78	50	50	51	49
Romania	61	66	68	70	52	53	53	51
Turkey	...	37	40	40	38	39	39	38
Other European countries								
FYR Macedonia	64	68	71	75	39	51	45	40
Ukraine	...	11	15	14	19	20	20	20
Other countries								
Australia	9	9	9	9	15	16	17	17
Indonesia	6	6	6	6	10	9	9	9
Japan	3	4	5	...	10	10	10	10
Pakistan	4	7	9	...	12	13	13	11
South Korea	1	5	6	...	8	9	9	8
Thailand	5	5	4	...	10	9	8	8

Sources: IMF, national sources. Data for Turkey and the Former Yugoslav Republic of Macedonia have been kindly provided by the Turkish Undersecretariat of the Ministry for Foreign Trade and by the State Statistical Office of the Republic of Macedonia respectively.

Note: (...) stands for "not available". Data for Malta, Slovakia and Sweden are not available.

1) 2004 data for the Czech Republic and Estonia refer to the first quarter of 2004 as a result of changes in the way data are collected from May 2004 onwards.

2) In 2004, the methodology of compiling the geographical breakdown of imports has changed. This change increased the share of the euro area in Hungary's imports by more than 10 percentage points.

SPECIAL FOCUS: DETERMINANTS OF THE CURRENCY OF INVOICING IN INTERNATIONAL TRADE

I INTRODUCTION

What determines the choice of currency in which international trade is to be invoiced? As the last issue of this review noted, this question has attracted the attention of economists worldwide for decades but the limited availability of data has meant that little is actually known beyond a number of broad stylised facts.²⁷ This special focus contributes to an increasing body of empirical literature that makes use of the efforts undertaken by the European System of Central Banks (ESCB) to collect data, as well as a systematic survey of publicly available information from other countries.

Until recently it was commonly assumed in the literature that exporters preferred to set prices in their own currency, a result commonly referred to as Grassman's law, named after a seminal contribution that found a much higher use of the Swedish kronor in Sweden's exports than in its imports (Grassman, 1973). However, evidence challenging Grassman's law and a new focus on the impact of conditions of monopolistic behaviour and sticky prices has translated into renewed interest in the issue of the choice of currency in international trade. This holds, in particular, if one allows for market imperfections and frictions that may result, for example, in sticky prices resulting from "menu costs," i.e. the physical costs of re-pricing goods. As a result the law of one price, which states that there must be a single price for two identical goods, may cease to hold true across countries. Another important phenomenon to consider is the business practice of "pricing to market." This term captures the behaviour of monopolistic firms that, exploiting their ability to take advantage of differences in demand elasticities across countries, are able to set different prices in different national markets (Krugman, 1987 and Dornbusch, 1987). In principle, exporters could price to market regardless of whether they invoice in their own currency (known as "producer currency pricing") or in the currency of the

local market where the products are sold ("local currency pricing"). However, the combined effect of flexible exchange rates and the menu costs of changing nominal prices implies that exporters facing a competitive local market may opt to use the local currency in their pricing so as to avoid that exchange rate fluctuations would result in a loss of competitiveness. The combination of market power and nominal rigidities has brought the issue of the choice of invoicing currency to centre stage, not least since full local currency pricing of imports would also imply no pass-through from the exchange rate to domestic inflation for the importing country, at least in the short run.

The question of what determines the choice of currency in international trade has become all the more topical given the increase seen during recent years in the use of the euro in international trade by a number of countries, primarily EU Member States and EU acceding and accession countries. This increase has already been documented in previous issues of this review and seems to be broadly confirmed in the data for 2004 which are published in this issue (see section A). As noted above, such an increase would be expected to have repercussions on the pass-through from exchange rate movements into prices.²⁸ There is also some evidence that the increase in the use of the euro may partly reflect the growing role of the euro as a vehicle currency, i.e. a currency used between two counterparties outside the country or area of issuance of the currency. For example, in Sweden the use of the euro in transactions involving non-euro area countries roughly doubled between 1999 and 2002 (Wilander, 2005). Similarly, in the

²⁷ See Box 5 ("The choice of currency in international trade: theory and recent evidence") in the *Review of the international role of the euro* published by the ECB in January 2005, pp. 32-33.

²⁸ However, a recent contribution by Campa et al. (2005) found no strong statistical evidence that the introduction of the euro has caused a structural break in the exchange rate pass-through in the euro area, with the exception of the case of some manufacturing industries. That notwithstanding, the authors found that estimated point elasticities have indeed declined since the introduction of the euro.

case of the acceding countries, the share of the euro in the exports of Bulgaria and Romania now exceeds its share in their exports to the euro area, indicating a vehicle currency role in their trade with other trading partners. In contrast, the euro does not appear to be used much in transactions not involving EU Member States or acceding countries.

The research strategy underlying this special focus consists of three straightforward steps, which will also serve as a structure: (a) a review of theoretical and empirical literature so as to identify the relevant factors that may help to explain the currency of invoicing or settlement in international trade; (b) collection of a data set that is as wide as possible on the use of the euro in international trade and on the factors suggested to be important by earlier literature; and, (c) empirical estimation of the relative importance of the different factors. This special focus presents detailed results only regarding the use of the euro. However, where appropriate the results are also compared with those obtained for the US dollar. Those results are available in the background research paper on which this special focus is based.²⁹

2 REVIEW OF THE LITERATURE

The literature on the choice of currency in international trade can be traced back several decades. As early as 1968, Swoboda argued that international trade was likely to be conducted in highly liquid currencies with low transactions costs, which in his view explained the use of the US dollar as a vehicle currency, i.e. by two parties neither of which were American. Shortly after, the hypothesis of Grassman prompted a number of authors to provide possible rationales for the observed preference of exporters to invoice in their own currency (see Bénassy-Quéré et al. (1998) for a review of the early literature). Krugman (1984) and Black (1990) observed that the relative sizes of the trading partners mattered and that Grassman's law applies unless the importing country is much

larger than the exporter. A number of authors stressed that currencies associated with a history of high inflation were used less in their country's foreign trade than currencies without such an inflationary history. In addition, McKinnon (1979) emphasised the difference between trade in differentiated manufactured goods and the relatively homogeneous primary goods. In his view the predominance of domestic currency pricing by European countries was due to the fact that exporters of industrial products enjoy greater market power and are thus able to avoid bearing the exchange rate risk. This would help to explain why, in trade between industrial and developing countries, the industrial country's currency or a third currency, usually the US dollar, is used in most cases. Moreover, trade in homogeneous commodities is often centralised, which facilitates the efficient communication of relative price information. As Tavlas (1997) points out, such commodity exchanges tend to be centralised in only a few countries that have a comparative advantage as financial centres. The existence of such established exchanges in the United States and the United Kingdom reduces the likelihood that commodities traded through exchanges would be priced in currencies other than the US dollar and the pound sterling (for a summary of stylised facts from the early literature, see Hartmann 1998a). Hartmann (1998a) also suggests that factors such as low liquidity in financial markets and capital controls would increase transaction costs and would therefore affect the choice of currency in international trade.

From a theoretical perspective, attempts at modelling the choice of invoicing currency within a framework of a profit-maximising firm go back to the contributions of Giovannini (1988) and Donnenfeld and Zilcha (1991). These partial equilibrium models shed light on

²⁹ Kamps (2005), "The euro in international trade", mimeo, European Central Bank. Both the background paper on which this research is based and the text of the special focus itself have also benefited from comments from Eurosystem staff, in particular Juan Ruiz (Banco de España), Iris Nelissen (Deutsche Bundesbank), Lionel Potier (Banque de France) and Franz Nauschnigg (Oesterreichische Nationalbank).

the underlying trade-off between price and demand uncertainty that the exporter faces. On the one hand, if the exporting firm chooses to use the local currency to price its goods, the quantity demanded will be known. However, exchange rate fluctuations would affect the revenue raised by the firm when converted back to its own currency and, hence, its profit. On the other hand, if the exporting firm chooses to price in its own currency, exchange rate fluctuations will mean that the local consumers will respond by changing the quantity demanded, since the exchange rate fluctuations effectively mean changes in price in the local currency, leading to a quantity effect. The key contribution from this literature is to formalise the conditions under which it is optimal for exporters to price in their own currency or in the currency of the local market.³⁰ As demonstrated by Bacchetta and van Wincoop (2005), in a general equilibrium framework the shape of both the demand and the cost curves affects the exporter's choice. In general, a high elasticity of demand and steeply increasing marginal costs will make pricing in local currency more attractive. This is because a highly elastic demand will imply large quantity effects, which will reduce revenue significantly in the case of a reduction in the quantity demanded, while the higher marginal costs will increasingly offset the higher revenues from the greater quantities of goods sold. Thus, in contrast to the early assumptions of the literature, this research demonstrates that, under certain conditions, it may be optimal for an exporter to use the local currency. In particular, the higher the level of competition in the local market (and hence the higher the elasticity of demand faced by the individual exporter), the more attractive local currency pricing becomes.

More ambiguous is the expected impact of exchange rate volatility on the choice of invoicing currency. Recent theoretical research has demonstrated that the choice of

exporters to use their own currency does not depend on exchange rate volatility as such but rather on how the fluctuations of the exchange rate and those of other economic variables are interrelated (Goldberg and Tille, 2005). In addition to exchange rate volatility, these models include also volatility in wages and foreign demand as factors that affect the choice of invoicing currency.³¹

The theoretical literature has also taken up the argument that, through positive externalities or economies of scale, the wide use of a currency as a medium of exchange may prove to be self-reinforcing (see Box 4). Importantly, positive externalities may arise from the use of a currency as regards other functions of money. For example, "thick market" externalities imply that low transactions costs associated with a currency trading in foreign exchange markets – as a result of high liquidity or "thick" trading in that currency – will make it more likely that the currency is used in international trade (Rey, 2001).

30 Extensions to these partial equilibrium models include Friberg (1998), who introduces a forward currency market and the possibility of setting prices in a third currency (vehicle currency pricing), and Johnson and Pick (1997), who include the possibility that the exporting firm faces competition from exporters from other countries. Since competitors from other countries also have a choice as to what currency to use, this introduces an additional level of uncertainty for the exporter, who now faces demand uncertainty even if the local currency is used. The result is that the use of a vehicle currency becomes more likely.

31 In this regard, Engel (2005) suggests that, in situations where it would be optimal for an exporter to keep its prices in its own currency stable (what Engel refers to as "producer currency stability"), it is likely that it will be optimal for the firm to price in its own currency.

Box 4

THE ROLE OF NETWORK EFFECTS AND MARKET STRUCTURES FOR THE USE OF CURRENCIES – THE CASE OF OIL INVOICING

The literature on trade invoicing suggests that primary commodities, in particular crude oil, tend to be priced in vehicle currencies. The US dollar has been the predominant currency of invoicing for crude oil since at least the 1950s, and researchers have argued that the role of the dollar as a vehicle currency is self-reinforcing as a result of network externalities.

In line with the three uses of money, network externalities fall into three categories. First, the existence of transaction costs in foreign exchange markets may make it profitable for traders to use only one currency as a medium of exchange. If transaction costs are decreasing in the size of the foreign exchange market, the preference for an established vehicle currency will be self-reinforcing. Second, the larger the number of users and the longer the period of time during which a given currency is used, the lower the information costs for using this currency will be, thereby strengthening its role as a unit of account. Third, externalities may also arise from the interrelation between the role of money as a medium of exchange and its role as a store of value. For example, a currency already established as an investment currency will benefit from deeper financial markets and, hence, lower transaction costs, which will help to reinforce the preference of agents to use that currency.

Oil is perceived as a homogenous good and is traded around the globe. Hence, quick price comparisons are necessary to permit a smooth global oil market, supporting the argument in favour of a single vehicle currency for the pricing, invoicing and settlement of oil trades. A closer look at the structure of the oil market, however, reveals that there may be more segmentation in the market than commonly thought. Presently, oil is traded in three kinds of contracts, namely term, spot and futures. About half of the global physical oil trade is settled in term contracts. In particular, the Gulf economies tend to sell in this manner. By contrast, less than 50 percent of the global physical oil trade is conducted as spot contracts.

Despite their relatively small share in physical trade, spot prices are the main determinants of most other petroleum prices, as they are used in pricing formulae for the term sales of OPEC and other oil-exporting countries. However, the spot market is not fully transparent (either in terms of prices or quantities), since physical spot market transactions lack a central clearing house and are often confidential. In addition, trade deals often differ not only in terms of pricing but also with respect to many other characteristics, such as cargo size and timing of delivery. Given this limited transparency, pricing service agencies calculate spot prices based on information on these bilateral contracts. Platts, the leading agency, calculates daily prices for 62 grades of crude oil on the basis of prices of petroleum shipments from the main transportation hubs (maritime terminals or pipeline centres) under typical market conditions.

While overwhelmingly denominated in US dollars, spot contracts also differ in some cases in the use of currencies in the pricing and settlement of oil trades. For example, some Canadian grades are quoted in Canadian dollars. Also, Chinese oil companies price their locally-produced crude oil in US dollars based on international benchmark grades, but settle domestic contracts (which account for the majority of their crude oil sales) entirely in renminbi. Since

February 2005 Platts have reported certain benchmark grades, including Dated Brent and WTI, in euro as a supplement in order to allow for efficient price comparison across regions.¹

Turning to the third type of contract under which oil is traded, futures contracts have grown in importance in recent years. The New York Mercantile Exchange (NYMEX) and the International Petroleum Exchange (IPE)² in London collectively trade annually nearly three times the actual volume of physical oil produced. The futures and spot markets are closely interrelated. On the one hand, the futures markets depend on the spot market at the point of contract delivery or settlement. On the other hand, prices from the futures markets are increasingly acquiring prominence in the physical trade of crude oil. OPEC producers, for instance, are now using a weighted average of daily Brent futures prices on the IPE in the pricing formulae for petroleum shipments to European customers. In addition, since purchases of oil futures outnumber physical petroleum deals by a factor of ten, they provide high liquidity for the oil market (Energy Intelligence, 2004).

It is noteworthy that not all futures exchanges are carried out in US dollars. The Tokyo Commodity Exchange (TOCOM) lists a crude oil futures contract based on a benchmark Asian grade of petroleum, which is quoted and settled in Japanese yen. Trading activity has been on the rise since its establishment in September 2001. In February 2005 the Multi Commodity Exchange of India introduced a crude oil futures contract priced in rupees and deliverable in Mumbai. As a result of the success of this contract, the exchange listed a second Brent Crude contract in June 2005. Although most companies trading on the Tokyo and Mumbai Commodity Exchanges are domestic, they do include large international petroleum companies such as Reliance Industries³ of India and Mitsui⁴ of Japan.

In sum, the analysis suggests that the crude oil market is less homogenous than commonly thought as it is quite segmented in terms of both geographic regions and grades of petroleum. Moreover, oil prices depend on complex relationships between spot, term and futures markets, the former often being non-transparent. In line with this, it was found that, in a few countries, domestic contracts, both spot and futures, are settled in the home currency. Moreover, in a variety of sub-markets, network effects do not appear to prevent oil contracts being concluded in other invoicing currencies. By contrast, network effects seem to be strongest with regard to pricing, as oil prices are quoted almost solely in US dollars.

1 Platts also announced that it was launching euro-equivalent prices for some refined products (see the Platts press release of 14 February 2005).

2 In 2001 the IPE was acquired by the Intercontinental Exchange, a conglomerate of major banks and oil companies whose ambition is to establish a platform for the trade of all physical, forward, futures, and over-the-counter derivatives in all commodities (Energy Intelligence, 2004).

3 Business Standard, "Crude oil futures trade kicks off," 10 February 2005, New Delhi, India.

4 TOCOM website (2005).

Another important contribution to the literature refers to the effect of the formation of a monetary union on the choice of invoicing currency. Bacchetta and van Wincoop (2005) show that a new currency established as the result of a monetary union is likely to be used more extensively than the sum of the currencies it replaces. This is because the formation of the monetary union implies changes to the relative market shares of exporters and importers resident in the currency union. For a monetary union, it is the market share of the entire currency union that matters and the market share of the monetary union is now more likely to be dominant, both with regard to exports and imports. In addition, increased liquidity in the foreign exchange market for the common currency would further increase the likelihood that it will be used.

A final contribution to the theoretical literature to be mentioned here is that of Goldberg and Tille (2005). These authors present a model which highlights the importance of industry-specific features such as the degree of competition and demand elasticity across

industries. Producers in industries with high demand elasticities are more likely than producers in other industries to display “herding” in their choice of currency (i.e. using the same invoicing strategy as their competitors, regardless of whether this means pricing in the local currency or using a vehicle currency). Such strategic or “herding” motives are more important than the need to hedge against certain macroeconomic contingencies. Using this distinction between “hedging” and “herding” factors, Table 12 provides a summary of some of the key determinants behind the choice of invoicing currency as suggested in the theoretical literature.

In parallel to the development of the theoretical literature, progress has also been made in recent years on empirically exploring the determinants behind the choice of invoicing currency. However, the limited availability of data has been a major obstacle in this regard and, in this respect, the literature is still in its infancy. The lack of empirical cross-country studies is particularly acute. The few empirical studies to have been undertaken on

Table 12 Key factors affecting the choice of invoicing currency as suggested by the theoretical literature

Factor	Expected effect
Macroeconomic: “hedging” motive	
Monetary instability	If a currency has a history of high inflation or high inflation variability, the likelihood of that currency being used will decrease (e.g. Tavlas, 1991).
Exchange rate volatility	Ambiguous. Under certain conditions a highly variable exchange rate will make exporters prefer to set prices in their own currency (Devereux, Engel and Storgaard, 2004; cf. Donnenfeld and Haug, 2000). Absence of, or costly, hedging instruments would exacerbate this preference (Magee and Rao, 1980).
Business cycle	The volatility of wages and foreign demand affects the invoicing of differentiated products (Goldberg and Tille, 2005; Engel, 2005)
Industry-specific: “herding” motive	
Product differentiation	Low differentiation is associated with vehicle currency pricing as these products are often traded through organised exchanges (e.g. McKinnon, 1979).
Competition	Producers in highly competitive industries with high demand elasticities are more likely to display herding in their choice of currency (Bacchetta and van Wincoop, 2005; Goldberg and Tille, 2005).
Market structure	A high market share of producers from the same country/currency area is likely to lead to pricing in that currency being adopted by other producers as well. The currency created as a result of a monetary union is therefore likely to be used more than the sum of the currencies it replaces (e.g. Swoboda, 1968; Bacchetta and van Wincoop, 2005).

Table 13 Summary of selected recent empirical studies

Author	Data coverage and estimation method	Key results
Donnenfeld and Haug (2003)	Canada Bilateral flows (Canada – 16 countries), quarterly 1989-1994, industry-level Multinomial logit model	Exchange rate volatility <i>increases</i> the likelihood of local currency pricing. Long distance between trading partners significantly increases the likelihood of local currency pricing.
Oi, Otani and Shirota (2004)	Japan Correlation analysis	Japanese yen more often used in industries with differentiated products, such as the automobile industry.
Silva (2004)	Netherlands Bilateral flows (Netherlands – OECD countries), 1987-2002 Panel data – extended GLS	Inflation in partner country increases the likelihood of invoicing in Dutch guilder. High share of a country in world exports increases the likelihood that the country's currency is used. Financial development increases the likelihood of pricing in the currency of the country undergoing financial development.
Wilander (2005)	Sweden pricing. Bilateral flows (Sweden – 69 countries), industry-level Multinomial logit model	Exchange rate volatility <i>decreases</i> the likelihood of local currency pricing. High GDP and GDP per capita in the importing country increases the likelihood of local currency pricing. Large market share of a third country increases the likelihood of the third's country currency being used as vehicle.
Goldberg and Tille (2005)	Cross section regression analysis based on 24 countries	Producers in industries facing high demand elasticities are more likely to exhibit herding behaviour in their choice of currency. Business cycle volatility matters more for invoicing of differentiated products.
Goldberg (2005)	New EU Member States and Bulgaria	For most countries the share of the euro is larger than would be expected given their trading partners, composition of trade and the variance and covariance of macroeconomic conditions vis-à-vis trading partners.

the choice of invoicing currency consist almost exclusively of country-specific evidence. Only Goldberg and Tille (2005) and Goldberg (2005) provide empirical findings from a broader set of countries, albeit on the basis of a limited sample. Table 13 summarises some key results from these studies, which generally corroborate the hypotheses put forward in the recent literature. In this regard, the differences in the observed impact of exchange rate volatility are not surprising given the ambiguity of its impact as predicted by the theory.

3 A NEW PANEL DATASET

Given the limited availability of data, a key priority in order to understand the determinants of the use of the euro in international trade was to compile as broad a

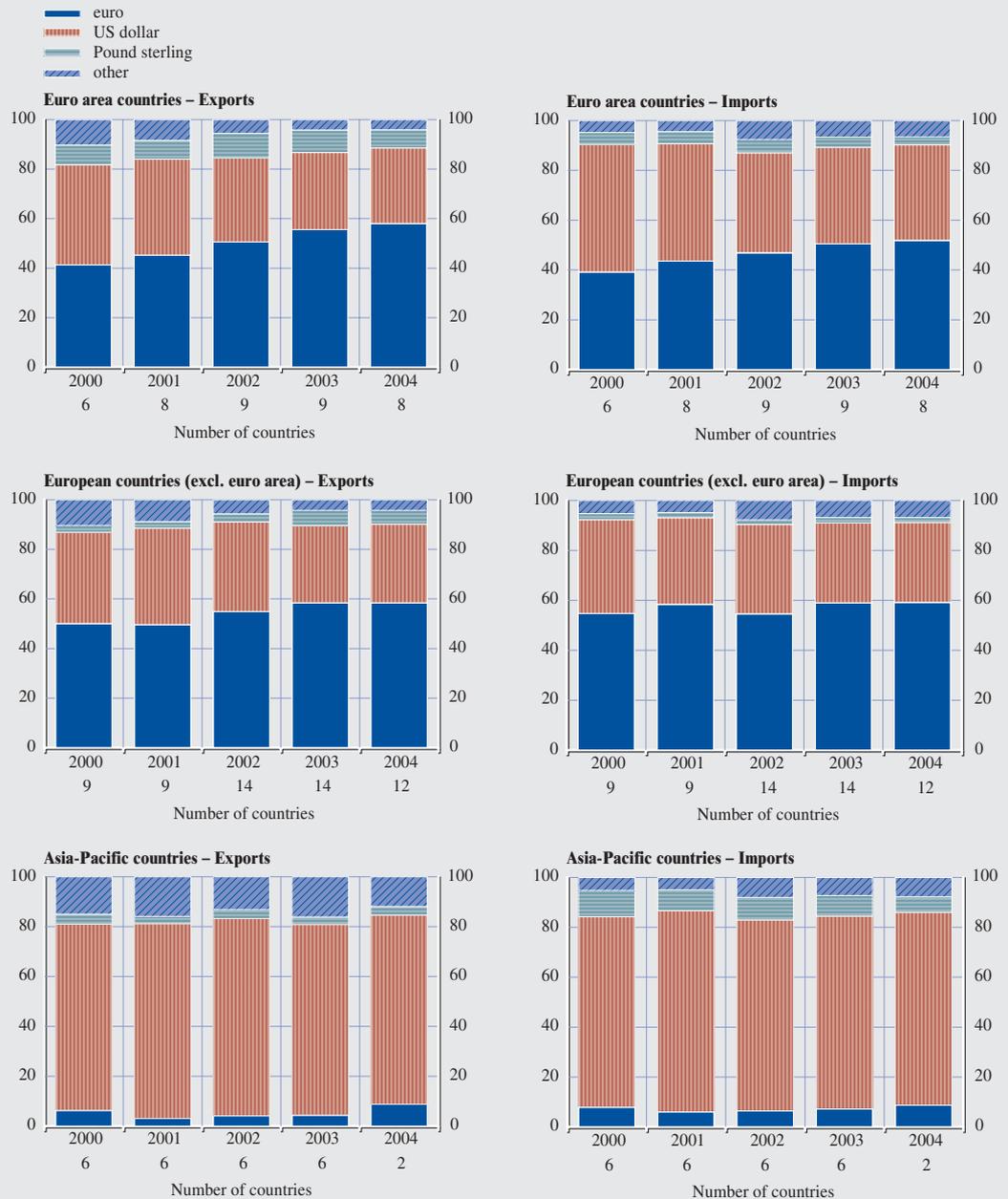
dataset as possible. This has been greatly facilitated by the ESCB's efforts in compiling data for a number of EU countries. Together with data obtained through the ECB's requests to other central banks and publicly available information, a dataset has been assembled on the use of the euro in the external trade of 38 countries, including nine euro area countries.³²

As shown in Chart 6, the increase in the use of the euro in international trade appears to have taken place mainly among the euro area countries and other European countries.

32 In addition to the 30 countries for which multi-annual data is presented in Tables 8-11 (Belgium, France, Germany, Greece, Italy, Luxembourg, Portugal, Spain, Cyprus, Czech Republic, Denmark, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, United Kingdom, Bulgaria, Croatia, Romania, Turkey, Former Yugoslav Republic of Macedonia, Ukraine, Australia, Indonesia, Japan, Pakistan, South Korea and Thailand), less frequent observations were also included for a number of other countries (Morocco, Serbia and Montenegro, South Africa and Tunisia).

Chart 6 Average share of currencies used in exports and imports by region

(percentages)



Sources: ECB and national sources, as compiled by Kamps (2005).

However, these data should be interpreted with caution. One reason is the lack of harmonisation in the data, which often refer to the currency of settlements rather than invoicing or pricing practices. An additional

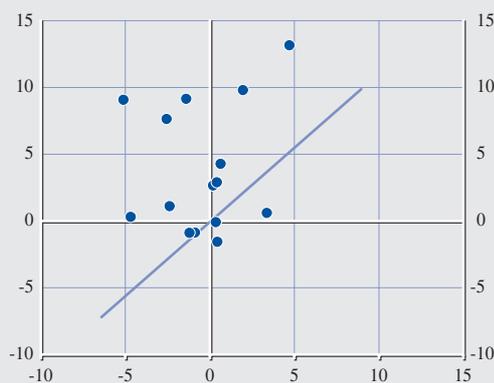
factor is that the time series available differ widely across countries. While very unbalanced, this panel dataset allows us to make estimates on the basis of more than 140 observations.

Chart 7 Change in the share of trade invoiced/settled in euro vs. change in the share of trade accounted for by the euro area

(2002-2004, percentage points)

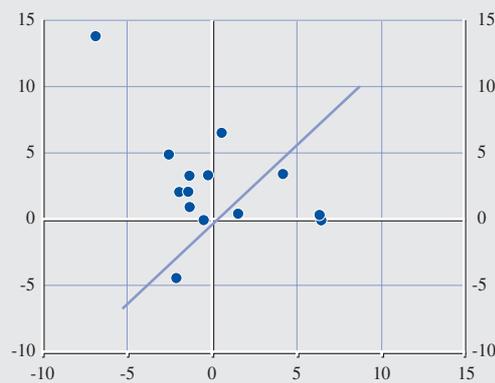
x-axis: Change in share of exports to the euro area to total exports
y-axis: Change in share of exports invoiced in euro

Exports



x-axis: Change in share of imports to the euro area to total imports
y-axis: Change in share of imports invoiced in euro

Imports



Sources: ECB and national sources, as compiled by Kamps (2005).

It is also important to stress that the data for euro area countries refer to extra-euro area trade. Therefore, the increase seen in the share of the euro cannot be related to an increase in trade flows among euro area countries. However, data for other countries refer to the total external trade of those countries. Increases in the share of the euro in the external trade of those countries could be driven by changes in the geographical structure of their trade, possibly by increases in trade with euro area countries in relative terms.

The unweighted average share of the euro in exports of euro area countries reached 58% in 2004. This corresponds exactly with the baseline scenario suggested by Hartmann (1998b) for the share of the euro in extra-euro area exports after EMU. That baseline scenario was constructed on the basis of the invoicing practices of the five EU Member States for which data was available in the early 1990s. However, the share of the euro in 2004 is about 8 percentage points higher than the unweighted average of own currency invoicing for those five EU Member States in the early 1990s.

The importance of the euro area as a trading partner in driving the patterns of international trade invoicing in euro is tested econometrically below. However, it may already be informative to show in graphical form the correlation between the increase in the share of the euro in international trade and the increase in the role of the euro area as a market for exports or a source of imports. This correlation, which is shown in Chart 7, suggests that, with very few exceptions, the increase in the use of the euro is greater than the increase in the role of the euro area as a trading partner (i.e. most data points are above the 45-degree line). In fact, there are a number of cases where the increase in the share of the euro has taken place despite a reduction in the importance of the euro area as a trading partner, particularly as regards imports. This suggests that the euro may be increasingly used in the trade of these non-euro area countries with other non-euro area countries, and that it is thus taking on the role of a vehicle currency.

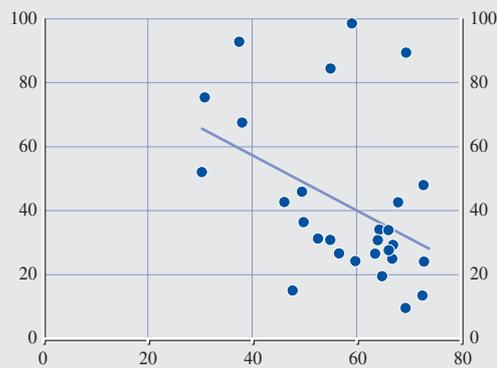
However, the euro does not display one of the characteristics typically associated with

Chart 8 Correlation between share of differentiated goods and choice of currency in exports

(2003)

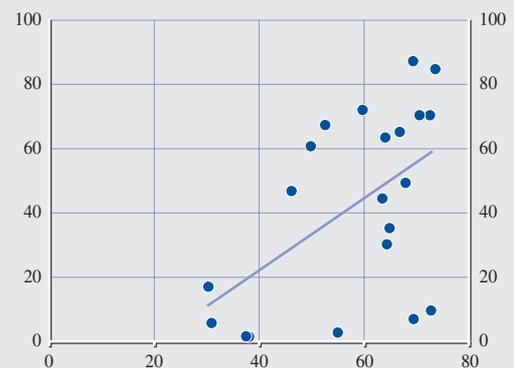
x-axis: Share of differentiated goods in exports
(based on data for 28 countries)
y-axis: Currency share in exports

US dollar



x-axis: Share of differentiated goods in exports
(based on data for 21 countries)
y-axis: Currency share in exports

Euro



Sources: ECB, national sources and UN Comtrade, as compiled by Kamps (2005).

vehicle currencies – namely its use in the trade of commodities and other goods exhibits a low degree of product differentiation. Chart 8 shows how the use of the euro across the 22 countries for which data are available for 2003 appears to be positively correlated with the share of exports account for by differentiated goods (as measured by the Rauch index as proposed by Goldberg and Tille, 2005). This contrasts with the available evidence for the US dollar, where the general rule is that the higher the degree of product differentiation in exports, the lower the share of trade denominated in US dollars.

4 METHODOLOGY AND RESULTS

The following section presents the tentative results of an econometric analysis of the determinants of the use of the euro using the panel of data assembled.³³ In particular, a random effects model is estimated as follows:³⁴

$$y_{it} = a + \beta X'_{it} + u_{it}$$

where y is the share of exports (or imports) invoiced in euro, i represents the country

dimension, t represents time, β is a set of coefficients, X is a set of explanatory variables, and u_{it} is the country-specific error term c_i plus the white noise e_{it} .

To examine the extent to which the euro is used by euro area exporters to price their goods (producer currency pricing), by euro area importers (local currency pricing) and by non-euro area trading parties (vehicle currency pricing) necessitates a look at the external trade of a different set of countries in each case and also a look at slightly different variables. Therefore, when analysing the use of the euro

³³ The panel approach allows us to explore the possible impact of the introduction of the euro, which would not be possible if we were to undertake a cross-section analysis.

³⁴ Given the highly unbalanced nature of the panel across the time dimension, the estimation method used is a one-way random-effects GLS panel. The random effects model seems preferable as it allows time-invariant explanatory variables to be taken into consideration and avoids the loss of degrees of freedom that would result from estimating a fixed effects model with country-specific constants. The Breusch-Pagan Lagrange Multiplier test for a zero variance of the individual errors could be rejected for every estimation, so that the data could not be pooled. Hausman tests performed to compare the coefficients of the fixed and the random effects estimation suggest that the null hypothesis of no systematic differences could not be rejected and that the random effects should be preferred due to their higher efficiency.

as far as producer currency pricing is concerned, the relevant independent variable would be the share of exports from euro area countries invoiced in euro. In contrast, if the analysis was to be of the use of the euro as far as local currency pricing is concerned, the focus would need to be on the share of the euro in the imports of euro area countries. While these exercises were indeed conducted and a set of stylised results is presented below, we will focus here on presenting the results from the analysis of the euro as a vehicle currency, since such analysis is based on a larger dataset.

THE EURO IN VEHICLE CURRENCY PRICING

The use of the euro as a vehicle currency can be examined from the perspective of both exports and imports among non-euro area countries. This would allow two sets of regressions to be run and the estimated results contrasted for consistency. However, one difficulty arises from the fact that the data available on the currency invoicing patterns of these countries refer to their total foreign trade and, thus, include trade that they conduct with the euro area. While this poses a problem, it is dealt with in the econometric estimations by controlling for the share of exports (imports) to (from) the euro area in the total exports (imports) of these countries. The explanatory variables tested are as follows:

- *Share of exports (imports) to (from) the euro area in total exports (imports)*. The rationale, as discussed above, is to control for the importance of the euro area as a trading partner. Data are taken from the IMF Direction of Trade Statistics.³⁵
- *Share of differentiated goods in country *i*'s exports (imports)*. Following the approach in Goldberg and Tille (2005), this aims to capture the possible link between non-differentiated products and pricing in vehicle currencies. The variable is measured according to Rauch's (1999) definition of non-differentiated goods as being those goods for which reference prices are

available or which are traded in organised exchanges.³⁶ Data on trade by type of goods up to the four-digit SITC code are taken from the UN Comtrade database.

- *Exchange rate volatility vis-à-vis the euro and inflation differential vis-à-vis the euro area*. These two variables aim to capture the common argument in the literature that monetary stability would increase the likelihood of a currency being used in international trade. The exchange rate volatility is measured by the four-month moving average of the standard deviation of the exchange rate, while the inflation differential is expressed in terms of percentage points.
- *Dummy variable to reflect countries that are part of the EU or are candidate countries*. This is time-invariant as, arguably, prospective EU membership may be as important in shaping invoicing patterns as actual EU membership.
- *Step dummy variable from 2002 onwards to reflect the euro cash changeover*. As suggested by the literature, the launch of a monetary union may affect the invoicing patterns in international trade. Although the euro was introduced in 1999, the limited availability of data before 1999 suggested that, in order to ensure robust estimations, the cash changeover in 2002 was chosen to mark the beginning of EMU. In addition, available evidence suggests that the use of legacy currencies was still common in international trade settlements until 2001 (DNB, 2004).
- *Dummy variable to reflect the presence of a forward market*. This time-invariant

³⁵ Admittedly, this is an imperfect proxy that, insofar as it may be correlated with other explanatory variables, would introduce an unpredictable bias into the results.

³⁶ Rauch (1999) provides a comprehensive list of commodities traded in organised exchanges (as reported by the International Commodity Markets Handbook and the Knight-Ridder CRB Commodity Yearbook) and of commodities for which reference prices are available (e.g. price quotations published in trade journals such as Chemical Marketing Reporter).

dummy, which controls for whether countries had a domestic forward market in 1999 or not, aims to control for the availability of opportunities to hedge exchange rate exposures.

- Dummy variable to capture countries with an exchange rate regime consisting of a *hard peg to the euro*.

Results are presented in Table 14 for estimations conducted on the exports of a total of 29 non-euro area countries for which information on the share of exports invoiced in euro was available.

Three key results are worth highlighting. First, institutional factors related to the EU appear to be particularly important. The dummy variables capturing institutional factors such as being part of the EU (or a candidate country)

and the euro cash changeover are highly significant, both from a statistical and an economic point of view, as they increase, in the basic specification, the share of the euro in invoicing by around 25 and 8 percentage points respectively. These effects remain large and robust across a number of specifications and the inclusion of other institutional variables such as pegs to the euro, which also prove to be significant. It is important to stress that being part of the EU (or being a candidate country) has an impact on euro invoicing which is not a result of higher trade flows.³⁷ The importance of trade with the euro area, picked up by the

³⁷ An alternative specification was to include a geographical measure of distance to the EU instead of the institutional dummy variable reflecting EU membership or candidate country status. In the specification used the geographical distance was not significant. Only when both the institutional dummy variable reflecting EU membership or candidate country status and the share of exports to the euro area were excluded did the measure of distance become significant.

Table 14 The euro as an invoicing currency in the exports of non-euro area countries

Regression	(1)	(2) ¹	(3)	(4)	(5)	(6)
Constant	-4.07 (-0.82)	-24.98 ²⁾ (-2.32)	-26.13 ²⁾ (-2.44)	-22.49 ²⁾ (-2.1)	-19.52 ¹⁾ (-1.76)	-21.89 ¹⁾ (-1.95)
Share of exports to euro area	0.59 ³⁾ (5.41)	0.60 ³⁾ (5.68)	0.60 ³⁾ (5.72)	0.51 ³⁾ (4.84)	0.48 ³⁾ (4.54)	0.48 ³⁾ (4.65)
EU25 and candidates (dummy)	25.11 ³⁾ (3.97)	16.99 ²⁾ (2.41)	17.17 ²⁾ (2.47)	21.36 ³⁾ (3.04)	20.23 ³⁾ (2.82)	17.46 ²⁾ (2.38)
Euro cash changeover (dummy)	8.07 ³⁾ (9.14)	8.12 ³⁾ (9.21)	8.31 ³⁾ (8.96)	7.05 ³⁾ (7.56)	7.02 ³⁾ (7.58)	6.48 ³⁾ (7.27)
Share of differentiated exports		0.44 ²⁾ (2.15)	0.45 ²⁾ (2.21)	0.43 ²⁾ (2.13)	0.46 ²⁾ (2.23)	0.51 ²⁾ (2.43)
Exchange rate volatility to euro			32.01 (0.68)	60.00 (1.34)	62.98 (1.42)	90.43 ²⁾ (2.11)
Inflation differential to euro area				-0.27 ³⁾ (-3.91)	-0.28 ³⁾ (-4.05)	-0.30 ³⁾ (-4.56)
Forward market (dummy)					-7.56 (-1.31)	-8.13 (-1.38)
Peg to euro (dummy)						13.14 ³⁾ (3.53)
Number of observations	144	144	143	143	143	143
Number of countries	29	29	29	29	29	29
Wald chi2	159.14	171.31	172.44	200.27	201.75	226.87
R squared within	0.47	0.47	0.47	0.55	0.55	0.60
R squared between	0.69	0.74	0.74	0.72	0.73	0.73
R squared overall	0.73	0.75	0.75	0.72	0.76	0.75

Source: Kamps (2005).

Note: Absolute value of z statistics in parentheses

1) Significant at 10%.

2) Significant at 5%.

3) Significant at 1%.

Table 15 Summary of stylised results from the econometric estimations

Regression capturing	Euro as vehicle currency	Euro as vehicle currency	Euro as producer currency pricing	Euro as local currency pricing	US dollar as vehicle currency	US dollar as vehicle currency
Coverage	Exports by non-euro area countries	Imports by non-euro area countries	Exports by euro area countries	Imports by euro area countries	Exports by any country (excl. US)	Imports by any country (excl. US)
Number of observations	143	145	42	42	166	155
Impact of	(1)	(2)	(3)	(4)	(5)	(6)
Share of exports (imports) to (from) the euro area (US in regressions 5 and 6)	+	+	...	...	Not significant	Not significant
EU25 or candidate country dummy	+	+	...	...	-	-
Euro cash changeover dummy	+	+	+	+	-	-
Share of differentiated goods in exports (imports)	+	Not significant	Not significant	Not significant	Not significant	-
Exchange rate volatility vis-à-vis the euro (US dollar in regressions 3, 4, 5 and 6)	+	Not significant	Not significant	Not significant	Not significant	Not significant
Inflation differential with the euro area (US in regressions 3, 4, 5 and 6)	-	-	Not significant	Not significant	+	+
Presence of forward market dummy	Not significant	-	...	...	Not significant	Not significant
Pegged exchange rate to the euro (US dollar in regressions 5 and 6)	+	+	...	...	+	+

Source: Kamps (2005).

Notes: (...) indicates that this variable was not included in the regression as it was not applicable. Preliminary results reported here are on the basis of regressions including all of the above variables, i.e. similar to regression (6) in Table 14, and on the basis of critical values at 5% statistical significance.

significance of the coefficients on the share of exports going to the euro area, suggests that the use of the euro outside bilateral trade with the euro area is limited.

This second key result can also be interpreted as evidence that the use of the euro as a true vehicle currency is limited. This interpretation seems to be supported by the positive estimated coefficients on the share of differentiated goods, which indicate that the higher the share of differentiated goods in the exports of these countries, the higher the share of the euro in invoicing. This result confirms the suggestion from the correlation depicted in Chart 8. Given that the effect of exchange rate uncertainty may depend on the price elasticity of demand, approximated here by the share of differentiated goods in trade, we introduced an

interaction term which includes the share of differentiated goods in exports with the exchange rate volatility variable so as to capture the possibility that exchange rate volatility may only matter for differentiated goods. However, this interaction variable did not prove to be significant.

The third key result to be highlighted here is the mixed evidence found regarding the importance of economic variables that aim to capture the hedging factors in the choice of invoicing currency, such as inflation differentials with the euro area, exchange rate volatility vis-à-vis the euro, or the presence of a forward market. The coefficient on the inflation differential has, in fact, a negative sign, which is the opposite of what we would have expected, since the negative sign

indicates that the higher the inflation differential with the euro area, the lower the share of exports invoiced in euro. Exchange rate volatility vis-à-vis the euro increases the share of exports invoiced in euro in the preferred regression number 6, but the result is not robust across different specifications. Finally, the lack of a forward market does not increase the use of the euro in the exports of these countries.³⁸ Taken together, this third set of results suggests that, in the presence of high inflation and limited hedging opportunities, exporters from these countries choose a currency other than the euro, possibly the US dollar. These results are therefore consistent with the interpretation that the use of the euro as a vehicle currency is limited beyond its use in countries with institutional links to the EU.

Similar sets of regressions were run also on the share of imports invoiced in euro among non-euro area countries, again attempting to capture a measure of the extent to which the euro was used as a vehicle currency by controlling for the importance of imports from euro area countries. In addition, Table 15 summarises the results of regression for the use of the euro in producer and local currency pricing. Moreover, for the sake of comparison, results of regression for the use of the US dollar as a vehicle currency are also presented. Column 1 in Table 15 corresponds to the results already presented in Table 14 for the use of the euro in the exports of non-euro area countries.

The interpretation of these preliminary results is nevertheless inherently difficult given the limited availability of data. This is particularly the case with regard to the use of the euro in producer currency pricing (on the basis of exports by euro area countries) or local currency pricing (on the basis of imports by euro area countries). It should nevertheless be noted that the economic variables included in the analysis do not seem to explain the use of the euro by euro area countries and that only the institutional variable capturing the cash changeover has explanatory power. Not

forgetting the shortcomings of the data, a comparison of the results for the use of the euro in the foreign trade of non-euro area countries (columns 1 and 2) with those for the use of the US dollar (columns 5 and 6) may still lead to a number of highly tentative conclusions.

First, while the importance of the euro area as a trading partner helps to explain the use of the euro, trading with the United States does not significantly help to explain the use of the US dollar. This result is consistent with the interpretation that the US dollar is a true vehicle currency for trade among third parties while the euro is only now beginning to emerge in this regard.

Second, the institutional variables related to EU membership and the euro cash changeover affect positively the share of trade invoiced in the euro and negatively the share of trade invoiced in the US dollar. These results tend to confirm the strong connection between the regional role of the euro and institutional factors, and also give support to the hypothesis put forward by Bacchetta and van Wincoop (2005) that the establishment of a monetary union would *per se* increase the use of the common currency in trade.

Third, effects stemming from the type of goods traded differ for the euro and for the US dollar. A higher proportion of trade in differentiated goods appears to increase the use of the euro while it appears to decrease the use of the US dollar, although this result does not hold across both exports and imports. The impact of inflation differentials on invoicing in the euro and the US dollar also appears to be somewhat different. Higher inflation differentials vis-à-vis the euro area have the effect of reducing the

³⁸ In an alternative specification, private credit to GDP is used as an indicator for financial development. For the vehicle currency estimations, this financial development indicator is always insignificant. Only for home currency import invoicing does this measure of financial development have a significant positive (as expected) impact. For home currency export invoicing, the positive coefficient is only significant when leaving out the forward market dummy from the regression.

share of trade invoiced in the euro while, in contrast, higher inflation differentials vis-à-vis the United States have the effect of increasing the share of trade invoiced in the US dollar. These results are consistent with the interpretation that suggests the US dollar has a true vehicle currency role.

There are, however, some common themes that emerge from the sets of regressions on both the euro and the US dollar, notably that hard pegs matter in both cases while the presence of a forward market does not. This latter result may well be due to the fact that the variable used does not capture sufficiently the availability and ease of methods for hedging exchange rate risk. One last result worth noting, and one which is also broadly common for both the euro and the US dollar, is the non-significance of exchange rate volatility. This finding is unsurprising given the ambiguous effect predicted by the theoretical literature.

Overall, it should be stressed that these tentative results must be interpreted with great caution. Not only is the dataset limited but it is also overwhelmingly composed of European countries.³⁹ If specific characteristics of the trade patterns of these European countries are not accurately controlled for with the independent variables used in the analysis, a bias would be introduced into the results. Ideally, a larger dataset including countries from other regions of the world such as Latin America would help to explore these possible biases. Unfortunately, however, there are still only very limited data available on the invoicing practices of countries worldwide.

CONCLUSIONS

In recent years, the use of the euro in international trade has seen a notable increase, particularly among a number of EU Member States. What are the factors behind this increase in the use of the euro in international trade? This special focus has addressed this question, making use of a panel dataset on the

invoicing practices of countries in foreign trade. The dataset was gathered largely thanks to the data collection efforts of the ESCB.

On the basis of this dataset, some tentative findings have emerged, even though it is important to stress that these findings must be interpreted with great caution given the limited sample of largely European countries on which they are based. First, there is limited evidence regarding the use of the euro as a vehicle currency in foreign trade, i.e. among the trade of non-euro area countries. There is certainly evidence from some non-euro area countries where the share of trade denominated in euro is higher than the share of trade with the euro area, thus suggesting that some trade with non-euro area countries is conducted in euro. However, the preliminary results from the econometric estimations point to some features regarding the use of the euro that are not consistent with the traditional view of vehicle currency pricing. These relate, in particular, to the type of goods traded and to the inflation differentials vis-à-vis the euro area. Traditionally, it would be expected that a vehicle currency would be used more in the trade of non-differentiated goods and in cases where the trading partners suffer from price instability. However, these effects do not feature with regard to the use of the euro in the foreign trade of non-euro area countries. This suggests that the observed use of the euro as a vehicle currency may be driven by other factors than those commonly cited in the literature as causes of vehicle currency pricing.

A second tentative conclusion that has emerged from this analysis relates to the importance of institutional factors in explaining the development in the use of the euro in international trade. The results provide evidence that countries with clear prospects of being part of the EU, as well as those with hard

³⁹ In contrast with the results presented here, a recent study of invoicing practices in Korean exports found that exchange rate volatility of the won vis-à-vis the US dollar, the euro and the Japanese yen could help to explain the relative use of these three currencies in Korean exports (Yun, 2005).

pegs to the euro, make greater use of the euro in their foreign trade even when controlling for the actual trade with the euro area. The analysis presented here has also provided some tentative evidence supporting the view that, controlling for a number of economic variables, Economic and Monetary Union has led to an increase in the use of the euro in international trade. Overall, the analysis conducted in this special focus has confirmed the gradual increase in the use of the euro in international trade, as well as its strong regional element.

B THE EURO IN THIRD COUNTRIES

This chapter reviews the role of the euro in countries outside the euro area (so-called “third countries”), distinguishing between official and private use. Official use refers mainly to the euro’s role in third countries’ monetary and exchange rate policies, in the form of an anchor or reference currency, a reserve currency or an intervention currency. Private use refers to the use of the euro by private agents in third countries, mainly as a parallel currency in the accumulation of financial assets or in the denomination of specific transactions and contracts.

I OFFICIAL USE: THE EURO IN THIRD COUNTRIES’ EXCHANGE RATE POLICIES

I.1 THE EURO AS AN ANCHOR CURRENCY

Choosing the appropriate exchange rate regime is one of the key policy choices for monetary authorities, with additional implications for the size and composition of foreign reserves and interventions. The IMF lists about 150 countries with exchange rate regimes involving a reference currency or a basket of reference currencies. In 40 of these countries, the euro serves as the anchor of exchange rate policies (see Table 16), either as the sole reference currency, or as part of a currency basket.⁴⁰

As in previous years, the use of the euro in third countries’ exchange rate regimes has a strong geographical and institutional underpinning, as it is observed mainly in EU neighbouring regions and in countries that have established special institutional arrangements with the EU or its Member States. With the exception of those countries participating in the exchange rate mechanism II (ERM II), the decision to use the euro as an anchor currency is a unilateral decision and does not involve any commitment on the part of the Eurosystem.

DEVELOPMENTS IN THE PERIOD UNDER REVIEW

In the period under review, the main exchange rate regime changes involving the euro as an anchor currency took place in three new Member States which entered ERM II (Cyprus, Latvia and Malta). In addition, as an EU acceding country, Romania strengthened the

reference role of the euro in its intervention policy while formally adopting an inflation targeting framework. In EU neighbouring regions, Russia introduced a reference basket for the daily management of its exchange rate which includes the euro along with the US dollar. Israel, on the other hand, formally introduced inflation targeting and reduced the role of intervention in its monetary policy framework. As regards other regions, China announced in July that it would operate a managed floating exchange rate policy based on market supply and demand with reference to a basket of currencies that includes the euro as one of its main components.⁴¹

With effect from 2 May 2005 the currencies of Cyprus, Latvia and Malta have participated in ERM II. Prior to their entry into ERM II, the Cyprus pound and the Latvian lats were already unilaterally pegged to the euro, Latvia having moved in January 2005 from an SDR to a euro peg, while the Maltese lira was pegged to a basket including the euro, the pound sterling and the US dollar with no fluctuation band. For all three currencies, the standard fluctuation band of $\pm 15\%$ around the central parity will be observed. In addition, the Latvian and the

⁴⁰ Other entities linking their exchange rate regimes to the euro include the French territorial communities and overseas territories (Saint-Pierre-et-Miquelon, Mayotte, French Polynesia, New Caledonia, and Wallis and Futuna), the European microstates that are not IMF members (the Vatican City, and the principalities of Monaco and Andorra), as well as Kosovo and Montenegro (see Table 16). As a result, a combined total of 50 countries and territories have an exchange rate regime involving the euro.

⁴¹ Finally, outside the review period, the IMF recently announced that the share of the euro in the Special Drawing Right (SDR) will increase from 29% to 34% from 2006 on.

Table 16 Countries with exchange rate regimes linked to the euro

(as at 1 December 2005)

Region	Exchange rate regimes	Countries
European Union (non-euro area)	ERM II	Cyprus, Denmark, Estonia ¹⁾ , Latvia ²⁾ , Lithuania ¹⁾ , Malta ³⁾ , Slovenia, Slovakia
	Peg arrangements based on the euro	Hungary
	Managed floating with the euro as reference currency	Czech Republic
	<i>Pro memoria</i> : Independent floating	Sweden, United Kingdom, Poland
Acceding, accession and potential candidate countries	Unilateral euroisation	Kosovo, Montenegro
	Euro-based currency boards	Bulgaria, Bosnia and Herzegovina
	Peg arrangements or managed floating with the euro as reference currency	Croatia, FYR Macedonia, Romania, Serbia
	<i>Pro memoria</i> : Independent floating	Albania, Turkey
Others	Euroisation	European microstates ⁴⁾ , French territorial communities ⁵⁾
	Peg arrangements based on the euro	CFA Franc Zone ⁶⁾ , French overseas territories ⁷⁾ , Cape Verde, Comoros
	Peg arrangements and managed floats based on the SDR and other currency baskets involving the euro (share of the euro)	Seychelles (37.7%), Russian Federation (35%) ⁸⁾ , Libya, Botswana ⁹⁾ , Morocco ¹⁰⁾ , Tunisia ¹¹⁾ , Vanuatu ¹²⁾

Sources: IMF and ECB compilation.

1) Unilateral commitment to a currency board.

2) Unilateral commitment to an exchange rate fluctuation band of $\pm 1\%$.

3) Unilateral commitment to maintain a fixed exchange rate.

4) Republic of San Marino, Vatican City, Principality of Monaco, Andorra. In the case of Andorra: unilateral euroisation. The other countries and jurisdictions are entitled to use the euro as their official currency.

5) Saint-Pierre-et-Miquelon, Mayotte.

6) WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) and CAEMC (Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, Gabon).

7) French Polynesia, New Caledonia, Wallis and Futuna.

8) Trade-weighted currency basket for monitoring and setting ceilings for real appreciation (euro share of 36.4%); since February 2005 dollar-euro basket for daily exchange rate management (since August 2005 euro share of 35%).

9) Weighted basket of currencies comprising the SDR and the South African rand.

10) Weighted basket in accordance with the distribution of Morocco's foreign trade and the pattern of currencies of settlement.

11) Real effective exchange rate target.

12) Weighted (trade and tourism receipts) basket of currencies of Vanuatu's major trading partners.

Maltese authorities have declared that they will unilaterally maintain tighter fluctuation bands around the central parity ($\pm 1\%$ in the case of Latvia and zero percent in the case of Malta). These unilateral commitments place no additional obligations on the ECB. Outside the review period, Slovakia joined ERM II on 25 November 2005.

In January 2005 the Romanian authorities announced that the euro would be used as the de facto single reference currency for the leu, replacing a reference currency basket in which the euro had a weight of 75%. The euro had already become the main reference point of Banca Națională a României in 2003 when it

announced that it would carry out all foreign exchange interventions in euro. More recently, the monetary authorities have announced the introduction of inflation targeting. It remains to be seen to what extent this new framework for monetary policy will affect Romania's exchange rate policy.

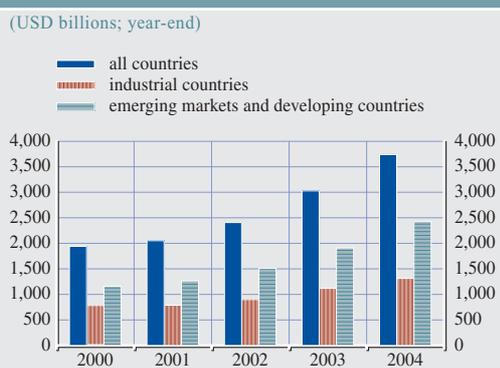
In Russia, the euro has played a role in the country's exchange rate policy for some years, with the Bank of Russia aiming to limit the real effective appreciation of the rouble against a trade-weighted currency basket composed of the currencies of a large number of Russia's trading partners. Trade with euro area countries accounts for over 36% of Russian

foreign trade. In February 2005 an operational US dollar/euro basket was introduced as a reference for the daily management of the rouble's exchange rate. The weight of the euro, initially set at 0.10, has now increased to 0.35.⁴² In line with this change in policy, daily volatility in the rouble/euro exchange rate has decreased slightly. Outside the review period, as of 2 December 2005, the weight of the euro in the Central Bank of Russia's operational basket for daily exchange rate management was increased to 0.4.

As of June 2005 Israel formally introduced inflation targeting, abandoning the exchange rate band around a basket of currencies and rendering the shekel a free-floating currency. The basket was dominated by the US dollar and had a euro share of 28%. As the band had been irrelevant for the practical conduct of policies in the preceding years due to its width, with the last intervention by the Bank of Israel having taken place in 1997, this move does not imply a material change of exchange rate policy.

Outside the review period, on 21 July 2005 China revalued its currency by 2% against the US dollar and moved to a "managed floating exchange rate regime based on market supply and demand with reference to a basket of currencies", as stated by the People's Bank of China (PBC). The PBC pointed out that managing the exchange rate "with reference to" a basket of currencies did not mean that the renminbi would actually be pegged to that basket of currencies. While the weights of the currencies in the reference basket were not disclosed, the currencies were selected mainly on the basis of the relative shares of China's partners in the trading of goods and services (with the other variables considered including the sources of foreign direct investment into China and the currency composition of Chinese debt). The currencies with the highest weight in the basket include the US dollar, the euro, the Japanese yen and the Korean won. However, following the PBC's announcement, the actual movements of the renminbi against the US dollar have remained marginal. Thus,

Chart 9 Global foreign exchange reserves



Sources: IMF (2005) and ECB calculations.

for the time being the reform has resulted primarily in a one-off revaluation against the US dollar, with an otherwise tightly managed renminbi/US dollar exchange rate.

1.2 THE EURO AS A RESERVE CURRENCY

The global reserve build-up continued during 2004. In December 2004 global foreign exchange reserves stood at USD 3,738 billion, an increase of 23% from the figure of USD 3,028 billion at the end of 2003 (see Chart 9).⁴³ This mainly reflected developments in emerging markets and developing countries, where foreign exchange reserve assets continued to grow at a pace of 27% in US dollar terms. By contrast, reserve growth in industrialised countries slowed from 24% in 2003 to 17%, mainly as a consequence of Japan's decision to terminate its interventions in the foreign exchange market as of March 2004.

According to revised IMF figures, the share of euro-denominated assets in global foreign exchange reserves fell slightly from 25.3% to 24.9% (see Table 17). As a result of changes in the IMF's methodology for compiling data on

⁴² A recent statement by the authorities indicates that the basket is operated with fixed quantities and variable weights based on price notation, with the US dollar as a reference currency.

⁴³ The information on aggregate reserve holdings has been taken from IMF (2005), with SDR values being converted into US dollar values on the basis of end-of-period exchange rates.

the currency composition of global foreign exchange reserves, the revised figures cannot be directly compared with previous data and should be interpreted with caution due to their limited coverage (see Box 5). Having this caveat in mind, the euro share has been moderately decreasing among industrialised countries (from 22.1% to 20.9%) while it has been gradually rising among developing countries (from 28.9% to 29.2%). However, it is difficult to draw inferences about a global trend towards euro-denominated reserves in developing countries from the IMF's revised data since major reserve accumulators, most notably in Asia, are not covered in these data (see Box 5).⁴⁴ Thus, the gradual but steady increase of euro-denominated reserves since 1999, in particular in developing and emerging market countries, is likely to reflect to a considerable extent an orientation towards the euro in EU neighbouring countries.⁴⁵

Decomposing the SDR change of foreign exchange reserves into quantity and valuation

(price) changes reveals that the euro benefited in 2004, as in previous years, from positive price effects (see Table 18). In contrast, the increase of US dollar reserve holdings was in part offset by negative valuation effects, reflecting the depreciation of the US dollar against major currencies in the course of 2004.

⁴⁴ Press reports about indications of shifts in foreign exchange reserve holdings by central banks in Asia, the Middle East and Latin America have not been substantiated by official figures. Moreover, survey results on central banks' holdings of foreign exchange reserves, as published by Central Banking Publications in January 2005 ("RBS Reserve Management Trends 2005") and indicating that 70% of the 65 surveyed central banks have increased their exposure to the euro over the past two years, also have to be interpreted with caution for the following reasons: first, the largest reserve holders were, again, not included in the survey. Moreover, the true coverage of the survey is not known, as only 54 central banks answered the question about the currency breakdown of reserves and the report only gives aggregated information for the 65 central banks that answered any of the questions. Second, the responding central banks stated merely that they increased their exposure to the euro, but not by how much. Moreover, in the context of rapid reserve accumulation, increases in exposure do not necessarily translate into a change in the share of the euro.

⁴⁵ See also the analysis presented in ECB (2003).

Table 17 Official foreign exchange reserves: currency shares

(as a percentage of total identified holdings; end-of-year values)

	1999	2000	2001	2002	2003	2004
All countries						
US dollar	71.0	70.5	70.7	66.5	65.8	65.9
Euro	17.9	18.8	19.8	24.2	25.3	24.9
Japanese yen	6.4	6.3	5.2	4.5	4.1	3.9
Pound sterling	2.9	2.8	2.7	2.9	2.6	3.3
Swiss franc	0.2	0.3	0.3	0.4	0.2	0.2
Other currencies	1.6	1.4	1.2	1.4	1.9	1.8
Industrialised countries						
US dollar	73.5	72.5	72.7	68.9	70.5	71.5
Euro	16.1	17.1	18.0	22.4	22.1	20.9
Japanese yen	6.7	6.5	5.6	4.4	3.8	3.6
Pound sterling	2.2	2.0	1.9	2.1	1.5	1.9
Swiss franc	0.1	0.2	0.3	0.6	0.2	0.1
Other currencies	1.4	1.6	1.5	1.7	1.9	2.0
Developing and emerging market countries						
US dollar	68.2	68.2	68.6	64.0	60.7	59.9
Euro	19.9	20.6	21.8	26.1	28.9	29.2
Japanese yen	6.0	6.0	4.9	4.7	4.4	4.3
Pound sterling	3.7	3.6	3.6	3.8	3.9	4.8
Swiss franc	0.4	0.3	0.3	0.2	0.2	0.2
Other currencies	1.7	1.3	0.9	1.2	1.9	1.6

Source: IMF (2005).

Note: Due to methodological changes, data are not comparable with previously available figures (see box 5).

Box 5

CHANGES IN THE IMF'S METHOD OF COMPILING DATA ON THE CURRENCY COMPOSITION OF OFFICIAL FOREIGN EXCHANGE RESERVES

The revised figures published in the IMF's 2005 Annual Report reflect three main changes to the IMF's underlying database on the Composition of Official Foreign Exchange Reserves (COFER).

First, this year's data were compiled under a new rule which strictly limits the use of estimates when the currency composition of reserves is not reported to the IMF. In previously published data, the IMF often resorted to its own estimates when countries did not report the currency composition of their reserves. The new rule requires that any estimation of the currency composition is limited to short data gaps. Reserves held by non-reporting countries for which the currency composition was previously estimated have been moved to a new category called "unallocated reserves". As a consequence of the new rule, the reported currency shares are based on a substantially smaller country sample. While the rate of reporting compliance of industrial countries is close to 100%, the reserves of developing country reporters accounted for only 50% to 65% of total developing country reserves during the period from 1995 to 2004. According to the IMF, reporting compliance has been particularly low in Asia. The fact that the "reporting gap", measured as the difference between reserve holdings with a reported currency composition and total reserve holdings, is rising over time suggests that major Asian reserve accumulators are not included in the survey.

Second, the revised data now differentiate between "other currencies" (currencies other than the major ones identified in the table) and "unallocated currencies" (reserves held by countries that do/did not report to COFER). In previous years a category labelled "unspecified currencies" captured both foreign exchange reserves held in currencies other than the major currencies presented and reserves held by those non-reporting countries for which the currency composition was not estimated.

And third, the revised data also reflect data improvements resulting, in part, from new and revised figures reported by countries. These improvements entailed reclassifying some of the reserves that used to fall under "unspecified currencies" into the major currencies presented.

As a consequence of these changes, the revised figures are not directly comparable with those previously published. The revised figures are based on a smaller country sample which is composed only of countries which actually report their currency composition to the IMF. In that sense, the revised figures are more precise, but smaller in scope.

As major Asian reserve accumulators, which are believed to hold a comparatively small share of their reserves in euro, are apparently no longer part of the survey, the revised numbers show a higher euro share than previously published data, particularly in developing countries. According to the IMF, improved reporting by some countries, achieved by moving some reserve holdings previously labelled as "unspecified" into euro holdings, also contributed to a higher euro share.

Summing up, the revised IMF figures should be treated with caution and should not be interpreted as evidence of a global trend towards euro-denominated foreign exchange reserves. In order to enlighten the public debate on global reserve diversification trends, the ECB supports efforts to collect data on the currency composition of foreign exchange reserves from all IMF member countries.

Table 18 Currency composition of official holdings of foreign exchange, end of year

(in billions of SDR)

	2000	2001	2002	2003	2004
US dollar					
Change in holdings	90.6	51.5	-8.8	95.9	128.3
Quantity change	51.2	21.9	58.3	176.9	176.1
Price change	39.4	29.6	-67.1	-81.0	-47.8
Year-end value	802.2	853.8	845.0	940.9	1,069.2
Euro					
Change in holdings	34.0	25.8	67.5	54.8	42.1
Quantity change	37.8	29.5	41.4	21.9	29.3
Price change	-3.8	-3.7	26.1	32.9	12.8
Year-end value	213.9	239.7	307.2	362.0	404.1

Source: IMF (2005).

Evidence from the few central banks publishing the currency breakdown of their reserves (see Table 19) confirms that the share of the euro in official foreign exchange reserves is increasing in the new EU Member States and in EU neighbouring countries, while the evidence has been more mixed in mature economies which publish the currency composition of their reserves.

Significant increases in the euro's share in reserves holdings occurred in Latvia, which repegged its currency to the euro in January 2005 and entered ERM II in May 2005. Similarly, the euro's share increased considerably in Slovakia and Croatia. Both countries maintain a managed float exchange rate regime vis-à-vis the euro.

While the share of the euro in Canada's foreign exchange reserves remained stable, the United Kingdom increased its holdings of euro-denominated foreign exchange reserve holdings, mostly at the expense of the US dollar. By contrast, the share of the euro in official reserve holdings decreased over the review period in the remaining industrialised countries which report the currency composition of their reserves. In the United States, the euro's share in official foreign exchange reserves fell from 56% to 44%, while the share of the Japanese yen increased from 44% to 56%. In Australia, the trend of the

euro's share declining considerably continued. In Switzerland, the euro's share dropped from approximately 51% to 45%, mainly due to an increase in the share of pound sterling-denominated assets from approximately 5% to 10%.

1.3 THE EURO AS AN INTERVENTION CURRENCY

The functions of anchor, reserve and intervention currency are intricately intertwined. Under a floating regime, foreign exchange market interventions are infrequent, as they are mainly conducted to calm disorderly market conditions. By contrast, countries operating any form of exchange rate peg and managed float intervene regularly to achieve an exchange rate consistent with the chosen regime. In conducting interventions, they prefer to use the anchor currency.

As in the case of reserves, most authorities do not publish the currency composition of interventions. Press reports and publicly available statements by authorities indicate that several central banks in EU neighbouring countries intervened by using the euro as the intervention currency. This was also the case in most of the new EU Member States, particularly the Czech Republic, Hungary, Latvia, Slovakia and Slovenia. Moreover, by design, interventions in euro were conducted

Table 19 Currency breakdown of total foreign exchange reserves of selected countries

(percentages)

	Euro		US dollar		Japanese yen		Other currencies	
	June 2004	June 2005	June 2004	June 2005	June 2004	June 2005	June 2004	June 2005
G20 countries								
Australia	31	25	54	63	7	5	8 ¹⁾	7 ¹⁾
Canada	43	43	53	54	3	3	0	0
United Kingdom	50	56	36	31	14	12	0	0
United States	56	44	...	...	44	56	0	0
New EU Member States								
Latvia ²⁾	41	59	43	38	4	3	12	0
Lithuania	100	...	0	...	0	...	0	...
Slovakia	68	76	29	21	0	0	3	3
EU neighbouring countries								
Bulgaria	82	...	5	...	0	...	11 ¹⁾	...
Croatia	70	84	30	16	...	...	0 ³⁾	0 ³⁾
Iceland	40	...	40	...	5	...	15	...
Norway	53	54	39	38	...	...	8	9
Romania	54	...	32	...	...	...	5	...
Sweden	37	...	37	...	8	...	18	...
Switzerland	51	45	38	37	0	1.3	11	16
Other countries								
Colombia	13	...	84	...	3	...	0	...
Philippines	10	...	83	...	4	...	4	...

Sources: Websites of countries' authorities and ECB calculations.

Notes: Bulgaria: 2004 data refer to the 2004 average. Columbia: 2004 data refer to end-2004. Iceland: 2004 data refer to the investment guideline for 2004. Lithuania: 2004 data refer to the average of 2004. Norway: Euro and US dollar currency figures include other American and European currencies; other currencies include holdings in Japanese yen; 2005 figures as of March 2005. Philippines: 2004 data refer to end-2004. Romania: 2004 data refer to end-2004. United Kingdom: Data refer to March 2005.

1) Including SDRs and gold.

2) Latvia is a member of ERM II since May 2005 and has repegged from SDR to the euro in January 2005.

3) Including any holdings of Japanese yen.

by authorities of countries operating a euro-based currency board. In addition, Romania and some western Balkan countries were again active in the foreign exchange market in managing their exchange rate vis-à-vis the euro. The Croatian National Bank, which publishes details of its interventions in the

foreign exchange market, carried out its interventions almost exclusively in euro – they amounted to around €510 million during 2004. More recently, public statements by the Bank of Russia have suggested that, for the first time, the Russian central bank has intervened in the rouble/euro market (see Box 6).

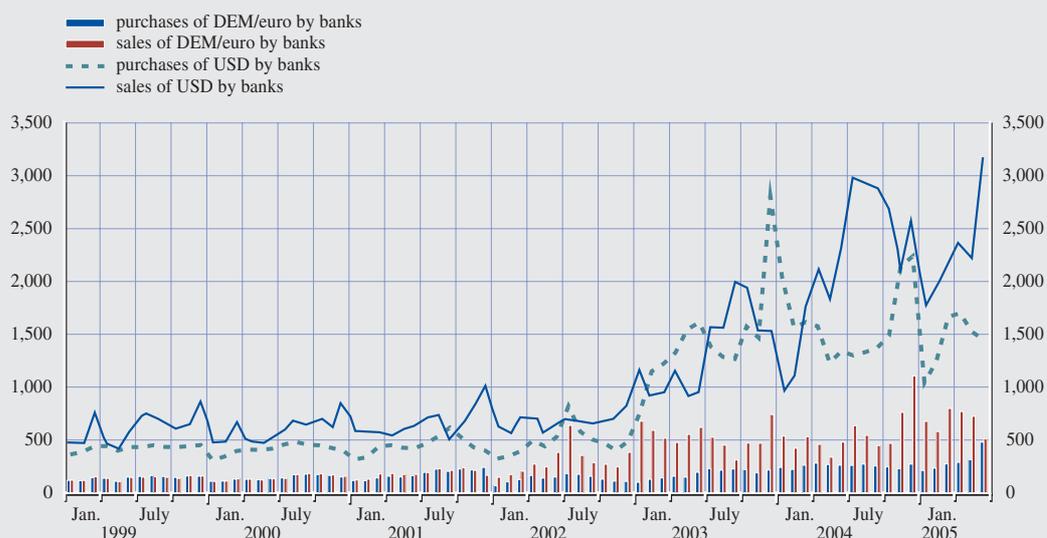
Box 6

THE ROLE OF THE EURO IN RUSSIA

Economic and financial links between the euro area and Russia have strengthened lasting recent years (see ECB, 2005). The euro area is Russia's most important trading partner, accounting for about 35% of Russia's total trade in goods. To some extent, these strengthening trade links may have motivated the Bank of Russia to take steps that have led to an increased role of the euro as an anchor and intervention currency.

Volume of cash transactions in US dollars and euro in Russia¹⁾

(USD millions)



Source: Central Bank of Russia and ECB calculations.
Notes: Bank purchase = customer sale; bank sale = customer purchase.
1) Between authorised banks and individuals.

Since 2003 the Bank of Russia's exchange rate policy has aimed to limit the real effective appreciation of the rouble against a trade-weighted currency basket composed of the currencies of a large number of Russia's trading partners. In February 2005, an operational US dollar/euro basket was introduced as a reference for the daily management of the rouble's exchange rate. The weight of the euro, initially set at 0.10, has now increased to 0.35, mirroring the proportion of Russia's trade which is carried out with the euro area. In line with this change in policy, daily volatility in the rouble/euro exchange rate has decreased slightly. Recently, public statements by the Bank of Russia have suggested that, for the first time, the Russian central bank has intervened in the rouble/euro market. According to the authorities, euro-denominated assets account for one-third of Russia's total foreign exchange reserves. With international reserve assets amounting to approximately USD 150 billion as at 30 June 2005, Russia is among the largest holders of euro-denominated foreign exchange reserves.

Data on foreign exchange cash transactions by authorised Russian banks also suggest that demand for euro cash by Russian households has increased since the euro cash changeover, mainly – as indicated by the seasonal pattern of banks' euro sales – for tourism purposes (see chart). By contrast, use of the euro as a vehicle currency in the foreign exchange market and as an investment and financing currency is still marginal. While the euro's share in the foreign assets of Russian banks rose from 6-7% in early 2002 to around 20% in early 2005, its share in banks' foreign liabilities has remained at 6-7%. Domestically, foreign banknotes and foreign exchange deposits are held mainly in US dollars, while the share of euro-denominated assets at BIS reporting banks has almost tripled from 11% in 2002 to 31% at the end of the first quarter of 2005 (see Box 3).

Summing up, while the role of the euro has been gradually increasing in Russia, the US dollar continues to be the most important currency in most cases.

2 PRIVATE USE: THE EURO AS A PARALLEL CURRENCY IN THIRD COUNTRIES

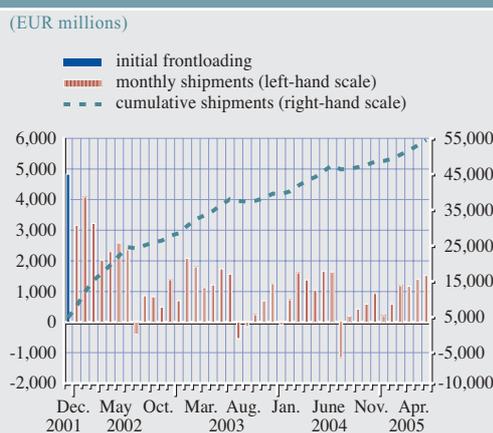
Residents of many developing, emerging market and transition economies hold a significant share of their financial assets in the form of foreign currency-denominated assets, mostly as foreign cash or foreign currency-denominated bank deposits. Holdings of euro banknotes and euro-denominated deposits outside the euro area can be considered one of the facets of the international role of the euro, in particular in EU neighbouring regions. This section provides updated information on the level of euro-based currency (sub-section 2.1) and asset substitution (sub-section 2.2) observed in these countries.

2.1 CURRENCY SUBSTITUTION – THE USE OF EURO BANKNOTES OUTSIDE THE EURO AREA

Given that holders of banknotes cannot be identified directly, information on non-resident demand for euro banknotes can only be derived indirectly and with a considerable amount of uncertainty.⁴⁶

For example, one way of estimating the amount of euro banknotes circulating abroad is by totalling over time the net shipments of euro banknotes by euro area monetary and financial institutions (MFIs) to destinations outside the euro area.⁴⁷ Following the relatively large shipments observed as a result of the euro cash changeover, shipments of euro banknotes by banks to destinations outside the euro area have started to stabilise and appear to be exhibiting an increasingly seasonal pattern (see Chart 10).⁴⁸ As a result of net shipments being mostly positive, the stock of euro banknotes accumulated outside the euro area continues to increase gradually. In the period between June 2004 and June 2005 net shipments of euro banknotes to destinations outside the euro area amounted to €8.7 billion, compared with €9.4 billion in the twelve months ending in June 2004.⁴⁹ In June 2005 the cumulative stock of euro banknotes shipped in net terms by euro area MFIs to destinations outside the euro area stood at around €55

Chart 10 Net shipments¹⁾ of euro banknotes to destinations outside the euro area



Source: Eurosystem.
1) Net shipments = Euro banknotes sent abroad minus euro banknotes received.

billion, compared with €46 billion in June 2004.

However, such an estimate has to be considered as rough at best, as transfers of euro banknotes to and from the euro area also take place through other channels, such as tourism, workers' remittances or activity in the grey economy. It also has to be considered as a lower-bound estimate, as anecdotal evidence suggests that the outflows of euro banknotes via non-MFI channels can often be considered to be more important than the backflow of euro banknotes via non-bank channels.

46 For a more complete overview of the methods for estimating non-resident demand for euro banknotes, see Boxes 7 and 8 in the *Review of the international role of the euro* published by the ECB in January 2005.

47 Net shipments are defined as shipments of euro banknotes by euro area MFIs to destinations outside the euro area minus the return of euro banknotes from destinations outside the euro area to euro area MFIs.

48 The information was compiled in cooperation with the national central banks of the Eurosystem.

49 The order of magnitude of these estimates for the annual net outflow of euro banknotes (less than €9 billion) indicates that the impact of non-resident demand for euro banknotes on the annual growth rates of euro area monetary aggregates in the past year has been negligible.

2.2 ASSET SUBSTITUTION – THE USE OF EURO-DENOMINATED BANK DEPOSITS

The euro cash changeover was accompanied in many EU neighbouring countries by a strong increase in euro-denominated deposits, probably related in part to a substitution of euro legacy currency banknotes with euro-denominated deposits. Following a period of slower growth for such deposits (see ECB, 2005), during the review period the share of euro-denominated deposits increased in most new Member States and EU acceding and accession countries (see Table 20).⁵⁰ In

addition, the share of euro-denominated deposits increased in some countries in the Commonwealth of Independent States (CIS) and the Middle East. In the CIS region, the euro's share in deposits is gradually increasing from a low base. In the case of Moldova, strong links with the EU acceding country Romania are likely to have contributed to the considerable rise in euro-denominated deposits. As regards mature economies, the share of euro-denominated deposits has

⁵⁰ Data at the country level should be interpreted with care as the methodologies in compiling the respective statistics might differ.

Table 20 Outstanding euro-denominated bank deposits in selected countries and dependent territories

	Absolute amounts (EUR millions)			As a percentage of total deposits		As a percentage of foreign deposits	
	mid-2004	latest 2005	as of	mid-2004	latest 2005	mid-2004	latest 2005
Cyprus	2,243	2,834	May 2005	9.4	11.0	25.0	26.7
Czech Republic	3,639	4,383	May 2005	6.5	7.3	63.7	68.0
Estonia	453	661	May 2005	12.3	13.3	42.8	49.1
Hungary	2,878	3,461	June 2005	9.9	10.3	67.4	70.0
Latvia	1,713	3,533	May 2005	20.7	33.0	28.6	43.3
Lithuania	542	679	May 2005	12.8	12.0	50.4	44.4
Malta	935	939	May 2005	10.8	10.3	31.4	27.7
Poland	5,176	5,924	May 2005	7.5	6.9	45.0	48.0
Slovakia	2,881	1,330	May 2005	13.1	7.8	70.6	66.4
Slovenia	n/a ²⁾	9,767	May 2005	n/a ²⁾	45.8	n/a ²⁾	91.0
Bulgaria	1,752	2,470	May 2005	26.9	29.6	51.9	59.7
Romania	1,325	2,545	June 2005	12.3	11.1	29.8	29.0
Croatia	9,396	9,301	March 2005	54.4	55.0	86.0	86.6
Turkey	8,597	11,439	May 2005	9.3	9.6	20.9	23.8
Albania	367	523	May 2005	14.8	17.7	48.9	54.8
Bosnia and Herzegovina	1,056	1,249	April 2005	40.7	40.3	86.7	85.2
Kosovo	954	1,040	June 2005	100.0	97.6	- ¹⁾	- ¹⁾
FYR Macedonia	504	606	May 2005	51.1	48.9	79.1	79.3
Montenegro	209	326	June 2005	92.4	93.1	- ¹⁾	- ¹⁾
Serbia	1,043	n/a ²⁾	-	84.0	n/a ²⁾	87.5	n/a ²⁾
Belarus	100	155	June 2005	4.4	4.8	8.8	11.2
Moldova	68	105	May 2005	15.7	17.7	31.6	42.5
Ukraine	519	911	May 2005	4.4	5.7	14.5	16.5
Denmark	33,770	41,409	May 2005	13.4	14.6	39.3	41.1
Sweden	26,172	38,239	May 2005	9.3	11.5	35.6	41.5
Switzerland	25,497	28,431	May 2005	7.0	8.0	38.5	41.9
United Kingdom	1,393,467	1,662,840	May 2005	23.1	24.2	40.6	41.6
Egypt	1,993	2,397	June 2005	3.2	3.2	9.9	10.8
Israel	7,094	7,214	May 2005	6.8	6.5	21.4	21.0
Lebanon	1,773	1,926	March 2005	4.1	4.6	6.2	5.9
Saudi Arabia	1,054	1,405	May 2005	1.2	1.3	6.5	8.8
South Africa	658	616	May 2005	0.5	0.5	13.5	13.5

Sources: National central banks and ECB calculations.

Note: Data may be subject to revision.

1) The euro is legal tender.

2) Previous figures not comparable.

remained relatively stable, with the exception of in Sweden.

With regard to asset substitution in cash holdings, surveys carried out by the

Oesterreichische Nationalbank indicate that the share of the euro in cash holdings by individuals in central, south-eastern and eastern Europe has continued its upward trend over the years in most countries (see Box 7).

Box 7

THE EURO IN CENTRAL, SOUTH-EASTERN AND EASTERN EUROPE – SURVEY RESULTS

Surveys conducted by the Oesterreichische Nationalbank¹ in Croatia, Hungary, the Czech Republic, Slovenia and Slovakia since 1997 reveal important information about the role played by cash holdings in foreign currencies, including the euro, in these countries.

Before the euro cash changeover, the Deutsche Mark was the most important foreign currency in these countries, but its share was declining. Available figures which summarise the evolution of respondents' euro and US dollar cash holdings since 2002 clearly show that the trend over the years in the Czech Republic, Hungary, Slovakia and Slovenia has been for the share of euro holdings to increase. In Croatia, the euro's share has been more or less constant for several years. In the spring of 2005 about 48% of Slovenians, 33% of Czechs, 29% of Croats, 27% of Slovaks and 10% of Hungarians were holding euro cash balances. It is noteworthy that the figures in Slovakia, Slovenia and Hungary are now higher than the corresponding figures for the Deutsche Mark were in the late 1990s. A similar development can also be observed in the amounts of euro that circulate in all five countries. In comparison with the 1990s, demand for the euro was low at the end of 2001. However, survey estimates indicate a steady increase, totalling 60%, between 2002 and 2005.²

US dollars, in turn, are held by a much smaller proportion of respondents, and this share has remained more or less constant. At the same time, the surveys indicate that the amount of US dollars circulating in those countries has declined by about 23% since 2002.

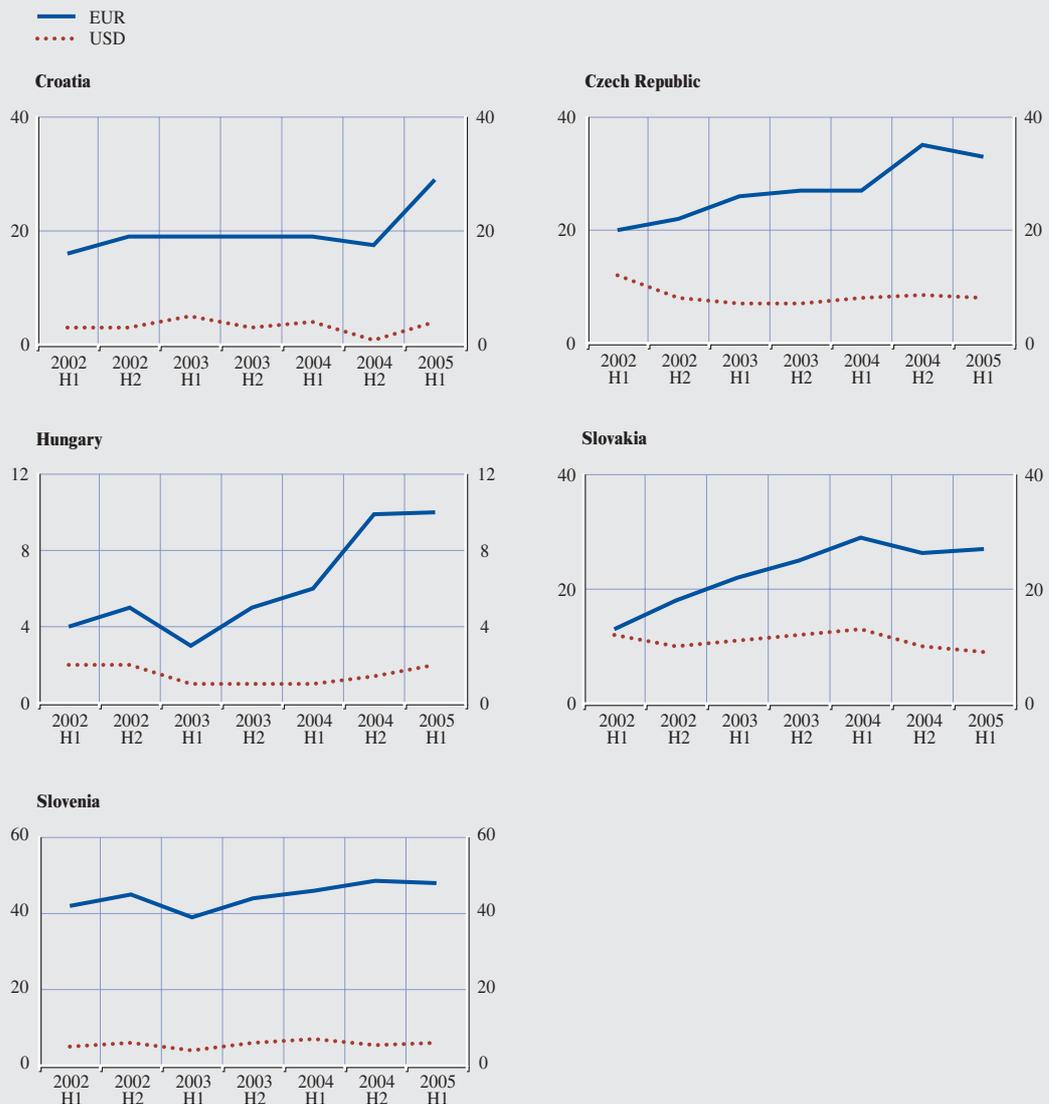
A comparison of survey participants' responses from 1999 and 2000 on their motives to hold Deutsche Mark with participants' responses from 2004 and 2005 on their motives to hold euro reveals some interesting changes. In particular, the transaction demand motive ("spending abroad") has increased in the Czech Republic, Slovakia and Slovenia. In Hungary, the motive "spending at home" has increased. For Croatia, no change in motives can be observed. In absolute terms, the general reserve motive still dominates as the reason for euro holdings in Croatia (72% of those holding euro) and Slovenia (55%), while "spending abroad" is the most important motive for euro holdings in the Czech Republic (87%), Slovakia (68%) and Hungary (56%).

As far as the use of the euro for payments in the respective countries is concerned, survey respondents were asked whether they had noticed that it was possible to make payments in euro

¹ About 1,000 people over the age of 14 were interviewed per survey and country in April/May, and then again in October/November. For a detailed description see Stix (2001, 2004) and Nauschnigg (2003).

² This value may be overestimated due to an unusually high value of foreign currency holdings in Croatia in the May 2005 survey. Even without Croatia, holdings have still increased by 36%.

Foreign currency holdings in percent of respondents



Source: Surveys conducted by the Oesterreichische Nationalbank.
 Note: Figures show the percentage of respondents that hold foreign cash.

in their country. In total, 58% of Slovenians, 53% of Czechs and about 40% of Hungarians and Slovaks answered that they were aware of this possibility. Of those who were aware, a solid majority (between 64% and 82% of Slovaks, Slovenians and Czechs) believed that euro payments occurred more frequently than it had been the case six months earlier. Also, the results point towards some use of the euro for domestic payments by residents. When asked whether only tourists were making payments in euro or whether both tourists and locals were doing so, almost 70% of respondents in Hungary and Slovenia answered that both tourists and locals were paying in euro, while in Slovakia the answers were balanced. These figures are in contrast to the Czech Republic, where about 62% answered that only tourists made payments in euro.

CONCLUSIONS

In the period under review, the euro continued to expand some facets of its role as an international currency, while in other market segments a levelling-off has set in.

In particular, the share of the euro in the stock of international debt securities has continued to gradually increase. Given the magnitude of the stocks involved, the increase of the euro's share in global bond markets is naturally a very gradual process. In other global markets, such as international loan and deposit markets and the global foreign exchange market, the euro showed signs of stability during the period under review.

With regard to the use of the euro in international trade, the increases seen in previous years have continued in some countries, while in others use appears to have levelled off. In addition, the tentative findings of the special focus suggest that the euro does not exhibit some of the patterns that are traditionally associated with vehicle currencies in international trade. Moreover, the robustness of institutional factors in explaining the developments in the use of the euro in international trade confirms the regional pattern that characterises other aspects of the internationalisation of the euro.

During the review period, the use of the euro as an anchor and intervention currency increased in a number of third countries. This phenomenon was increasingly observed in the new EU Member States, in the EU acceding and accession countries and in other EU neighbouring regions, again suggesting that institutional factors along with geographic proximity and strong trade links are important drivers of these developments. As regards the share of the euro in official foreign exchange reserves, the available evidence remains limited, in particular with respect to developing countries.

As far as the use of the euro as a parallel currency is concerned, evidence on net shipments of banknotes indicates that some

stabilisation has set in. However, transfers of euro banknotes to and from the euro area could also have taken place through channels other than MFIs. The share of the euro in the deposits of third countries, on the other hand, has increased in most new Member States, EU acceding and accession countries and other countries neighbouring the EU, confirming the geographic focus of the euro's international use.

DATA SHEET

	This review (latest data available)	Previous review
The euro in international debt markets		
Share of the euro in:		
– globally defined stock of debt securities ¹⁾	2005 Q1: 27.3%	2004 Q1: 25.6%
– broadly defined stock of international debt securities ¹⁾	2005 Q1: 46.6%	2004 Q1: 43.2%
– narrowly defined stock of international debt securities ¹⁾	2005 Q2: 31.5%	2004 Q2: 30.7%
– narrowly defined issues of international bonds and notes (gross issues at current exchange rates)	2005 Q2: 34.9%	2004 Q2: 36.1%
– narrowly defined issues of international money market instruments (gross issues at current exchange rates)	2005 Q2: 37.1%	2004 Q2: 35.5%
– bond portfolio sample surveyed by <i>The Economist</i>	mid-2005: 30%	mid-2004: 27%
– portfolios of funds under management in the United States and Canada included in eMaxx database	mid-2005: 0.7%	mid-2004: 0.6%
– portfolios of funds under management in non-euro area Europe included in eMaxx database	mid-2005: 26.2%	mid-2004: 32.1%
The euro in international loan and deposit markets		
Share of the euro in:		
– cross-border loans from euro area banks to non-bank borrowers outside the euro area ¹⁾	2005 Q1: 37.4%	2004 Q1: 37.9%
– cross-border loans from non-euro area banks to non-bank borrowers in the euro area ¹⁾	2005 Q1: 54.1%	2004 Q1: 54.1%
– cross-border loans from non-euro area banks to non-bank borrowers outside the euro area ¹⁾	2005 Q1: 6.2%	2004 Q1: 4.9%
– cross-border deposits of non-euro area non-banks in banks in the euro area ¹⁾	2005 Q1: 50.6%	2004 Q1: 51.1%
– cross-border deposits of euro area non-banks in banks outside the euro area ¹⁾	2005 Q1: 51.5%	2004 Q1: 54.2%
– cross-border deposits of non-euro area non-banks in banks outside their country of residence excluding the euro area ¹⁾	2005 Q1: 8.4%	2004 Q1: 7.7%
The euro in foreign exchange markets		
Share of the euro in:		
– total foreign exchange turnover ²⁾	April 2004: 37.2%	April 2001: 37.6%
– daily settlement with CLS ²⁾	30 June 2005: 43%	30 June 2004: 44%
The euro in trade in goods and services		
Share of the euro in:		
– settlement/invoicing of exports of goods to non-euro area residents of a number of euro area countries	2004: 44% to 63%	2003: 47% to 63%
– settlement/invoicing of imports of goods from non-euro area residents of a number of euro area countries	2004: 41% to 61%	2003: 40% to 60%
– settlement/invoicing of exports of services to non-euro area residents of a number of euro area countries	2004: 14% to 71%	2003: 16% to 70%
– settlement/invoicing of imports of services from non-euro area residents of a number of euro area countries	2004: 22% to 72%	2003: 20% to 69%
The euro in third countries		
– number of countries or territories whose exchange rate regimes were linked to the euro	mid-2005: 50	mid-2004: 50
– share of the euro in global foreign exchange reserves (as per new IMF methodology)	end-2004: 24.9%	end-2003: 25.3%
– cumulative net shipments of euro banknotes to destinations outside the euro area	June 2005: €55 billion	June 2004: €46 billion
– total stock of euro-denominated bank deposits in EU neighbouring regions ³⁾	June 2005: €68.0 billion	June 2004: €57.9 billion
1) At constant 1994 Q1 exchange rates.		
2) Given the convention to account for both sides of each trade in foreign exchange markets, percentages add up to 200%, meaning that the euro's actual share, in total turnover is half the percentage reported in this key data sheet.		
3) Data refer to 27 countries and territories for which data are available for both 2004 and 2005, excluding Denmark, Sweden, Switzerland and the United Kingdom (which are shown in Table 20).		

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