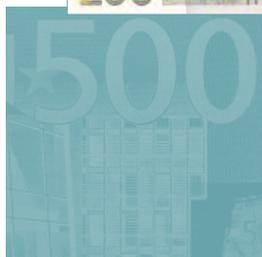






EUROPEAN CENTRAL BANK

EUROSYSTEM



# FINANCIAL INTEGRATION IN EUROPE

APRIL 2009

In 2009 all ECB  
publications  
feature a motif  
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€200 banknote.

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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.europa.eu>

**Fax**

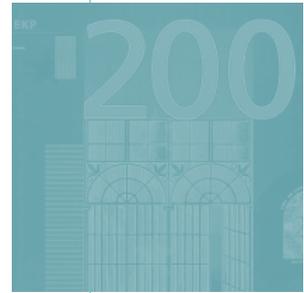
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*Unless otherwise stated, this document uses data available as end-February 2009.*

ISSN 1830-7140 (print)

ISSN 1830-7159 (online)



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## ABBREVIATIONS

### COUNTRIES

BE	Belgium	LU	Luxembourg
BG	Bulgaria	HU	Hungary
CZ	Czech Republic	MT	Malta
DK	Denmark	NL	Netherlands
DE	Germany	AT	Austria
EE	Estonia	PL	Poland
IE	Ireland	PT	Portugal
GR	Greece	RO	Romania
ES	Spain	SI	Slovenia
FR	France	SK	Slovakia
IT	Italy	FI	Finland
CY	Cyprus	SE	Sweden
LV	Latvia	UK	United Kingdom
LT	Lithuania	JP	Japan
US	United States	CH	Switzerland

### OTHERS

ABS	Asset-backed securities
ACH	Automated clearing house
ACI	Financial Markets Association
AMEX	American Stock Exchange
BEEPS	Business Environment and Enterprise Performance Survey
BIS	Bank for International Settlements
BSC	Banking Supervision Committee
CCBM	Correspondent Central Banking Model
CCBM2	Collateral Central Bank Management
CCP	Central counterparty
CD	Certificate of deposit
CDO	Collateralised debt obligation
CDS	Credit default swap
CEBS	Committee of European Banking Supervisors
CESAME	Clearing and Settlement Advisory and Monitoring Expert Group
CESR	Committee of European Securities Regulators
CFS	Center for Financial Studies
CLS	Continuous Linked Settlement
CP	Commercial paper
CPIS	Coordinated Portfolio Investment Survey
CPSS	Committee on Payment and Settlement Systems
CSD	Central securities depository
CSM	Clearing and settlement mechanism
DTCC	The Depository Trust & Clearing Corporation
EA	Euro area
EACHA	European Automated Clearing House Association
EALIC	European Association of Listed Companies
EBF	European Banking Federation
EBRD	European Bank for Reconstruction and Development
ECB	European Central Bank
ECOFIN	Council of Economic and Finance Ministers

ECP	Euro commercial paper
ECSA	European Credit Sector Association
ECSDA	European Central Securities Depository Association
EFAMA	European Fund and Asset Management Association
EFMLG	European Financial Markets Lawyers Group
e-MID	Italian electronic market for interbank deposits and overnight indexed swaps
EMU	Economic and Monetary Union
EONIA	Euro overnight index average
EPC	European Payments Council
ESCB	European System of Central Banks
ESI	Eurosystem Single Interface
ESSF	The European Securities Services Forum
EU	European Union
EUREPO	Repo market reference rate for the euro
EURIBOR	Euro interbank offered rate
EX	Euronext countries
FISCO	Clearing and Settlement Fiscal Compliance expert group
FSF	Financial Stability Forum
GDP	Gross domestic product
ICPF	Insurance corporations and pension funds
ICSD	International CSD
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IPO	Initial public offering
ISDA	International Swaps and Derivatives Association
LCG	Legal Certainty Group
LVPS	Large-value payment system
M&A	Merger and acquisition
MFI	Monetary financial institution
MIF	Multilateral interchange fee
MiFID	Markets in Financial Instruments Directive
MIR	MFI interest rate
MMF	Money market fund
NASDAQ	National Association of Securities Dealers Automated Quotations
NCB	National central bank
NTMA	National Treasury Management Agency
NYSE	New York Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OFI	Other financial intermediary
OIS	Overnight index swap
OLS	Ordinary least squares
OTC	Over the counter
PE	Private equity
PHA	Proprietary Home Account
PSD	Payment Services Directive
R&D	Research and development
RMBS	Residential mortgage-backed securities
RTGS	Real-time gross settlement
SCT	SEPA Credit Transfer

SDD	SEPA Direct Debit
SEPA	Single Euro Payments Area
SME	Small and medium-sized enterprise
SMPG	Securities Market Practice Group
SPV	Special purpose vehicle
SSP	Single shared platform
SSS	Securities settlement system
STEP	Short-Term European Paper
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
T2S	TARGET2-Securities
UNIDROIT	International Institute for the Unification of Private Law
UNIQUE	Union of Issuers Quoted in Europe
UR	User requirements
VC	Venture capital
WBES	World Business Environment Survey
WFE	World Federation of Exchanges
YIC	Young innovative company

# PREFACE

## INTRODUCTION

The main purpose of the ECB report on “Financial Integration in Europe” is to contribute towards the advancement of European financial integration by raising public awareness of the importance of this process and the Eurosystem’s role in supporting it.<sup>1</sup>

The Eurosystem has a keen interest in the integration and efficient functioning of the financial system in Europe, particularly in the euro area.<sup>2</sup> First, financial integration is of key importance for the conduct of the single monetary policy, as a well-integrated financial system enhances the smooth and effective transmission of monetary policy impulses throughout the euro area. Second, financial integration is relevant to the Eurosystem’s task of contributing to financial stability, as it enhances opportunities for risk diversification and improves access to funding and liquidity in the financial markets; at the same time, it increases the scope for spill-over effects and contagion across borders. Third, financial integration is fundamental to the Eurosystem’s task of promoting the smooth operation of payment systems, which also relates to its keen interest in the safe and efficient functioning of securities clearing and settlement systems. Fourth, the Eurosystem supports, without prejudice to the objective of price stability, the aim of the Lisbon agenda to complete the Single Market in order to realise the full economic potential of the European Union.

The Eurosystem fully supports the efforts of the private sector and the European institutions to enhance the integration and development of the European financial system. In particular, the ECB works in very close cooperation with the European Commission, which has primary responsibility in this field. As such, this ECB report complements the monitoring work of the European Commission in the area of European financial integration.<sup>3</sup> It focuses mainly on issues related to the ECB’s core tasks and on developments pertaining to the euro area. Where relevant, however, issues will be addressed from an EU perspective.

## THE ECB’S WORK IN THE FIELD OF FINANCIAL INTEGRATION<sup>4</sup>

The ECB considers the market for a given set of financial instruments or services to be fully integrated when all potential participants in such a market: (i) are subject to a single set of rules when deciding to buy or sell those financial instruments or services; (ii) have equal access to this set of financial instruments or services and (iii) are treated equally when they operate in the market.<sup>5</sup> Building on this definition, the ECB has developed quantitative indicators of financial integration in the euro area, which provide the basis for an assessment of the current level of financial integration and its evolution over time. These indicators are discussed in greater detail in Chapter I and the statistical annex to the report.

Chapter II consists of Special Features presenting in-depth assessments of selected issues relating to financial integration. The topics are mainly selected on the basis of their importance to the EU’s financial integration agenda and their relevance for the pursuit of the ECB’s tasks. Some of the Special Features also contain analytical articles on the subject of financial integration and financial development.

- 1 This is the third report published by the ECB on this subject. The first was published in March 2007 and the second in April 2008. All reports are available at <http://www.ecb.europa.eu/pub/html/index.en.html>.
- 2 The Governing Council of the ECB formulated the Eurosystem’s mission statement: “We in the Eurosystem have as our primary objective the maintenance of price stability for the common good. Acting also as a leading financial authority, we aim to safeguard financial stability and promote European financial integration.” (For more details: <http://www.ecb.int/ecb/orga/escb/html/mission/eurosys.en.html>.)
- 3 See in particular the European Commission’s annual European Financial Integration Report.
- 4 See also the ECB Monthly Bulletin articles entitled “The integration of Europe’s financial markets” (October 2003), “The contribution of the ECB and the Eurosystem to European financial integration” (May 2006), and the article “Financial integration” in the special edition of the Monthly Bulletin on the occasion of the 10th anniversary of the ECB (May 2008).
- 5 The term “market” is used in a broad sense, covering all possible exchanges of financial instruments or services, be these via an organised market, such as a stock exchange, or via an over-the-counter market created by a financial institution supplying a financial instrument or service.

Chapter III gives an overview of the main Eurosystem activities over the past year that foster financial integration. The Eurosystem contributes to financial integration in four ways: (i) by giving advice on the legislative and regulatory framework for the financial system and on direct rule-making; (ii) by acting as a catalyst for private sector activities, thus facilitating collective action; (iii) by enhancing knowledge, raising awareness and monitoring the state of European financial integration and (iv) by providing central bank services that also foster European financial integration.

#### SCOPE OF THIS YEAR'S REPORT

This year's report focuses to a large extent on the impact of the recent financial turmoil on the financial integration process. The core question being examined is whether and to what extent the financial turmoil ongoing since mid-2007 has led or may lead to a retrenchment of financial markets within national borders and, thus, to a reversal of the European financial integration process. This issue is investigated in detail from several perspectives, in particular in Chapter I and in the first Special Feature of Chapter II. Although conclusions at this stage must necessarily be preliminary since the turmoil is still unfolding, early indications suggest signs of retrenchment within national borders. Going forward, heightened vigilance and monitoring of the functioning of the single European financial market will be necessary.

As announced last year, the scope of the report has been extended to encompass aspects of financial development alongside integration. The performance of a financial system depends on its degree of development, linked in turn to the institutional environment, including laws, regulations and corporate governance structures. To capture these new aspects, specific new financial development indicators have been included in Chapter I and the statistical annex. The second Special Feature in Chapter II discusses institutional investors, the importance of which has grown along with the financial development process, and in particular their

role in financial integration. The third Special Feature addresses the financing conditions of small and medium-sized enterprises and young innovative companies, explaining, for example, how their vital role for the euro area economy could be supported through further development of the venture capital industry.

While financial integration and development are normally associated with better market performance, experience of the ongoing crisis shows that distorted incentives can have the effect that some financial innovations are at times implemented in ways that increase information asymmetries and encourage excessive leverage and risk-taking in the financial system. This confirms the importance of considering financial development and integration in tandem.

## EXECUTIVE SUMMARY

The report comprises three main chapters.

Chapter I, together with the statistical annex, sets out the ECB's assessment of the degree of financial integration and some aspects of development in the different segments of the euro area financial system. Based on a set of quantitative indicators, the analysis covers the money, bond, equity and banking markets, as well as the underlying market infrastructures. The chapter highlights those market segments that are lagging behind and points to a few salient implications of the financial turmoil for the integration process.

The degree of integration varies considerably across the different market segments, depending partly on the characteristics of the underlying market infrastructures. Moreover, the developments preceding the financial crisis must be distinguished from the more recent ones. The segment closest to the single monetary policy, the euro area money market, continued to be highly integrated before the intensification of the financial crisis in autumn 2008, supported by the high degree of integration of the underlying large-value payment systems. The recently introduced second generation TARGET system has established an even more uniform wholesale payment service in the euro area. A considerable degree of integration has been achieved in bond markets and, to an increasing extent, in euro area equity markets. The euro area banking markets for wholesale and capital market-related activities also show clear signs of increasing integration. The retail banking segment, by contrast, remains rather fragmented, as does the underlying market infrastructure. The Single Euro Payments Area (SEPA), once fully implemented, is expected to enhance the integration of the euro area retail payment infrastructure.

The money market, and to different degrees the government bond markets, have been hit particularly hard by the financial turmoil, as reflected in a sharp increase in interest rate differences across euro area countries. The

generalised market disruption has exerted a strong negative impact on the interbank money market, leading to segmentation along national borders. At the same time, it should be considered that some of the large movements displayed by the quantitative indicators of integration following the turmoil could be the result of temporary market overreactions.

In Chapter II, *the first Special Feature, entitled "The impact of the financial crisis on euro area financial integration"*, investigates in some detail how the financial turmoil has affected money, bond, equity and banking markets. Although the turmoil has been sizeable in all financial markets, some segments have been more affected than others. The money and bond markets in particular have been affected by sharply increased liquidity and credit risk concerns. European equity markets have shown highly synchronised movements, prima facie suggesting no notable reduction in their degree of integration. The financial turmoil is also discouraging a variety of cross-border banking activities (interbank lending and deposit-taking, securities holdings), which declined in autumn 2008 relative to domestic business. Conversely, traditional retail business such as lending or deposit-taking with foreign non-bank clients whose movements are typically more inertial, do not seem to have been much affected so far.

While these developments, on the whole, suggest that the turmoil has significantly affected euro area financial integration in a number of key sectors, caution should be exercised before drawing definitive conclusions. The crisis is still unfolding and, once more stable conditions return to financial markets, the long-term drivers of financial integration will continue to operate. Moreover, it is not excluded that some of the major European market players with a global reach focus again on their European activities, as their biggest risks were located outside Europe. Going forward, enhanced vigilance on developments of financial integration will be required.

*The second Special Feature is entitled "Institutional investors and financial integration".* Institutional investors, which include investment funds, insurance companies and pension funds, have become major collectors of household savings and important shareholders of firms and banks in Europe.

Through their portfolio choices, and in particular through their inherent geographical diversification, institutional investors make an important contribution to European financial integration. Euro area investment funds, in particular, have over the past decade substantially increased the fraction of their portfolios invested in equities from other euro area countries at the expense of domestic equities. During the turmoil, the value of overall assets managed by institutional investors has shrunk considerably. This by itself tends to impede integration, even though their cross-border portfolio allocation strategies within the euro area do not seem to have been greatly affected as yet.

*The third Special Feature looks at "Financing of small and medium-sized enterprises and young innovative companies in Europe".* Small and medium-sized enterprises (SMEs) account for the bulk of European employment and are important for the conduct of monetary policy, given their reliance on bank financing. Young innovative companies (YICs), a special class of SME, are particularly relevant for the development of new technologies.

SMEs are subject to more stringent financial constraints than other firms, owing to their higher degree of information opacity, higher risk profiles and lower available collateral. This may result in sub-optimal investment, especially in research and development (R&D), ultimately translating into low innovation and economic growth. Access to finance by SMEs could be facilitated by improving the structure of credit markets (e.g. in terms of banking competition and financial integration) and stimulating the venture capital industry (e.g. through the development and proper design of exit markets and an appropriate prudential regulatory framework).

Chapter III provides an overview of the main activities that the Eurosystem pursued in 2008 with the aim of advancing financial integration in the euro area.<sup>6</sup>

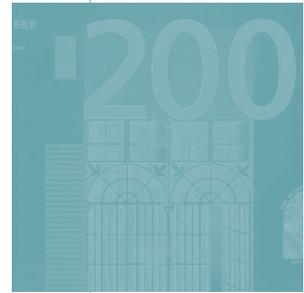
First, as regards the provision of advice on *the legislative and regulatory framework for the financial system*, in view of the financial turmoil, the Eurosystem issued recommendations and legal opinions on measures by national authorities aiming at stabilising the banking system (such as government guarantees for bank debt and bank recapitalisations). In the area of securities clearing and settlement systems, the Eurosystem's main contributions related to the implementation of the Code of Conduct for Clearing and Settlement, the further removal of the so-called Giovannini barriers and the finalisation of the ESCB-CESR recommendations for securities settlement systems and central counterparties.

Second, with respect to *the catalytic role of the ECB and the Eurosystem* for private sector activities, the SEPA project developed favourably following the SEPA launch for credit transfers and cards in 2008, but important challenges nevertheless remain. The market for Short-Term European Paper (STEP) further expanded despite the financial turmoil and the Eurosystem continued to support the initiative.

Third, regarding *enhancing knowledge, raising awareness and monitoring the state of financial integration*, the ECB pursued its work on financial integration and development indicators, as well as on financial market statistics. The ECB was also involved in various research initiatives related to financial integration.

Finally, regarding *central bank services that foster financial integration*, the migration to the second generation TARGET system was successfully completed. In addition, the Governing Council of the ECB formally approved the TARGET2-Securities (T2S) project and the single technical platform for Eurosystem collateral central bank management (CCBM2).

<sup>6</sup> Chapter III also expands on the chapter on financial integration in the ECB Annual Report.



# CHAPTER I

## RECENT DEVELOPMENTS IN FINANCIAL INTEGRATION IN THE EURO AREA

*This chapter presents the ECB's assessment of the progress of financial integration in the euro area, based on a set of financial integration indicators developed and regularly updated by the ECB.<sup>1</sup> The annex to this report contains additional indicators and the methodological notes.*

### I INTRODUCTION

This chapter reviews the most significant developments in 2008 in the money, bond, equity and banking markets. It contains two main novelties with respect to previous reports. First, the scope of the report is extended to cover indicators of financial development. Second, the discussion this year focuses on the impact of the financial turmoil on the degree of financial integration in the euro area.

While financial integration is an important factor in increasing the efficiency of a financial system, the latter also depends on other elements such as the degree of development of the financial system and the quality of the institutional environment, including laws, regulations, corporate governance structures, monetary authorities, market infrastructures, and political and cultural factors determining the financial market framework conditions. The theoretical underpinnings of financial development and its relationship with financial integration were explained in a special feature of the previous Report on Financial Integration in Europe.

Financial development can be defined as a process of financial innovation and organisational improvements that reduces asymmetric information, increases the completeness of markets, adds possibilities for agents to engage in financial transactions through (explicit or implicit) contracts, reduces transaction costs and increases competition.

Financial integration and financial development are distinct yet at the same time interconnected because they both affect the performance of a financial system. Integration generates competitive pressures on financial intermediaries, creates economies of scale, increases overall market liquidity and improves the scope for diversification and risk sharing. Nevertheless, frictions in financial markets can persist even in a perfectly integrated financial market. An important source of frictions is asymmetric information among economic agents active in the financial system. As illustrated by the problems in interbank markets that have been emerging since the summer of 2007, such informational frictions can balloon during times of distress and thereby significantly reduce the efficiency of the financial intermediation process. In the presence of extraordinary uncertainty surrounding counterparty risks, banks charge higher interest rates in compensation for accepting such risks. In extreme situations – such as those prevailing in September and October 2008 – banks may choose to exit the market and hoard liquidity in the form of central bank money. Some banks were even locked out of the money market completely.

While both financial integration and financial development are usually associated with better economic performance, in particular over longer periods of time, recent experience suggests that financial innovation “per se” does not always lead to desirable outcomes. This was the case, for instance, for certain credit instruments that grew particularly fast in recent years and may have been used in ways contributing to increased asymmetric information or even lack of information, distort incentives and encourage extreme risk-taking. To properly assess the efficiency and functioning of the euro area financial system it is therefore important to broaden the analysis and cover wider aspects of financial development.

<sup>1</sup> For a biannual update of the indicators, see the ECB's website at <http://www.ecb.int/stats/finint/html/index.en.html>.



Progress in financial development will be illustrated using five specific indicators: the overall size of capital markets; the commercial paper market (and its STEP component); the corporate bond market; the information processing capacity of equity markets and finally venture capital financing. In particular, venture capital is a potentially important source of financing for SMEs and YICs, which play a central role in the euro area economy. There is evidence that these firms tend to face more stringent financial constraints, which in turn may adversely affect their ability to invest in R&D and innovate. Special Feature C discusses in detail recent developments in the financing of SMEs and YICs in Europe.

The second new aspect of this chapter is its focus on the effects of the 2007-08 financial turmoil on the state of financial integration in the euro area. The available evidence shows that the financial turmoil has considerably affected the money and government bond markets, while the corporate bond, equity and retail banking markets have so far been affected less or not at all. Usual indicators of integration – such as the cross-country standard deviations of money market rates, or government bond spreads – deteriorated gradually over the past year and worsened dramatically in the last months of 2008. The extent to which the generalised market disruption has resulted in a retrenchment within national borders (cross-border disintegration) is examined by looking at the differential impact of the turmoil on domestic and cross-border activity. The available price-based and quantity-based indicators for cross-country data are compared with those built on national data. Concerning specifically price-based indicators, preliminary information available on interbank rates shows signs of divergence for all transactions, with more pronounced divergences for cross-border ones. This suggests the presence of heightened credit and liquidity risks everywhere, with larger risks for cross-border counterparties. Quantity-based indicators point to mixed evidence. There appears to be an increased importance of the national component for turnover in the unsecured money market and the holdings of government

bonds, while there is an increase in the proportion of non-domestic euro area transactions in the repo market. Special Feature A dwells further on these issues and presents a more in-depth discussion on the impact of the financial crisis on euro area financial integration.

In the past the growth of institutional investors has contributed significantly to the integration of securities markets, as these investors are typically well diversified across countries. In 2008 the European investment fund industry experienced strong outflows of funds which were mainly concentrated on bond and equity funds owing to investors' increased risk aversion and a generalised "flight to safety". The reduction of amounts managed by institutional investors may have negative implications for financial integration. Developments in institutional investors' behaviour will be reviewed in detail in Special Feature B.

In light of this evidence, coordinated action to restore the proper functioning of the financial system will be of the utmost importance going forward. The competent authorities must be vigilant that instability does not stop or reverse the financial integration process. The Eurosystem is following market developments very closely and it has been particularly proactive in money markets. It played an essential re-intermediation role, which was instrumental to support the functioning and integration of the money markets during the crisis period. In the course of 2008, conditions in the euro area unsecured interbank money market became extremely tense. Banks have become increasingly dependent on ECB liquidity operations and overnight borrowing, as interbank lending at longer maturities has almost completely disappeared. Faced with this impairment of market functioning, the Governing Council of the ECB decided on 8 October 2008 to introduce fixed-rate tender procedures with full allotment in all refinancing operations and to reduce the corridor between the rates applied on standing facilities from 200 basis points to 100 basis points. On 15 October 2008 the ECB announced additional measures to further expand the list of assets

eligible as collateral in Eurosystem credit operations and to enhance the provision of longer-term refinancing. These actions – combined with a cumulative interest rate cut of 175 basis points in less than two months and the further measures decided by governments, including guarantees and capital injections, helped reduce somewhat the tensions in the euro area money market. As a result, modest signs of unfreezing have emerged in several segments of the money market.

## 2 OVERVIEW OF THE FINANCIAL MARKET SEGMENTS

A widely used summary statistic to gauge the state of development of a financial system is the total capital market size. There is a well documented positive correlation between the total size of capital markets and the performance of the real economy in the long term.<sup>2</sup> Countries with more developed stock and bank loan markets tend to experience stronger economic growth, other things equal.

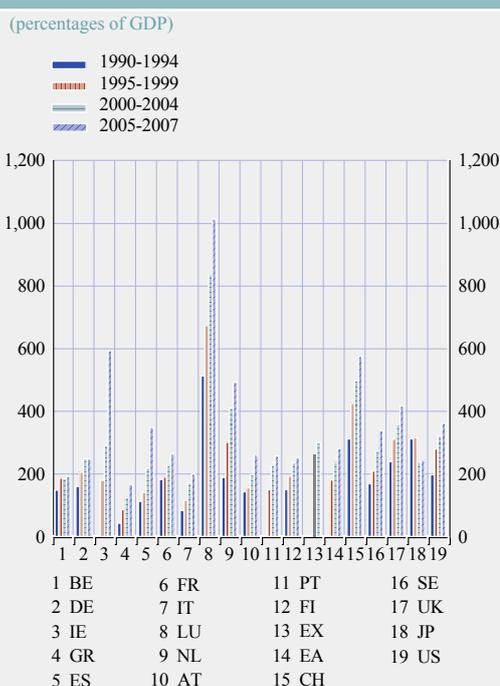
Chart 1 reports, as a broad indicator of financial development, the total size of capital markets, which aggregates the size of stock, bond and loan markets as a share of GDP, for the euro area and a number of benchmark countries.

In order to minimise the impact of more conjunctural market fluctuations on the value of the indicator and also to avoid associating booms and busts – as they occasionally occur in financial markets – with advancing or diminishing financial development, five-year averages are taken. The chart shows that capital markets have been growing steadily over the past fifteen years for all developed economies. As a consequence of the ongoing market turmoil, however, financing through stock, bond and banking markets is expected to be subdued in the near future.

### MONEY MARKETS

The euro area money market, characterised since 1999 by a high degree of integration, has

Chart 1 Size of capital markets



Sources: WFE, IMF, Datastream, Eurostat and ECB calculations.  
Note: See the statistical annex for details.

been particularly hit by the turmoil. Although it is too early to reach definite conclusions about the implications for financial integration, a comparison of price-based indicators for cross-border and national data reveals that the turmoil affected money markets more at cross-country than at domestic level, although national markets were also affected. Quantity-based indicators are less readily available and point to mixed evidence. There appears to be an increased importance of the national component for turnover in the unsecured money market, while there is an increase in the proportion of non-domestic euro area transactions in the repo market. This section also highlights one important development in the commercial paper market, namely the increasing share of assets with a STEP label. Given the high fragmentation

<sup>2</sup> See the Special Feature “Financial development: concepts and measures” in the ECB report “Financial Integration in Europe” (April 2008).

that has characterised the commercial paper market since the introduction of the euro, the harmonisation of market standards promoted by the STEP initiative may significantly contribute to the integration of this market segment.

The cross-sectional standard deviation of the EONIA<sup>3</sup> lending rates across euro area countries clearly signals tensions in the money market. After having reached its lowest level of 1 basis point in 2006, the standard deviation suddenly increased to 4 basis points in mid-2007 before reaching a peak of more than 15 basis points in October 2008 (see Chart 2 below and Chart C1 in the annex).

These developments closely followed the different stages of the financial crisis. Standard deviations started to increase with the beginning of the financial market turbulence and the emergence of liquidity problems in the very short-term money markets (August 2007). After a mild slowdown in June 2008, the variability of the EONIA rates – which had remained relatively high since the start of the turmoil – strongly picked up in September and October to unprecedented levels. As of September 2008 the

country averages dispersion of the EURIBOR and EUREPO rates increased substantially, especially in the one-month segment. In fact, in mid-September, conditions in major money markets around the world severely deteriorated, following heightened concerns about the scale and location of counterparty losses.

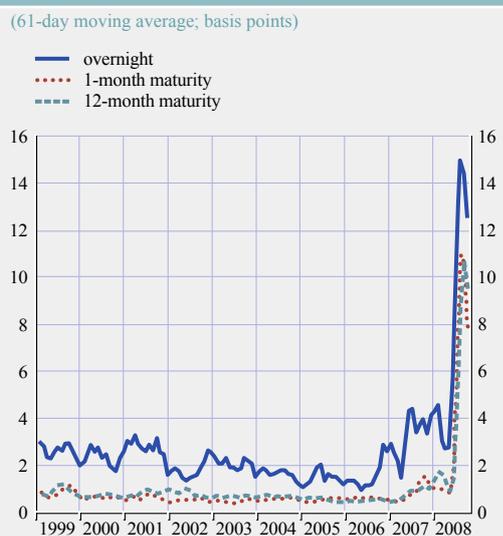
Increased concerns about the creditworthiness of counterparties and uncertainty about their own liquidity positions prompted banks to hoard liquidity and to lend funds only for the shortest maturities or only against higher-grade collateral in secured markets. In the unsecured segment, liquidity became very scarce at maturities beyond one week, even disappearing at longer maturities. Most interbank unsecured lending concentrated on the overnight maturity, but even overnight liquidity remained scarce.

The assessment of the state of financial integration for the last period is made very difficult by the effects of the financial dislocations on rates and spreads across the different instruments and maturities of the money market.

In the current turmoil, the fact that even very short-term interbank loans are perceived as risky may help to explain the increased dispersion of money market rates. In the presence of asymmetric information – for instance with high uncertainty about the number of risky borrowers in the interbank market – interest rates tend to rise and prudent borrowers may choose to drop out of the market. As counterparty risks increase even further, banks may prefer not to lend to other banks, thus reducing liquidity and increasing volatility in the interbank market.

To assess how much of the recent increase in dispersion of money market rates is attributable to a generalised market disruption, rather than market segmentation along national borders, Charts 3 to 6 compare standard deviations of rates within countries with those cross-country. More specifically, they compare the overall

**Chart 2 Cross-country standard deviation of the average unsecured interbank lending rates across euro area countries**

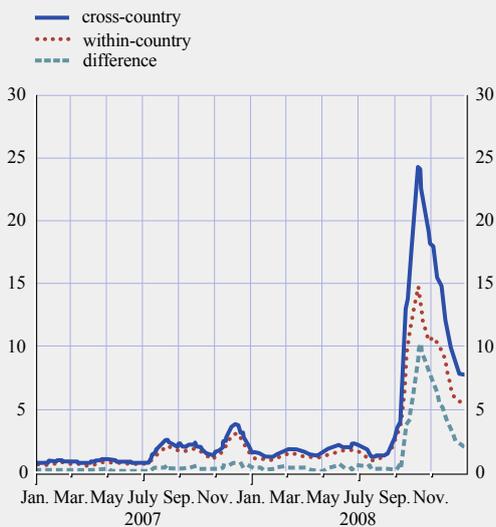


Sources: EBF, ECB calculations.

3 Euro overnight index average.

**Chart 3 Standard deviation of one-month EURIBOR**

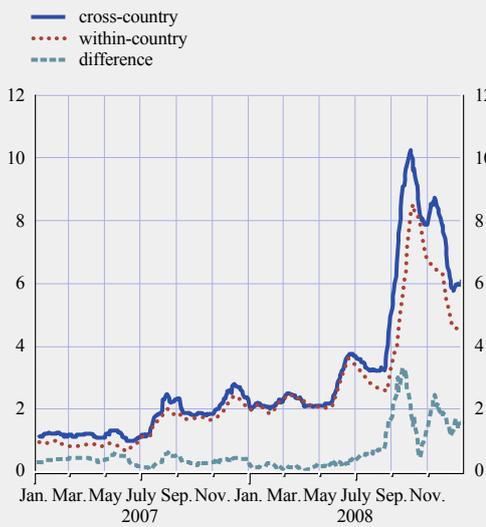
(basis points)



Source: EBF, ECB calculations.

**Chart 5 Standard deviation of one-month EUREPO**

(basis points)



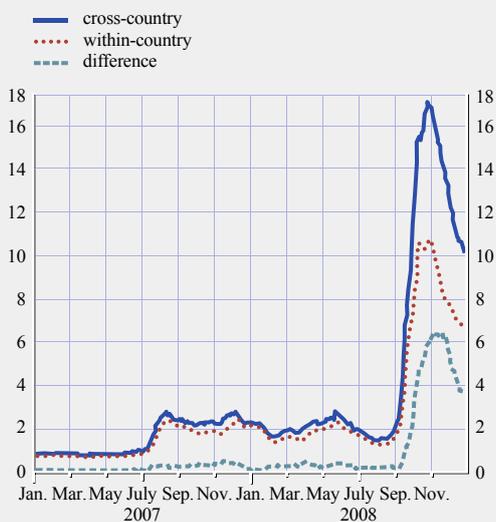
Sources: EBF, ECB calculations.

standard deviation of money market rates across the euro area with the average of within country standard deviations, for EURIBOR and EUREPO rates. The indicators show that, for both the secured and unsecured segments, the

cross-country dispersion exceeded the domestic dispersion at the height of the financial turmoil (the period from September to November 2008). The gap narrowed towards the end of the year in most segments reported.

**Chart 4 Standard deviation of 12-month EURIBOR**

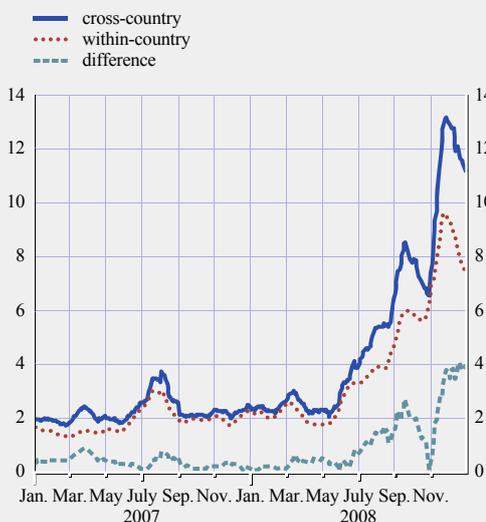
(basis points)



Source: EBF, ECB calculations.

**Chart 6 Standard deviation of 12-month EUREPO**

(basis points)



Sources: EBF, ECB calculations.

There is only partial evidence about whether asymmetric information between banks is more severe across borders. The available data from the Italian electronic platform e-MID confirm that the integration of money markets has been severely affected by the turmoil (see Special Feature A). The analysis shows that the volume of cross-border transactions declined significantly after the start of the turmoil. At the same time the price for cross-border trades was lower than that for domestic ones. These facts indicate the presence of a two-tier system: the cross-border interbank market is dominated by banks with a high credit standing which can afford to charge each other lower rates, while domestic market activity is driven by smaller banks which have to rely on the liquidity provision by internationally active counterparties. The market turmoil may well have reinforced this structure.

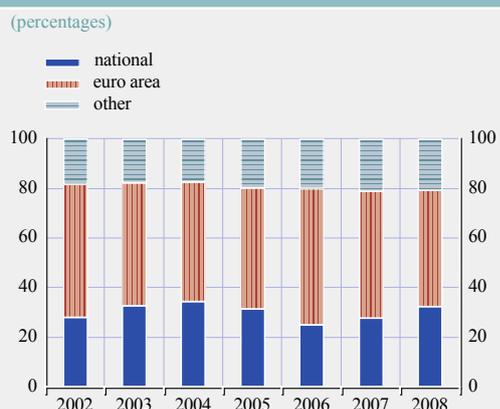
Charts 7 and 8 report the geographical breakdown of counterparties and collateral respectively in the unsecured money market and in the secured repo market (the figures derive from the annual Eurosystem money market survey). In 2008 banks increased their exposure towards domestic counterparties in the unsecured market, although the level of exposure did not exceed that of 2004, and non-domestic euro area banks remained the most active counterparties. In the case of repo markets, the

figures reveal that a constantly growing share of collateral was issued by non-domestic entities located in the euro area. Although the latest figures refer only to the second quarter of 2008 (and therefore do not include the impact of the most recent phase of the turmoil), they indicate that the integration of the repo market across the euro area is continuing. When interpreting these data, it should be borne in mind that the turmoil did have an impact on the overall activity of these markets, with a significant reduction in aggregate turnover in 2008 in both the unsecured and secured money markets.

Unlike the unsecured and secured segments, the market for short-term securities has shown only limited signs of integration since the introduction of the euro, mainly because of differences in market practices and standards. An efficient commercial paper (CP) market is needed to ensure efficient financing for firms and a smooth and timely transmission of monetary policy. Furthermore, the absence of a sufficiently developed CP market may result in elevated and uneven costs of capital in the euro area.

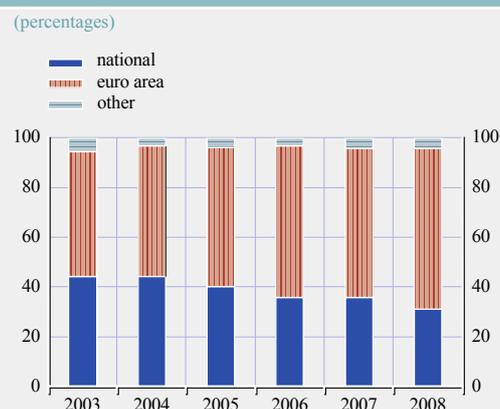
Since CP contracts vary across countries owing to differences in legal systems and regulatory requirements, the market for short-term paper in Europe has remained largely of a domestic nature.

**Chart 7 Geographical counterparty breakdown for unsecured average daily turnover**



Source: ECB.

**Chart 8 Geographical collateral breakdown for bilateral repo**



Source: ECB.

Since June 2006, the STEP initiative aims at fostering the integration of this market by promoting convergence of market standards.<sup>4</sup> Chart 9 illustrates the developments so far. The figure shows that, in 2007, more than half of the outstanding euro-denominated commercial paper had been assigned the STEP label and its share substantially expanded, even in a period of contraction of the entire market. As long as increasing numbers of issuers use a common STEP label, the obstacles to cross-border transactions represented by different domestic practices will be progressively eliminated (see also Chapter 3.2). The commercial paper market has therefore the potential to become a truly integrated euro area market, of a dimension comparable to that of the US market.

The proper functioning of the money market is dependent primarily upon the smooth operation of the cash settlement system. Since 1999 large value euro payments have been settled in TARGET.<sup>5</sup> The decentralised first generation system was fully replaced by an enhanced and technically integrated second generation system in May 2008. The latter is based on a single shared platform that allows the provision of a

harmonised service level, ensuring a level playing-field for banks across Europe.

Besides the technical harmonisation, the new system also provides a single price structure; in the past, the fee for cross-border transactions was harmonised but not the fees for payments within countries. In addition, economies of scale allow for lower average prices in the new system.

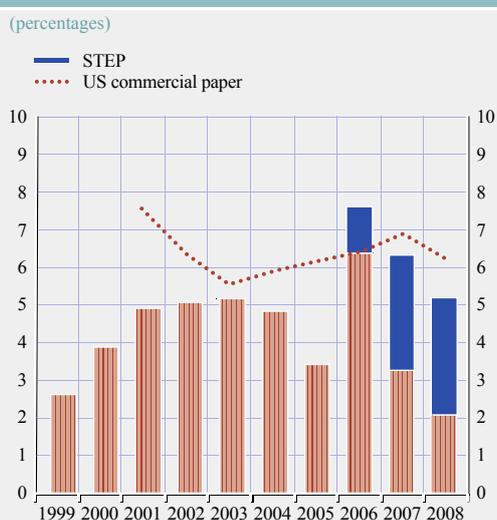
Among the current systems, most of the payment traffic is processed by TARGET and EURO1 (the private net settlement system). In 2008 TARGET had a market share of 90.3% by value and 59.5% by number of payments processed in large-value payment systems in euro. The corresponding figures for EURO1 were 9.7% and 40.4% respectively. The share of inter-Member State payments in the total number of payments processed by TARGET stood at about 17% in the first half of 1999. Since then, it has further increased, accounting for some 28% in the second half of 2008 (see Chart C3 in the annex).

## BOND MARKETS

Since the start of the financial turmoil, and in particular during 2008, both corporate bond spreads and euro area sovereign spreads vis-à-vis the German benchmark have increased substantially. The evolution of price-based and quantity-based indicators reveals tendencies towards market segmentation for government bond markets, but not for corporate bond markets.

Comparisons of bond yield differentials must be carefully analysed to avoid giving a misleading indication of the state of integration of bond markets. Spread divergences may be attributable to differences in perceived credit risks, and as such they reflect the proper functioning of market discipline rather than

Chart 9 Outstanding amounts of commercial paper in percentage of GDP



Sources: ECB, Euroclear, Banque de France, Dealogic and Federal Reserve.

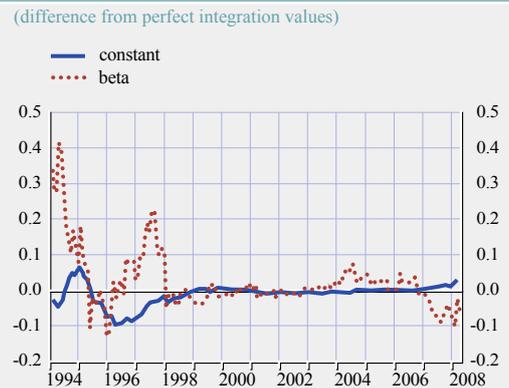
4 See Special Feature B in the ECB report “Financial Integration in Europe” (April 2008).

5 Trans-European Automated Real-time Gross settlement Express Transfer system.

a lack of integration. To address this kind of issue, most integration measures in bond markets are based on the economic intuition that as integration progresses, bond yields should be increasingly driven by common, rather than local, factors. A typical measure of cross-border integration of bond markets is based on a regression of changes in government bond yields of individual countries against changes in yields of a benchmark. As already mentioned in previous reports, the estimated slope coefficients varied substantially up to 1998, but converged afterwards towards 1, the level of perfect integration. Greek government bond yields converged after 2001, when Greece joined the euro area (see Chart C5 in the annex). In 2008 however, the evolution of this so-called beta convergence clearly signalled possible problems in the integration of the government bond market.

Since differences in bond yields across countries may also reflect differences in credit risk (which should not be interpreted as an indication of poor integration), Chart 10 (see also Chart C7 in the annex) presents the estimated constant and slope coefficients of a similar model where sovereign risks are controlled with country rating dummies. (Special Feature A presents an alternative strategy to control for credit risk. The results are qualitatively the same.) Again, in a situation of perfect integration these coefficients should converge to 0, assuming that no variables other than sovereign risk are affecting the change in yield.<sup>6</sup> This indicator shows that even after accounting for differences in sovereign risks, there are increasing signs of divergence from the theoretical benchmark value. This evidence suggests that spreads in the government bond market remain sizeable even after controlling for country credit risk, and that liquidity risk premiums remain non-negligible, partly reflecting the lack of non-Bund denominated futures markets. This trend is consistent with the evidence on cross-border holdings of debt securities discussed around Chart 13 below.

**Chart 10 Evolution of intercept and beta coefficients for ten-year government bond yields, adjusted for sovereign risk**



Sources: Reuters and ECB calculations.  
Note: The benchmark is the ten-year German government bond.

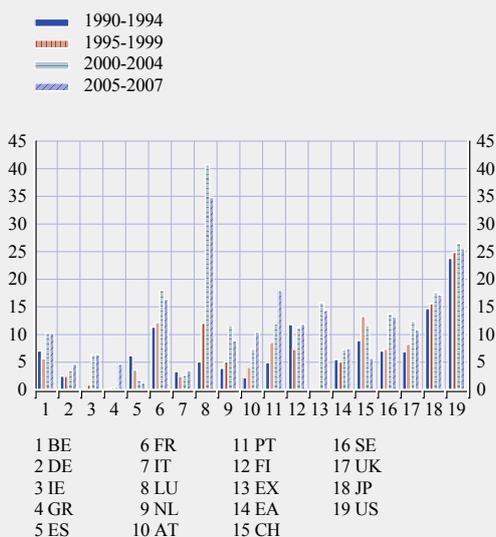
Turning to the euro area corporate bond market, Chart 11 reports the development of debt securities issued by the private sector over the last two decades. Similarly for the indicator of capital market size, it takes five-year averages to smooth out short-run fluctuations. This financial development indicator shows that during the last few years there has been stagnation, and sometimes even a decline, in bond issuance in most euro area and benchmark countries, partly reflecting the impact of the financial turmoil. There is considerable heterogeneity of bond issuance across the euro area. At the same time, it must be borne in mind that companies may well take advantage of foreign subsidiaries when issuing bonds in order to take advantage of lower transaction costs and/or more favourable fiscal regimes. Despite the impetus from the introduction of the euro, the overall level of issuance in the euro area is lower than in most benchmark countries (see also the discussion in Special Feature A).

Another important structural development of the past few years has been the increase in the amount of securitisation activity. As discussed in the box below, securitisation has contributed

<sup>6</sup> See the statistical annex for details.

Chart 11 Debt securities issued by non-financial corporations

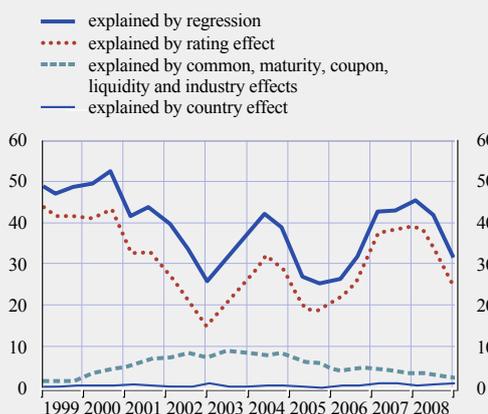
(percentage of GDP)



Sources: BIS, ECB, Eurostat and IMF.

Chart 12 Proportion of cross-sectional variance explained by various factors

(percentages)



Sources: Merrill Lynch, Bloomberg and ECB calculations.

to the completion and integration of credit markets by creating new ways to manage and transfer credit risk. At the same time, misaligned incentives and information asymmetries have significantly impaired the functioning of these markets in times of strain.

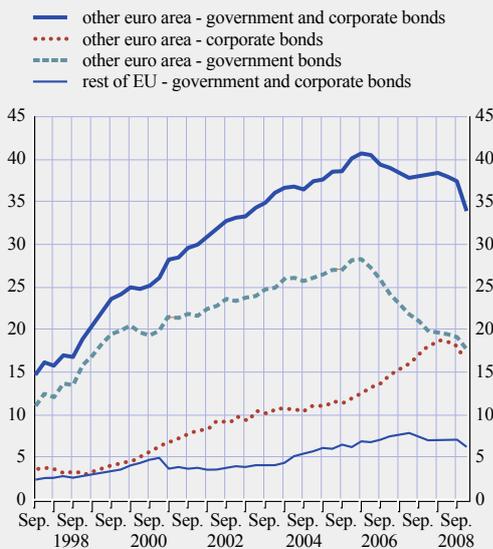
The extent to which integration in this market has progressed can be assessed by measuring the relative importance of country components versus common factors in explaining risk-adjusted yields. As integration advances, the proportion of the total yield spread variance explained by country effects should decrease. The respective indicator shows that the euro area corporate bond market is quite well integrated. Country effects explain only a very small constant proportion of the cross-sectional variance of corporate bond yield spreads (see Chart 12 and Chart C8 in the annex).

Also, quantity-based indicators point to an increasing degree of integration in the corporate bond market. Chart 13 shows that the trend towards geographical diversification observed

until now is continuing. For instance, holdings of long-term debt securities issued by euro area country governments and non-financial corporations and held by residents of other (non-domestic) euro area countries have continued to increase in the last ten years, although there was a small decrease in the last observed period. In the case of monetary financial institutions (MFIs), cross-border holdings of debt securities increased from about 15% to nearly 40% (see Chart 13 and Chart C11 in the annex). In particular, the holdings of debt securities issued by non-financial corporations have increased markedly from a very low level, suggesting that investors are increasingly diversifying their portfolios across the euro area. The decline – starting in 2006 – in the proportion of cross-border euro area holdings of government bonds reflects a substitution between government and corporate bonds in the portfolios of MFIs. This in turn can be explained by MFIs diversifying their investments in search of higher yields in the fixed income market. This trend has come to a halt and begun to reverse since the start of the turmoil.

**Chart 13 Share of MFI cross-border holdings of debt securities issued by euro area and EU non-MFIs: outstanding amounts by residency of the issuer**

(as a share of total holdings, excluding the Eurosystem; percentages)



Source: ECB. This indicator shows the geographical counterparty diversification of securities held by euro area MFIs vis-à-vis the non-MFI sector over the total outstanding amount. Debt securities issued by domestic and rest of the world non-MFIs are not displayed in the chart.

The integration of bond and equity markets relies greatly on the degree of integration of the underlying infrastructure, in particular of the securities settlement systems (SSSs) and central counterparties.<sup>7</sup>

There were 21 legal entities operating a central securities depository (CSD) in the euro area in 2008. Although this is the same number as in 1998, it must be remembered that during

the same period the euro area has of course expanded. For example, in 2008, Cyprus and Malta and their local CSDs joined the euro area. In addition, VP Lux (an affiliate of the Danish CSD) was established in Luxembourg, while the Irish “NTMA Settlement System for Exchequer Notes” ceased operations in 2008.

Integration between SSSs can take various forms. For example, in 2008, eight European CSDs launched an initiative (called “Link Up Markets”) to establish a common infrastructure allowing links to be easily implemented between CSD markets. Another form of integration is consolidation. Some consolidation activities among clearing and settlement infrastructures have proved to be mergers only in a formal sense, as the bodies involved continue to operate and serve their own markets on separate technical platforms. At the same time, a number of initiatives have been launched to technically integrate the clearing and settlement processes of different providers. The most significant initiative in this regard is the Eurosystem’s pan-European securities settlement platform T2S.<sup>8</sup>

7 The SSSs also play a crucial role in the Eurosystem’s collateral framework, as they provide the necessary infrastructure to allow counterparties to transfer collateral to the Eurosystem. It is interesting to note that the share of cross-border collateral held by the Eurosystem has increased significantly, from 28% in 2002 to 50% in 2006 and standing at 45% in 2008 (see Chart C13 in the annex).

8 See Chapter III for further information. T2S will provide settlement services for debt instruments and equities.

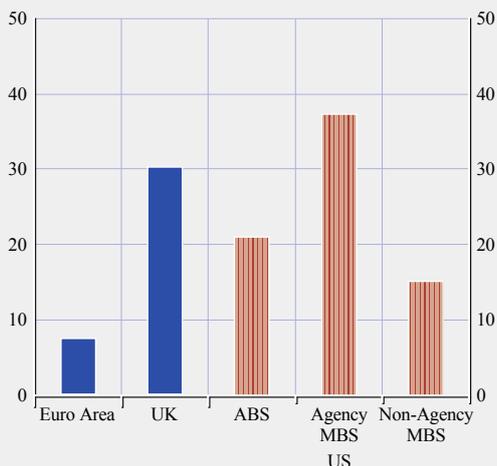
**Box**

**SECURITISATION, FINANCIAL DEVELOPMENT AND THE CREDIT TURMOIL**

Traditional securitisation can be defined as the pooling of financial assets and their subsequent sale to a special-purpose vehicle (SPV), which usually then issues fixed-income securities to investors – known as asset-backed securities (ABS) – the principal and interest of which derive from the cash flows produced by the pool of underlying financial assets. In the case of synthetic

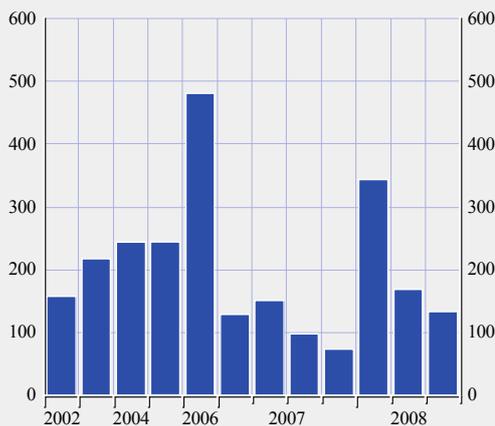
**Chart A Outstanding values of securitisation by country**

(as a percentage of GDP in 2008 Q3)



**Chart B Securitisation issuance in Europe**

(in EUR billions)



Sources: European Securitisation Forum, Bond Market Association, Eurostat and IMF.

Notes: For European countries, data report the issuance placed in the Euromarket or in European domestic markets. For the United States, data refer to issuance placed in the US market. As there is no information about the country of collateral for the United States, it is assumed that US issuances have mainly domestic collateral.

Source: European Securitisation Forum.

securitisation, there is no provision of funding but a transfer of credit risk of the underlying assets using credit derivatives.<sup>1</sup>

The years prior to the credit turmoil coincided with spectacular increases in the amount of securitisation activity and in the number of countries using these techniques. In this respect, securitisation has been prevalent in the United States and, to a lesser extent, in the United Kingdom and in continental Europe (Chart A). In the euro area, the growth of securitisation coincided with the introduction of the euro, which enabled institutional investors to increase their cross-country exposure in credit markets and gave issuers access to a broader pool of potential investors (Chart B). The recourse to securitisation, however, differs considerably among euro area Member States (Chart C).<sup>2</sup>

In principle, securitisation activity can help to reduce information asymmetries and make credit markets more complete. Securitisation can also potentially distribute risk across many investors, as credit risk can be more easily traded and widely transferred across the financial system. Prior to the credit crisis, the development of securitisation probably led to a reduction in the cost of raising funds for loan intermediation.<sup>3</sup> In terms of prices, securitisation also provides investors in

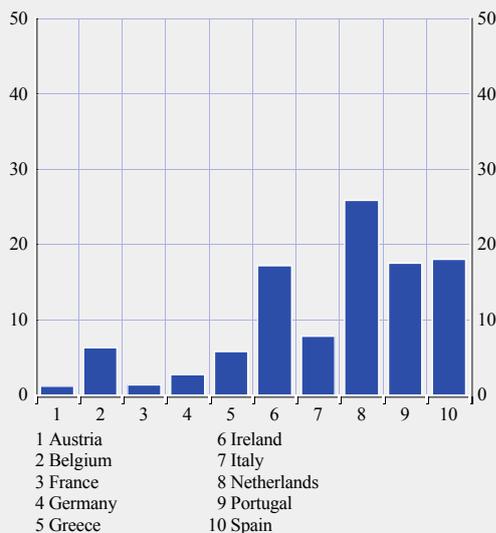
1 See the article entitled "Securitisation in the euro area" in the February 2008 issue of the ECB Monthly Bulletin. Securitisation was also discussed in Special Feature A in the ECB report "Financial Integration in Europe", April 2008.

2 Securitisation can be traced back to the 1930s in the United States. However, the modern foundations of securitisation originated from developments in the residential mortgage market in the 1970s by government-sponsored agencies such as the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation.

3 Even if the total risk remains within the banking sector, securitisation could allow banks to hold less risk simply owing to diversification and the increase in tradability. See Duffie, D. (2007), "Innovations in credit risk transfer: Implications for financial stability", Stanford University Working Paper.

**Chart C Outstanding values by euro area country**

(in percentage of GDP; 2008 Q3)



Source: European Securitisation Forum.

credit risk with an enhanced number of prices that are used as a basis for credit decisions both on and off balance sheet.

However, the more recent developments have cast strong doubt on whether securitisation activity, particularly as carried out in recent years, has indeed reduced asymmetries of information between borrowers and investors. Ashcraft and Schuermann (2008) provide a careful analysis of the information frictions among the different players involved in the securitisation process and point out a number of important flaws.<sup>4</sup> Foremost among these seem to be an excessive reliance on credit ratings and misalignment of the incentives of investors and asset managers (see also below).

Partly owing to misaligned incentives, securitisation instruments have become increasingly complex.<sup>5</sup> Market participants also indicate that the scope of securitisation activity

has expanded considerably to include products that are inherently difficult to understand as they are significantly more elaborate than their earlier counterparts. For instance, some of the ABSs or CDOs issued before the crisis were frequently themselves backed by structured securities, creating a process in which structured products were used to fund other structured products. These products are however extremely difficult to value in normal times, let alone in periods of crisis and they exceeded the analytical capabilities of even the most sophisticated investors.<sup>6</sup> Indeed as a result of the recent crisis there has been a return to simplicity or “back to basics” in terms of products’ characteristics. The issuance of relatively simple residential mortgage-backed securities (RMBS) has become more prominent and the primary issuance of complex products has almost disappeared. Overall, although the problems in securitisation markets have been concentrated in particular on highly complex products, the current turmoil in credit markets has also revealed significant informational frictions in simpler securitised products.

Thus the recent credit market crisis has brought to the fore certain features of securitisation markets which can impair market functioning in times of strain. In October 2007 the G7 ministers and central bank governors asked the Financial Stability Forum (FSF) for a set of recommendations to strengthen the financial system in light of the risks posed by the recent turmoil (see the

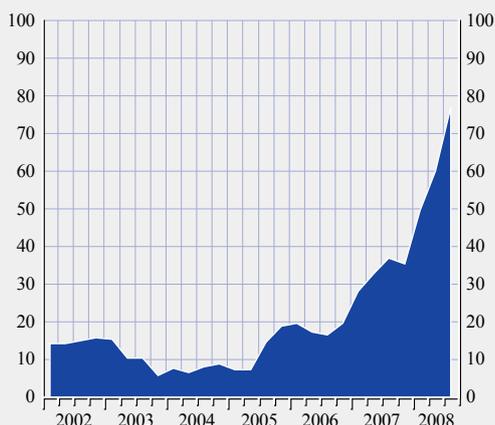
4 See Ashcraft, A. and T. Schuermann (2008), “The Seven Deadly Frictions of Subprime Mortgage Credit Securitization”, *Investment Professional*, Fall.

5 In this respect, a number of authors have emphasised the value of “standard securities” for the design of securities. Namely, those securities for which investors have overcome the fixed cost of understanding the security design. Gale, D. (1992), “Standard securities”, *Review of Economic Studies* 59, pp. 731-755.

6 Duffie, D. (2007), p.4, opus cit. argues, “even specialists in collateralized debt obligations are currently ill equipped to measure the risks and fair valuation of tranches that are sensitive to default correlation”.

Chart D Retained ABS/MBS securitisation in the euro area

(in percentages of total securitisation)



Sources: Dealogic, Van Rixtel and Criado (2008).

Financial Stability Forum, 2008, and the Joint Forum, 2008).<sup>7</sup> The FSF identified a number of issues that deserve to be strengthened in the originate-and-distribute model. The FSF underlined i) misaligned incentives along the securitisation chain including originators, arrangers, distributors, managers, credit rating agencies and investors; ii) lack of transparency about the risks underlying securitised products including the quality and correlation of the underlying assets and iii) poor management of the risks associated with the securitisation business including liquidity risk, credit lines and stress testing of these risks. The issue of transparency, in particular, is an area requiring urgent attention: a view shared by the European Commission, financial regulators and the financial services industry alike.

The recent turmoil is having a very negative impact on securitisation markets. While securitisation activity in primary markets has remained robust, most of this securitisation seems to be retained on the originators' balance sheet (see Van Rixtel and Criado, 2008 and Chart D).<sup>8</sup> The public market for securitisation has been very small and almost ground to a halt in 2008. Indeed evidence from the euro area Bank Lending Survey suggests that problems accessing securitisation markets are having an impact on banks' willingness and ability to lend.<sup>9</sup> In terms of asset classes, some markets such as the credit card or consumer loans markets have shown some signs of activity, particularly in the United States, but they have also been dramatically affected by the crisis. This situation is likely to continue in the near future owing to a dislocated investor base experiencing very heavy recent losses, the high level of uncertainty and an excess of pre-crisis supply.

Given its potential benefits, securitisation activity is likely to pick up thereby contributing to the development and integration of the euro area financial system. The securitisation market is however expected to reappear in a very different form compared with that of the pre-crisis period. In this respect, the recent turmoil shows that distorted incentives had the effect of encouraging securitisation activity to be conducted in ways that increased asymmetric information and allowed excessive risk-taking. Going forward, a strong reduction in the level of complexity and leverage of the instruments issued, a higher level of transparency and more aligned incentives are crucial for an efficient securitisation market.

<sup>7</sup> European Securitisation Forum, "Restoring Confidence in the Securitisation Markets", December 2008 as well as Financial Stability Forum, Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience, March 2008, and the Joint Forum, "Credit risk transfer: Developments from 2005 to 2007", Consultative Document, April 2008.

<sup>8</sup> Van Rixtel, A. and S. Criado (2008), "Structured Finance and the Financial Turmoil", Banco de España Occasional Paper 0808.

<sup>9</sup> See ECB Bank Lending Survey for the euro area, October 2008.

## EQUITY MARKETS

Euro area equity markets grew considerably before entering the recent volatile period associated with the turmoil. The available indicators do not signal any particular impact of the turmoil on integration in these markets.

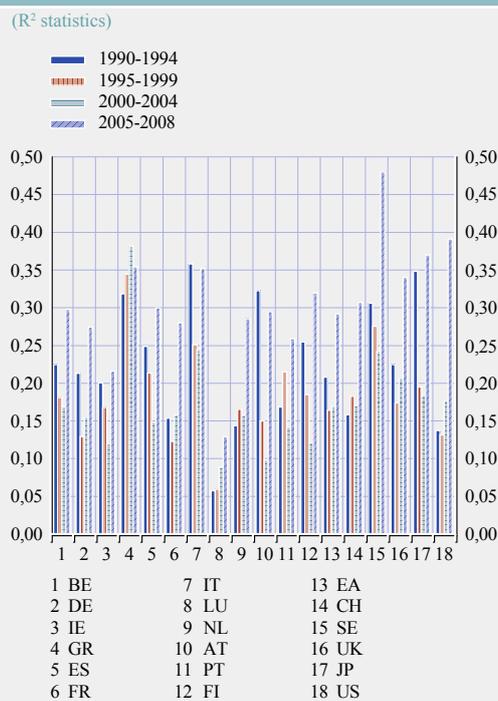
Before discussing indicators of financial integration, we introduce a new indicator of development, which can be useful to assess the efficiency with which equity markets process information.

The production and dissemination of accurate information plays a crucial role in the well-functioning of a financial system. Many frictions in financial markets are attributable to asymmetric information between market participants. For example, accurate and timely public reporting by firms allows investors to make better investment decisions, alleviates the control problem between outsiders and the management of a firm, and thus lowers the cost of capital. Several aspects of the recent financial turmoil can be traced back to information problems.<sup>9</sup>

Although the degree of information asymmetry depends on many factors, a simple measure to summarise the information-processing capacity of equity markets is the synchronicity of firms' stock returns within a market. If firms' stock prices are increasingly driven by market-wide or global factors, then the prices tend to move together indicating that little firm-specific news is incorporated into prices. A high synchronicity of stock returns within a market indicates a low information content of prices.<sup>10</sup>

Chart 14 displays the synchronicity of stock returns across euro area and reference countries. The measure is obtained from the explained variance of stock returns when regressing them on a number of market-wide and global factors.<sup>11</sup> Higher bars therefore represent a higher synchronicity of stock returns, which in turn indicates a lower information content of stock prices. The extent to which equity markets are information efficient varies across the euro

Chart 14 Pricing of firm specific-information in the stock market



Sources: Datastream and ECB calculations.

area and is overall comparable to the benchmark countries. While stock markets became more information efficient in the 1990s, over the past few years most equity markets have become somewhat less efficient at incorporating firm-specific news into stock prices.

It is harder to assess the degree of integration of equity markets relative to money and government bond markets, as equity returns

<sup>9</sup> See also "A research perspective on the propagation of the credit market turmoil", ECB Research Bulletin, No 7, June 2008.

<sup>10</sup> It is important to stress the cross-country dimension of this indicator as its time series behaviour could also be influenced by macroeconomic fluctuations. It has been shown that a high synchronicity of stock returns is found in countries with less developed financial systems, lower per capita GDP and more opaque stock markets. Moreover, stock prices are a better predictor of future earnings in industries with a lower synchronicity of stock returns. These findings hold when controlling for macroeconomic fluctuations and industry characteristics (see Special Feature A, ECB report "Financial Integration in Europe", April 2008).

<sup>11</sup> For details, see Special Feature A in the ECB report "Financial Integration in Europe", April 2008.

are not directly comparable. In principle, in a perfectly integrated market only common risk factors are priced, while diversifiable country risks command no risk premium. In practice, it is difficult to disentangle the impact on equity returns of changing economic fundamentals from changes in the pricing mechanism.

One simple indicator of equity market integration compares the country and sector dispersions in monthly stock returns over time. Dispersions reflect correlations and are indicative of the diversification opportunities: the higher the dispersion, the lower the correlation, and therefore the greater the benefits in terms of risk reduction from a proper diversification strategy. Chart 15 (see also Chart C14 in the annex) shows that since 2001 the benefits of diversification through sector-based equity investment strategies has increased relative to those obtained through country-based ones. These results are consistent with a paradigm change in the asset management industry, moving from a country-based to a sector-based equity allocation strategy, which should ultimately lead to a reduction in home bias.

An alternative indicator of equity market integration – based on the assumption that equity returns react to both local and global factors (proxied respectively by shocks in aggregate

euro area and US equity markets) – measures the proportion of the total domestic equity volatility that can be explained by local and global factors. Chart C15 in the annex shows that the importance of the euro area component has increased over the past 30 years with respect to the US component. However, the fact that the proportion of variance explained by euro area shocks has increased substantially more than that explained by US shocks suggests that regional euro area integration has progressed more quickly than worldwide integration. The level of variance explained by common factors (about 38% for euro area shocks and 16% for US shocks) reveals that local shocks are still important.

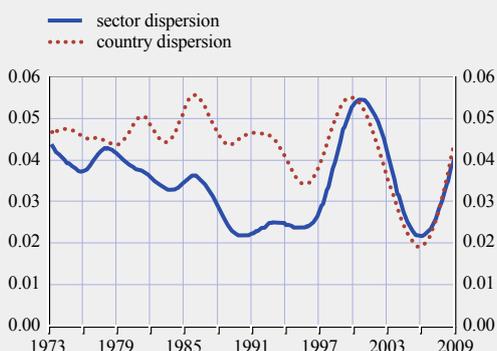
A complementary, direct strategy to quantify the impact of integration in equity markets is to look at the cross-country asset allocations in investors' portfolios. In a truly integrated market, investors should not prefer national over foreign equities, other things equal. Evidence of decreased home bias can therefore be consistent with the disappearance of psychological or physical barriers to cross-border investment.

Quantity-based measures also indicate a rising degree of integration in equity markets (see Chart 16 and Chart C17 in the annex). Between 1997 and 2007 euro area residents more than doubled their holdings of equity issued in other euro area countries (as a share of their total portfolio of shares issued in their own country and elsewhere in the euro area), whereas the share of euro area equity assets held outside the euro area remained at a much lower level and increased only slightly.

Institutional investors contributed to the process of reallocation of domestic equity holdings to equity holdings elsewhere within the euro area. Chart 17 (see also Chart C18 in the annex) shows what share of investment funds' total holdings of all shares and other equity (excluding investment fund shares/units) is issued by residents of the euro area outside the Member State in which the investment fund is located. Since 1999 this share has increased

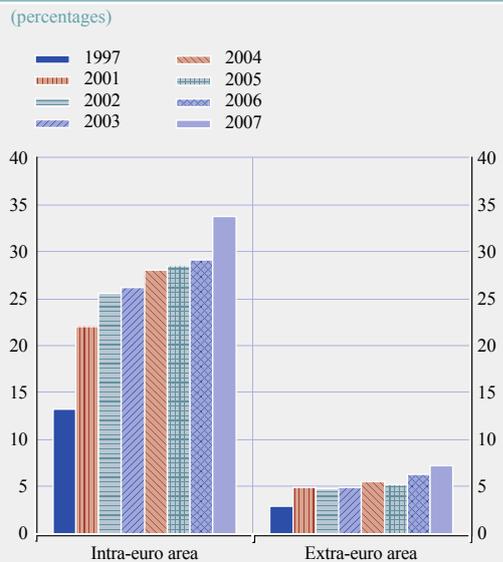
Chart 15 Filtered country and sector dispersions in euro area equity returns

(percentages)



Sources: Thomson Financial Datastream and ECB calculations.

**Chart 16 The degree of cross-border holdings of equity issued by euro area residents**

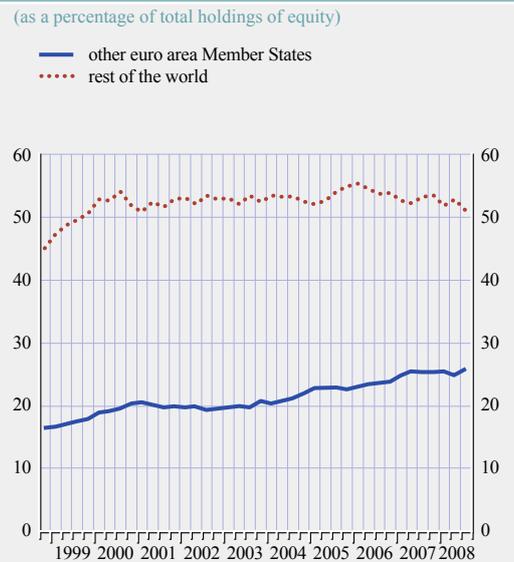


Sources: IMF, Thomson Financial Datastream and ECB calculations.

from 17% to 25%. (See Special Feature B for an in-depth discussion of institutional investors.)

The last development indicator to be introduced in this year's report is venture capital (VC), a potentially important source of finance for small and innovative firms. VC is a particular form of finance usually provided by professional investors to young, small research-based companies for which they also act as advisers or even managers, with the main goal of launching an Initial Public Offering (IPO) or taking part in a trade sale. Venture capitalists use staged financing, private contracting, screening and close monitoring to overcome the uncertainty, information asymmetry and agency costs associated with financing "early-stage" and technology companies that banks are reluctant to take on. In that sense, VC is well suited to the process of technological innovation in an entrepreneurial firm rather than a large industrial setting, and hence relaxes the financial constraints on innovative effort by young innovative companies in general and SMEs in

**Chart 17 Investment funds' holdings of equity issued in other euro area countries and the rest of the world**



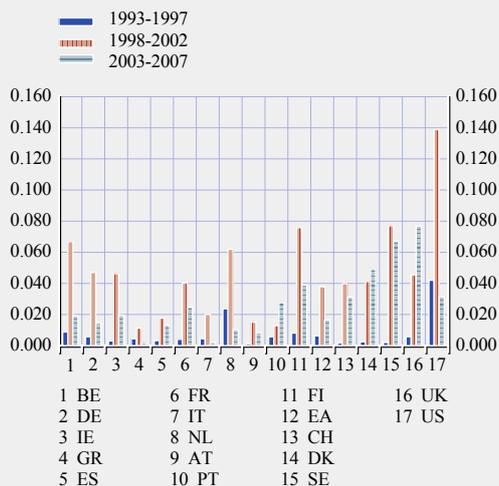
Source: ECB.

particular. Chart 18 shows that the importance of VC-backed, early-stage finance in Europe has increased in recent years, with some euro area countries such as Finland approaching the levels of investment of non-euro area countries such as Denmark, Sweden and the United Kingdom, which in the last years have surpassed the US levels in terms of early-stage finance. However, as indicated by Chart 18, the VC industry in many euro area countries is still at a rudimentary stage, constrained by the unavailability of exit markets (such as specialised stock exchanges for young and innovative firms), high corporate taxes, persistent rigidities in labour markets for highly skilled and foreign workers, and lingering restrictions to institutional investors investing in risk capital markets in some countries (see Special Feature C for details).

Regarding market infrastructures, the euro area securities settlement infrastructure for equities is even less integrated than that for bonds, partly owing to qualitative barriers such as differences in settlement cycles or the handling

**Chart 18 Venture capital financing (early investment stage)**

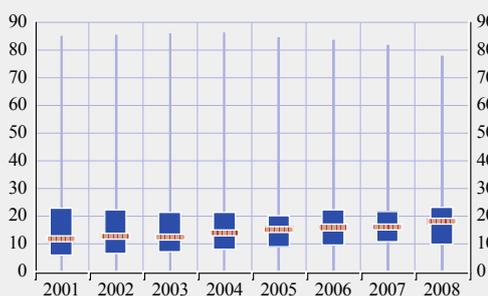
(percentage of GDP; by country of management)



Sources: European Private Equity and Venture Capital Association, PricewaterhouseCoopers and Eurostat.

**Chart 19 Dispersion of the total assets of euro area bank branches and subsidiaries across euro area countries**

(as a percentage of the total assets of the euro area banking sector)



Source: ECB.

Notes: The lower and upper markers show the minimum and maximum observations among euro area countries. The bottom and top of the box show the first and third quartile. The red line shows the median share of assets of branches in all euro area countries.

of corporate events and taxation, which continue to hinder progress in the integration of these infrastructures.

The number of central counterparties (CCPs) for financial instruments in the euro area declined from 13 to ten in the period from 1998 to 2008 as a result of some progress in consolidation. In 2008 there was considerable restructuring at the clearing level. Following the entry into force of the Markets in Financial Instruments Directive (MiFID) and the introduction of multilateral trading facilities, two new CCPs have been established serving these new trading facilities. Moreover, LCH.Clearnet and the US infrastructure provider DTCC have announced plans to merge.

A self-regulatory initiative promoted by the European Commission, the Code of Conduct for Clearing and Settlement was signed in 2006 to boost interoperability between different trading and post-trading platform providers. Integration has been facilitated by the implementation of links between different service providers and

many new links have been requested. However, the actual implementation of new links between these entities has met some obstacles, including regulatory ones (see Chapter III).

## BANKING MARKETS

The indicators confirm that the euro area retail banking markets continue to be fragmented, whereas the euro area interbank (or wholesale) market and capital market-related activities exhibit a much higher degree of integration.

The cross-border activity of banks plays an important role in the process of financial integration. One simple way to measure the development of cross-border activity is to monitor the establishment and activity of foreign branches and subsidiaries over time.

Chart 19 shows that the share of assets held by foreign branches and subsidiaries established in other euro area countries is rather limited (Charts C19 and C20 in the annex display the same indicator split for foreign branches and

**Chart 20 Euro area cross-border bank M&A activity**

(as a percentage of the total value of euro area banking system M&As, left axis; and in absolute numbers, right axis)

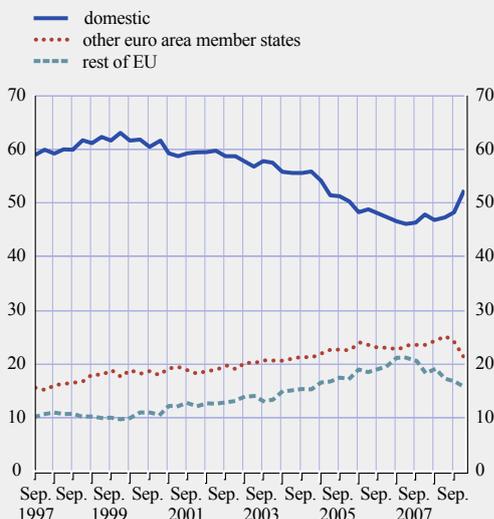


Sources: Bureau Van Dijk (Zephyr database) and ECB calculations.

subsidiaries). This share however has risen continuously over time, consistent with ongoing structural changes in the euro area banking industry and the increased relevance of foreign-controlled institutions tapping non-domestic markets.

**Chart 21 MFI loans to MFIs: outstanding amounts by residency of the counterparty**

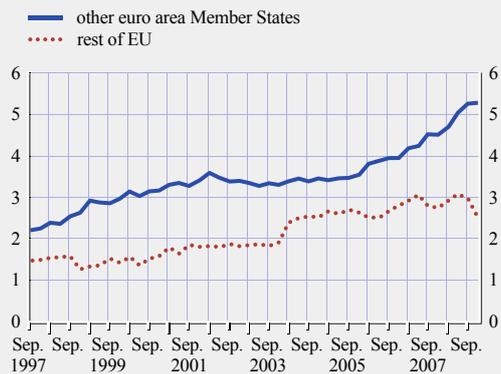
(as a share of total holdings, excluding the Eurosystem; percentages)



Source: ECB.

**Chart 22 MFI loans to non-MFIs: outstanding amounts by residency of the counterparty**

(as a share of total holdings, excluding the Eurosystem; percentages)



Source: ECB.

Another indicator of the cross-border presence of euro area banks is their cross-border merger and acquisition (M&A) activity, as shown in Chart 20 above.

In 2008 the value of euro area cross-border M&A increased substantially mainly owing to the takeover of a large institution (see Special Feature A for details).

Quantity-based indicators for MFI lending confirm that euro area wholesale banking markets are far more integrated than retail markets. Chart 21 shows that the share of loans granted to MFIs from other euro area countries' MFIs has increased in the past ten years at the expense of domestic ones. However, it also hints at a decline of this share in very recent times, after the intensification of the crisis in late 2008; Chapter II, Special Feature A contains more details. The share from other EU countries, after an increase in earlier years, declined substantially since the start of the turmoil in 2007.

Retail cross-border lending, on the other hand, still remains at low levels, even though it more than doubled since 1997 and accelerated further in the course of 2008 (see Charts 22 and 23). This last pattern could also be partly attributable to euro area MFIs increasing their

**Chart 23 MFI loans to non-MFIs: outstanding amounts to domestic counterparties**

(as a share of total holdings, excluding the Eurosystem; percentages)



Source: ECB.

financing to cross-border controlled other financial institutions in the course of the recent turmoil.

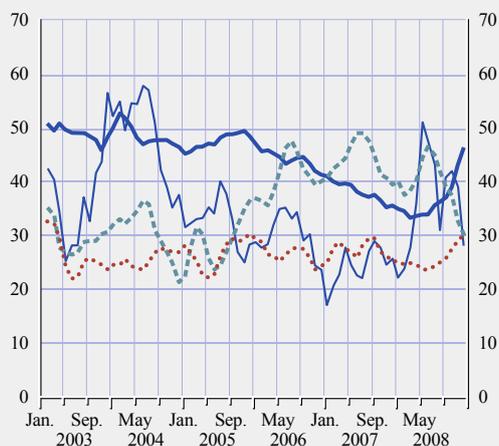
Turning to price measures, Chart 24 shows that the euro area cross-country dispersion of bank interest rates to non-financial corporations has remained relatively high and did not decrease over time. Also the dispersion of interest rates on loans to households continued to be stable in the observed period and remained substantial in the case of loans for consumption purposes (see Chart C23 in the annex).

One way to test the view that a process of convergence is underway is to regress changes in spreads between a specific country interest rate and the benchmark against the level of the lagged spreads. For the purposes of this report, the benchmark chosen is the lowest interest rate level within a euro area country in each

**Chart 24 Cross-country standard deviation of MFI interest rates on loans to non-financial corporations**

(basis points)

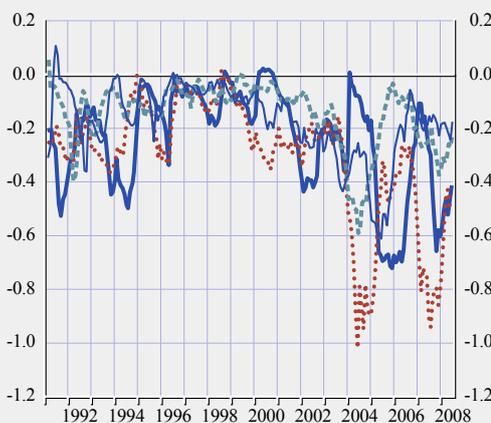
- floating rate and up to 1 year, up to and including €1 million
- ..... floating rate and up to 1 year, over €1 million
- over 5 years, up to and including €1 million
- over 5 years, over €1 million



Source: ECB.

**Chart 25 Beta convergence for selected banking retail interest rates**

- loans to non-financial corporations up to an amount of €1 million; floating rate and up to 1 year initial rate fixation
- ..... loans to non-financial corporations over an amount of €1 million; floating rate and up to 1 year initial rate fixation
- loans to households for house purchases; floating rate and up to 1 year initial rate fixation
- loans to households for house purchases; over 5 and up to 10 years initial rate fixation



Source: ECB.

Note: See the annex for a precise definition of the retail interest rates.

**Chart 26 Credit Transfer transactions processed in SEPA format**

(percentage of total transactions)



Source: ECB

category, with the assumption that this should reflect the level towards which – as a result of increased integration and competition within the euro area – the interest rates for the same product in other euro area countries should converge (see the statistical annex for technical details).

Chart 25 (see also Chart C25 in the annex) reports the evolution over time of the estimated slope coefficients of the regression for selected interest rates. The fact that the coefficient is almost always negative indicates that the process of convergence has been continuing over time.

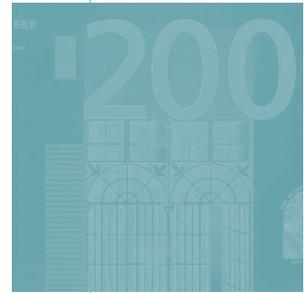
In this respect, it should be noted that differences in bank interest rates can be attributable to several factors, such as different conditions in national economies (credit and interest rate risk, firm size, industrial structure, degree of capital market development), institutional factors (taxation, regulation, supervision, consumer protection) and financial structures (degree of bank/capital market financing, competitiveness).<sup>12</sup> Moreover, the co-existence of different products in different countries may not be a symptom of lack of integration but instead reflect countries' different conditions.

The low level of retail banking integration is also associated with a relatively high level of fragmentation of retail payment infrastructures, where procedures, instruments and services offered to customers are not yet harmonised. This shortcoming is being addressed in the context of the SEPA project. In SEPA, payment systems and infrastructures are expected to establish a European-wide reach, thus becoming pan-European. The STEP2 retail payment system, operated by the EBA Clearing Company, represents the first pan-European automated clearing house (ACH). To facilitate the implementation of links between retail systems, the European Automated Clearing House Association (EACHA) has developed a "technical interoperability framework for SEPA-compliant giro payment processes" (EACHA Taskforce report, October 2008).

While the level of integration is still low as regards the concentration ratio among retail payment systems in the euro area, in 2007 the five largest retail payment systems in the euro area processed 86% of the total market volume (see Chart C28 in the annex).

Measuring the progress of migration to SEPA, the euro area SEPA Credit Transfer (SCT) indicator shows that the use of the SCT has been rising steadily since the launch of SEPA on 28 January 2008, although the overall volume is still very low. It is expected that migration will accelerate in 2009 (Chart 26 and Chart C29 in the annex).

<sup>12</sup> See the ECB report entitled "Differences in MFI interest rates across euro area countries", September 2006.



## CHAPTER II

### SPECIAL FEATURES

#### A. THE IMPACT OF THE FINANCIAL CRISIS ON EURO AREA FINANCIAL INTEGRATION

*This Special Feature examines preliminary evidence on the effects of the financial crisis on financial integration in the euro area. In particular, it looks at possible impacts of the crisis on money, sovereign bond and equity markets and on the banking sector.*

*Recent developments suggest that the turmoil is having a significant impact on euro area financial integration in certain sectors: most notably in the unsecured interbank market and in the government bond market. Cross-border interbank activity started to decline in certain areas in autumn 2008. Other segments (corporate bond, equity and retail banking markets, for example) seem as yet to have been affected less, or not significantly. This evidence should be considered cautiously, however, since the crisis is still unfolding. In the longer term, the fundamental forces favourable to integration will continue to operate.*

*Going forward, this evidence justifies enhanced vigilance in assessing the state and developments of financial integration in the euro area. Community institutions should proactively ensure that national emergency measures do not have a lasting negative impact on the integration of the banking sector or other financial market segments.*

#### I MONEY MARKETS

The money market has been particularly hit by the turmoil. Transaction volumes, especially for longer maturities, have declined, and unsecured rates have been characterised by unusually high elevated spreads. As the financial turmoil unfolded, the dispersion of interbank lending rates across countries reached unprecedented levels compared with those observed before the crisis began and even in the initial stages of the turmoil in the summer of 2007. Moreover, there are indications of emerging differences between domestic and cross-border rates in the unsecured money market. In particular, the volumes

of cross-border trades declined somewhat compared with domestic transactions.

While it is too early to reach definitive conclusions, a tentative analysis of the impact of the financial market turmoil on market integration follows.

#### CREDIT AND LIQUIDITY RISK IN MONEY MARKETS

During the financial turmoil, the increase in perceived liquidity and credit risks generated a sharp increase of volatility and a decline in trading activity in the euro area market not only for interbank unsecured loans but also in segments of the secured non-government repurchase agreement (repo) markets. Many banks no longer accept certain asset types (e.g. ABSs and CDOs) as underlying collateral in repo transactions. Even in those secured money market segments with high quality collateral, turnover has decreased. The reduction in turnover in these markets has two causes. First, because market participants are uncertain about counterparty credit risk, they have cut their credit lines and reduced their loan volumes markedly. Second, increased uncertainty about their own liquidity needs has led to liquidity hoarding.

The dramatic increase in perceived liquidity and credit risks had a major impact on the rates, the volatility and the spreads prevailing in the euro area money markets. For example, the spreads between the three-month deposit and the overnight index swap (OIS) rates reached levels ranging between 60 and 80 basis points between August 2007 and August 2008, and up to 180 basis points in September and October 2008 after the default of Lehman Brothers. Before the turmoil erupted, these same spreads typically stood at around 5-7 basis points.<sup>1</sup>

Several measures to alleviate money market tensions were launched by the Eurosystem. All were aimed at ensuring the continued access of

<sup>1</sup> EURIBOR fixings rely on quoted prices and not on actual trades, therefore interpretation of these spreads requires some caution.

solvent banks to liquidity, thereby contributing to facilitating the functioning of the euro area money market, while at the same time not impairing the fundamental monetary policy function of steering short-term interest rates.

A number of public initiatives for national interbank loan guarantee schemes, with the aim of fostering activity in the money market, are being discussed or have already been launched. From an integration perspective, it is important that such initiatives do not hamper the ability of the Eurosystem to implement the single monetary policy. In particular, they should be designed in a way that does not lead to a segmentation of the money market along national borders. Thus, for the integration of the euro area money market, it is important that such initiatives are accessible by, and affect, counterparties from all euro area countries in the same way.

#### HOW TO MEASURE INTEGRATION

The degree of integration of money markets is difficult to assess. Because a significant proportion of euro area money market transactions takes place over the counter, no comprehensive dataset on these transactions is available. A first indication on the impact of the turmoil on the integration of the unsecured money market can be drawn from the annual Money Market Survey.<sup>2</sup> Responses from the 159 credit institutions participating in the survey indicated that the share of average daily turnover of unsecured lending with national counterparties increased from 27.7% in 2007 to 31.8% in 2008 (second quarter). At the same time, the share of transactions with other euro area counterparties declined from 51.2% in 2007 to 47.4% in 2008 (second quarter; the residual covers transactions with counterparties outside the euro area, which remained fairly stable). Thus, there is some indication of a slightly less integrated unsecured money market. In addition, as the survey covers data from the second quarter of each year only, it cannot be ruled out that these features were reinforced by the tensions that emerged after September 2008.

Chapter I of this report compares standard deviations of money market rates across the euro area with those within countries and reaches a similar conclusion: the dispersion of (secured and unsecured) money market rates has increased more across euro area national borders than within countries.

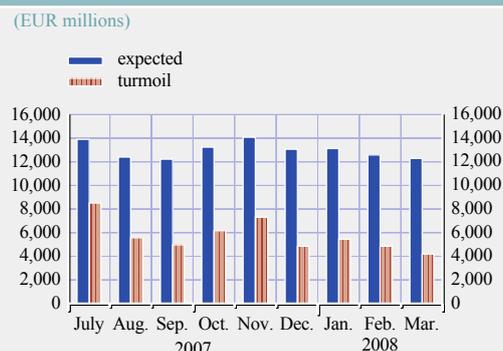
Some further information can be obtained using data from the electronic platform e-MID. This platform is used by banks to conduct unsecured money market trades of different maturities. In normal market conditions, in 2006, the turnover in this system in the overnight segment was estimated to comprise roughly 17% of all euro area money market trades. However, the specific nature of the e-MID trading platform – in particular its transparent and centralised nature – means that it is not fully comparable to the bulk of the interbank market, carried out on an over-the-counter (OTC) basis. Hence, any conclusions on money market trading patterns across the euro area based on this data should be treated with some caution.<sup>3</sup>

To the extent volumes of cross-border trading can be taken as a gauge of integration, since July

<sup>2</sup> ECB “Euro Money Market Survey”, September 2008.

<sup>3</sup> For instance, during the turmoil, e-MID suffered a higher than average drop in trading volume – also for trades of shorter maturities – compared with other available data sources (EONIA). This may have been attributable to the high degree of transparency in the e-MID environment, which led banks, especially borrowers, to refrain from posting bids.

Chart 27 Average daily cross-border volumes in e-MID



Source: ECB calculations based on e-MID data.

2007, such volumes in e-MID have been broadly half the corresponding volumes expected on the basis of pre-turmoil data (see Chart 27). This finding, if taken alone, would seem to indicate a weakening of the cross-border market with a possible segmentation of money markets across the euro area. In addition, Chart 28 shows that since October 2007, the price for cross-border transactions has decreased as opposed to the price for domestic trades. This evidence may be interpreted as follows: before the turmoil, a large number of banks were active both in domestic and in international money markets. As a result of the turmoil, cross-border interbank trades are now being conducted mainly by banks with a relatively high credit standing, who act as “money centres” in the different countries of the euro area. The higher average quality of cross-country borrowers is reflected in the lower interest rates. Other banks, most likely smaller or less known, are mainly trading in domestic markets, where interest rates are higher, because the average credit risk is perceived to be higher. Thus, in the cross-border context, the events seem to have enforced the two-tier system of the money market, in which smaller banks rely on liquidity provision by internationally active “money centre” banks. This structure enabled liquidity to continue flowing across the

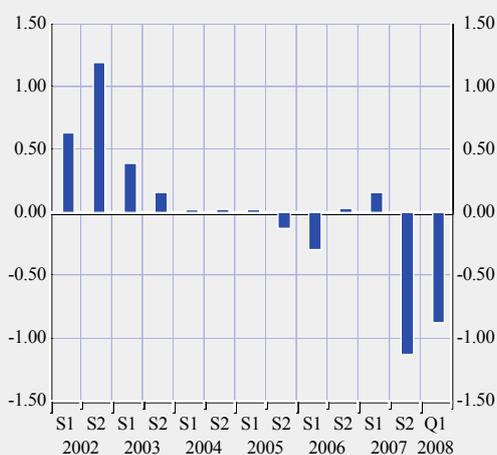
entire euro area at uniform rates (at least until March 2008, after which data were no longer available).

Regarding secured money markets, several sources point to a recovery in cross-border business within the euro area. While detailed data is not available because most transactions are carried out OTC, survey data can be used to assess some aspects of the effects of the recent events on financial integration, in particular, to what extent the collateral used is of national or foreign origin. If predominantly national assets were used in repo transactions, this would indicate a low ability to trade on a cross-border basis and vice versa. According to the Euro Money Market Survey, the share of euro area collateral used in bilateral repos increased from 60.6% in the second quarter of 2007 to 65.3% in the same quarter of 2008. Similarly, the European Repo Market Survey reports that cross-border business across automated trading systems operating in Europe increased from 55.8% in December 2007 to 58.6% in June 2008 and, for tri-party repos, from 71.4% to 73.0%.

Overall, all sources reveal that euro area collateral not only remains far more widely used than domestic collateral, but that it even increased its share in 2008.

**Chart 28 Average spread paid by foreign (non-Italian) banks when borrowing in the e-MID market**

(in basis points)



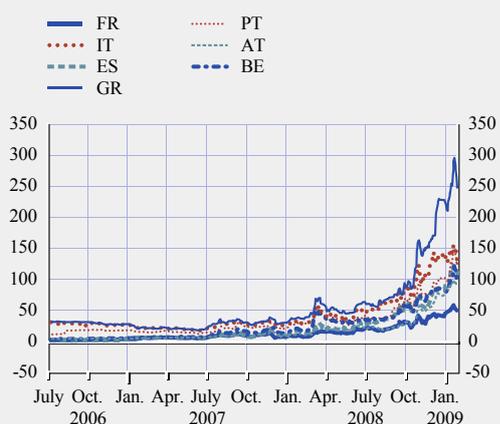
Source: e-MID.

## 2 GOVERNMENT BOND MARKETS

Similar to the money markets, the government bond markets have shown clear signs of strain during the turmoil despite benefiting from “flight to safety” as investors sought to reduce risk. From June 2008 the euro area sovereign bond spreads vis-à-vis the German benchmark increased dramatically from their already elevated levels in the first half of the 2008. Amid a general increase, the spreads of some countries widened significantly more than those of other countries. For some countries, credit ratings were downgraded from January 2009 in part owing to the heightened fiscal risks of unsustainable public finances (Chart 29).

**Chart 29 Ten-year government bond yield spread vis-à-vis the German bond**

(basis points; daily data; June 2006 - January 2009)



Source: Thomson Financial Datastream.

Chart 29 shows that in a rather short time period, countries that were considered to be relatively stable and low-risk were also affected by the turmoil. This may reflect in part a mounting concern about the sustainability of rapidly deteriorating public finances, also in light of the magnitude of the fiscal commitments launched as the turmoil worsened and the risk of economic downturn increased. Government bond yield spreads and their underlying risks increasingly became the focus of attention of investors and analysts as well as of the general public.

Notably, after the collapse of Lehman Brothers in September 2008, analysts and investors began to focus on the risks underlying the widening of yield spreads, such risks being related to a market's liquidity conditions (liquidity risk) and to the creditworthiness of the market players, i.e. the sovereign issuers (credit risk).

During September 2008 matching demand and supply of liquidity became increasingly challenging. Even financial institutions with ostensibly sound balance sheets found it more and more difficult to obtain liquidity to handle normal day-to-day operations as risk-aversion reached levels not hitherto observed in the post-war era. This is a reflection of the wider issues in finding a new equilibrium when there

are few, or perhaps even none, active market players.

As already pointed out in Chapter I, an increase of cross-country dispersion of yields was observed as the turmoil unfolded in autumn 2008. The increase may be partly related to the more difficult market liquidity conditions. From the standpoint of financial integration, this can be interpreted in different ways. It may indicate an upward risk of market segmentation. On the other hand, the increase is also consistent with explanations relating to changes in market fundamentals, such as a re-pricing of credit risk reflecting relative differences in the creditworthiness of sovereign issuers.<sup>4</sup>

#### DISENTANGLING CREDIT AND LIQUIDITY RISK

It is important to disentangle credit and liquidity risk: a difficult task even in normal times but in periods of turbulence the challenge is even greater. While there are many ways to proceed, one particularly simple approach is as follows.

The risk premium can be decomposed in two parts: one incorporating the price that investors attach to risk, and another related to the amount of risk *perceived* by investors. The latter *perception* is normally influenced by a host of idiosyncratic factors that are also present in normal times, but which at times of high market volatility may come to dominate, resulting in large departures from fundamentals.

$$\text{Risk Premium} = \text{quantum of risk} * \text{price of risk}$$

As we will see, this decomposition provides useful information on the latest developments in the government bond market.

<sup>4</sup> There need not be a one-to-one relationship between market liquidity and segmentation. For example, during the turmoil, the sovereign liquidity premium increased in highly integrated markets such as in the United States. By contrast, other features of this relationship are related to the presence of idiosyncratic elements such as, in the euro area, differing fiscal regimes, market conventions and national financial characteristics. In particular, not only does a certain degree of segmentation persist in the euro area, but it may also have increased during the turmoil.

## MEASURING THE PREMIUM

An estimate of the credit risk premium can be derived from the credit default swap (CDS) premium on government bonds. CDS premia have increased dramatically since the turmoil, characterised by ample swings in volatility on a spiralling trend (see Chart 30). By the end of November/beginning of December 2008, the CDS premium reached the highest value with a very strong trend increase, which was in part reversed in the following weeks. By the end of December 2008 the difference in premium on Germany five-year CDSs was greatest for Greece and Italy, which feature a high share of government debt to GDP and are lower in the credit rating scale (Chart 31).<sup>5</sup> The spreads also rose markedly for Austria, Portugal and Spain.

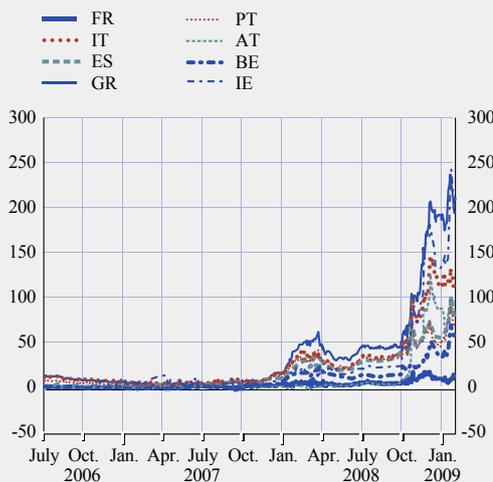
The sharpest increases in the CDS premia largely coincided with the announcements of fiscal stimulus and rescue packages in the euro area countries (Chart 32).<sup>6</sup>

As indicated above, part of this surge seems to reflect the increased risk stemming from doubt about the sustainability of public finances and fiscal soundness. However, this cannot explain the whole spike in the sovereign CDS premium.

One factor that, together with the fundamentals, may explain the spike is heightened *perceived* uncertainty, or more concretely, increased pessimism not explainable by movements in fundamentals. As the *perception of risk* increased during this time, so did the CDS premium. The spike in CDS premia is further related to the investors' perception of a "risk transfer" from the financial to the sovereign sector, which was then reflected in investors' perception of deteriorating country creditworthiness. When compared with other common measures of risk, such as the iTraxx-Crossover Index, sovereign CDS premia were in relative terms noticeably more affected than the iTraxx-Crossover Index although at much

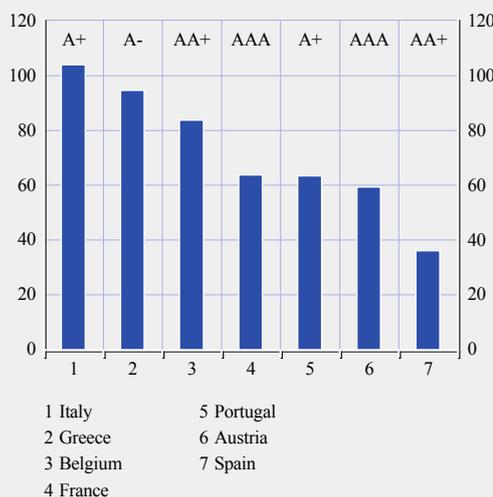
Chart 30 Five-year CDS premia difference vis-à-vis Germany

(basis points; daily data; June 2006 - January 2009)



Source: Thomson Financial Datastream.

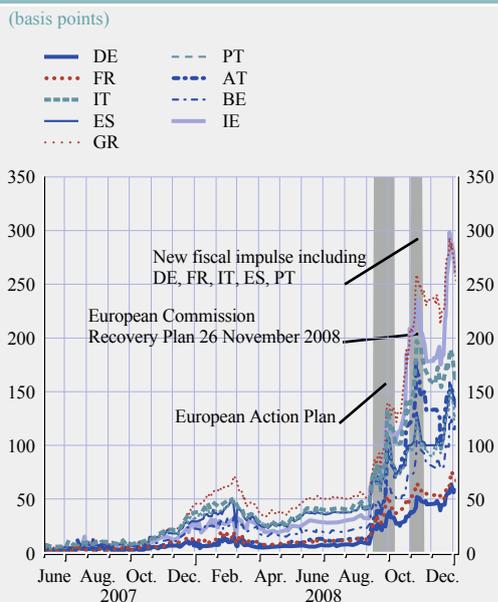
Chart 31 Government debt as percentage of GDP, 2007



Sources: European Commission, Bloomberg.

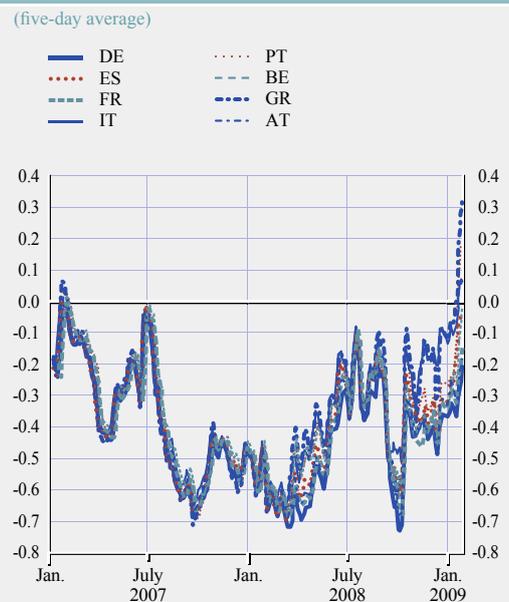
- <sup>5</sup> The highest CDS spread was 205.6 for Greece (5 December 2008) and 144.8 for Italy (8 December 2008). In the first week of December 2007 the median (largest) spread was 10.1 (13) for Greece and 10.4 (11.9) for Italy.
- <sup>6</sup> The different reactions to the CDS spreads in response to announcements of fiscal stimulus packages are also likely to reflect perceptions about the effectiveness of fiscal expansions in relation to the dimension of public debt. Countries with high debt may experience a "crowding-out" of private expenditures as their public expenditure increases.

Chart 32 CDS premium and fiscal measures



Sources: Thomson Financial Datastream, European Commission, ECB.

Chart 33 Correlation between daily stock returns on the Dow Jones EURO STOXX 50 stock price index returns and ten-year government bonds



Source: ECB calculations.

lower levels, thereby signalling heightened tensions in the sovereign bond markets.<sup>7</sup>

The movement in the perception of risk is mirrored in Chart 33, which displays the correlation between the Dow Jones EURO STOXX 50 and ten-year sovereign bond yields. While these are normally uncorrelated or slightly positively correlated, at times of heightened risk perception they become strongly negatively correlated, as can be seen from the chart. This is a sign of “flight-to-safety”, as investors shift their portfolio holdings from the riskier equities to the safer bonds. While this phenomenon is not new in periods of heightened uncertainty, the correlations exhibited unusually clear heterogeneity. Notably, the correlation between the Dow Jones EURO STOXX 50 and the German bond was the highest (negative) and between it and the Greek bond the lowest.<sup>8</sup> One way to interpret this is that investors were moving their capital to safety by discriminating between sovereign bonds of different quality, i.e. degree of credit/default risk. Indeed the periods in which heterogeneity became stronger,

for example from March to June 2008 and from October 2008 onwards, largely coincided with periods in which the CDS premium increased to reach very high levels, particularly for those countries with a lesser credit rating (Chart 30).

All in all, while investors focused their attention on countries’ creditworthiness, country risk premia also reflected the investors’ *perception of risk* at a time of extreme volatility.

The second potential driving force of the sovereign bond spreads is the liquidity premia, which in large part reflect the depth of trade in that particular bond. Put simply, the more the

7 ITraxx-Crossover index is an index of corporate CDS premia, often regarded as a measure of risk aversion. While the ITraxx-Crossover index and sovereign CDS spreads generally co-move, a significant departure was observed from mid-October 2008 to December 2008. See also Box 2 “Recent widening in euro area sovereign bond yield spreads” in the November 2008 issue of the ECB Monthly Bulletin.

8 See, for example, Hartmann P., Straetmans S. and C. G. de Vries (2004), “Asset market linkages in crisis periods”, *Review of Economics and Statistics*; Caballero R.J. and A. Krishnamurthy (2008), “Collective Risk Management in a Flight to Quality Episode”, *Journal of Finance*, 63(5), pp. 2195-2230.

Chart 34 Difference of average bid-ask spread 2007-2008<sup>1)</sup>



Sources: Reuters, ECB.

1) Average of bid-ask spreads, daily data (closing prices, snapshot at 6 p.m.) on long-term sovereign bonds computed in 2007 and 2008. Austria is omitted due to missing data. Data referring to 2008 for France are relatively few and must be interpreted with some caution.

bond is traded, the more liquid it is and the lower the bid-ask spread. Evidence from market participants suggests that liquidity became scarce during the turmoil. This is corroborated by quantitative measures of liquidity and in particular by the bid-ask spreads on long-term sovereign bonds. Chart 34 shows that a general widening of bid-ask spreads was observed in 2008 compared with the previous year.<sup>9</sup>

While German bid-ask spreads show the least change, consistent with Germany's status as a benchmark country with low fiscal risk, some other countries – including Spain and Greece – were quite considerably affected. For these countries, the average daily changes reached 1%, while for Belgium it reached 2%.

Altogether this suggests that both credit and liquidity risks played different and complex roles in the widening of sovereign spreads during the turmoil. The exact manner in which investors' views on liquidity and credit spreads have affected developments remains an open issue.

One way to approach this issue more formally is to estimate a simple model of the effects of changes in credit and liquidity risk on government spreads, using data for both before

and during the turmoil. Such a model can be written as:

$$YS_{i,t} = \alpha_i + \beta_i CS_{i,t} + \gamma_i LS_{i,t} + \delta_i VSTOXX_t + \Phi_i Dummy_t + \varepsilon_{i,t} \quad (1)$$

where  $YS$  represents the yield spreads,  $CS$  the credit spreads observed in the CDS market,  $LS$  the bid-ask spreads and  $\varepsilon$  is the unexplained error term. In addition, a measure of market uncertainty, as captured by the Volatility Index  $VSTOXX$  and a dummy variable to control for possible asymmetries, are also included.<sup>10</sup> In particular the dummy variable is defined as

$$Dummy_t = \begin{cases} 0 & \text{before 7 August 2007} \\ 1 & \text{after 7 August 2007} \end{cases} \quad (2)$$

Further, sub-index  $i$  represents countries and  $t$  time. The dummy variable thus captures a general “crisis-effect” on the spreads over and above those of credit and liquidity risk. Although this simple model cannot address all the issues related to the dynamics of sovereign bond spreads, it nevertheless has several advantages in terms of tractability and ease of understanding, especially when estimated for the euro area countries with both notable common features as well as differences. Indeed ease of understanding and tractability are non-trivial issues when examining the years 2004-2008, a period of severe financial stress. Nevertheless, the simplicity of the

<sup>9</sup> Bid-ask spreads are a commonly used measure of market liquidity in academia as well as among market practitioners. However there are a number of caveats associated with them, therefore a certain caution is required when interpreting the empirical evidence. First, the bid and ask prices are quoted prices, not the actual traded price. Therefore they might hold only for a sub-set of actually traded quantities. Second, they capture only an aspect of the generally more complex concept of liquidity. Nevertheless, there is evidence that bid-ask spreads are broadly representative and in some studies they are found to be one of the most significant liquidity measures (see, for example, Favero C.A., M. Pagano and E.L. von Thadden (2005), “Valuation, Liquidity and Risk in Government Bond Markets”, IGIER Working Paper No 281, and Schulz A. and G.B. Wolff (2008), “Sovereign bond market integration: the euro, trading platforms and globalisation”, European Commission Economic Papers, June.

<sup>10</sup> There are eight countries: Austria, Belgium, France, Germany, Greece, Italy, Portugal and Spain. The time period runs from 2004 to 2008; at daily frequency we have 7,623 observations in total.

**Table 1 Government bond yield spreads, explained by liquidity and credit risk**

	FR	IT	ES	GR	PT	AT	BE
<b>Credit spread</b>							
Pre-turmoil	0.018*** <i>0.002</i>	0.010*** <i>0.000</i>	0.012*** <i>0.001</i>	0.013*** <i>0.000</i>	0.014*** <i>0.001</i>	0.009*** <i>0.000</i>	0.018*** <i>0.001</i>
turmoil	-0.001 <i>0.001</i>	-0.001*** <i>0.000</i>	0.001*** <i>0.000</i>	-0.001*** <i>0.000</i>	0.002*** <i>0.000</i>	-0.001*** <i>0.000</i>	-0.002*** <i>0.001</i>
total (pre +turmoil)	<b>0.016</b>	<b>0.009</b>	<b>0.013</b>	<b>0.013</b>	<b>0.016</b>	<b>0.007</b>	<b>0.016</b>
<b>Liquidity spread</b>							
Pre-turmoil	0.103*** <i>0.024</i>	0.024 <i>0.066</i>	0.145*** <i>0.046</i>	0.107*** <i>0.044</i>	0.027 <i>0.077</i>	0.011 <i>0.075</i>	-0.199*** <i>0.070</i>
turmoil	-0.105** <i>0.055</i>	-0.237** <i>0.114</i>	-0.643*** <i>0.135</i>	0.271 <i>0.222</i>	-0.274 <i>0.218</i>	0.141* <i>0.091</i>	0.314*** <i>0.133</i>
total (pre +turmoil)	<b>-0.002</b>	<b>-0.213</b>	<b>-0.498</b>	<b>0.379</b>	<b>-0.247</b>	<b>0.153</b>	<b>0.114</b>
<b>Dummy</b>	0.047*** <i>0.005</i>	0.105*** <i>0.007</i>	-0.055*** <i>0.010</i>	0.069*** <i>0.011</i>	-0.090*** <i>0.014</i>	0.096*** <i>0.005</i>	0.052*** <i>0.006</i>
<b>VSTOXX</b>	0.003*** <i>0.000</i>	0.003*** <i>0.001</i>	-0.003*** <i>0.001</i>	0.002*** <i>0.001</i>	0.002*** <i>0.001</i>	0.001* <i>0.000</i>	0.003*** <i>0.000</i>
<b>R2</b>	0.82	0.94	0.87	0.96	0.81	0.85	0.90
<b>Adjusted-R2</b>	0.82	0.94	0.87	0.95	0.81	0.85	0.90
<b>Number of observations</b>	701	1181	896	1209	1209	1209	1167

Method: Least Squares.  
Sample (adjusted): From 26/01/2004 to 30/01/2009.  
White Heteroskedasticity-Consistent Standard Errors & Covariance.  
Note: \* refers to 10%, \*\* to 5%, and \*\*\* to 1% significance levels.  
Standard errors are marked in italics.

model has its limitations and results should be interpreted with some caution.

Table 1 shows the values of the estimated coefficients on a country level for five-year maturity government bonds. It also shows how the parameters are affected by the turmoil.<sup>11</sup>

The results presented in Table 1 not only illustrate the impact of credit risk on government bond yields during the turmoil, they also indicate that the liquidity risk is sometimes significant and, for certain countries, plays a non-trivial role. The results also show that the credit component has remained important throughout the whole sample, while for some countries liquidity concerns seem to have heightened more in relative terms during the turmoil. Notably, the common factors as captured by the volatility index and the dummy variable have played a similarly significant role for most of the countries in the sample.<sup>12</sup> This result is consistent with expectations given the relatively high degree of financial integration in the euro area as well as the presence of global financial linkages.

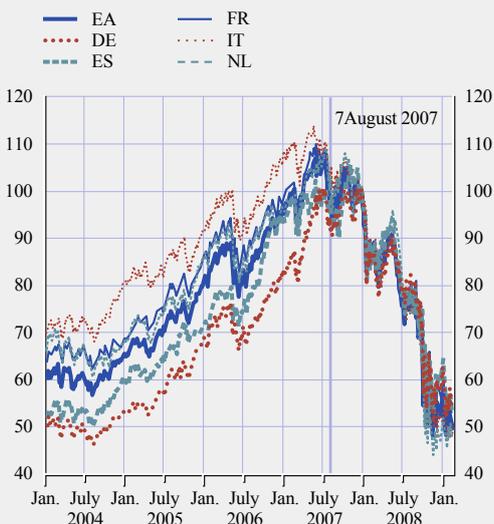
### 3 EQUITY MARKETS

During the turmoil equity markets exhibited extreme movements. The euro area was no exception in this regard, as the EURO STOXX plunged and rallied, often in reaction to news from the United States or the euro area. While still exhibiting country differences, there was a high level of synchronisation among the European equity indices consistent with the high degree of integration.

<sup>11</sup> The results in Table 1 are relatively robust in various dimensions. For example, we used lagged bid-ask differentials and lagged credit risk respectively in two versions of the baseline model of equation 1. We also estimated a different model specification with time-varying risk-premium. In particular, we chose a specific form for the liquidity risk premium, in which liquidity spreads are directly affected by time-varying risk aversion measures. Finally, we used credit ratings from Standard and Poor's (S&P) as instruments for credit spreads in both specifications of the model.

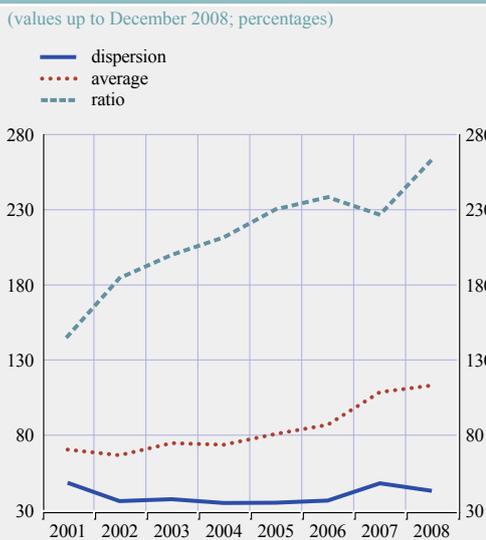
<sup>12</sup> These results are broadly in line with academic research where yield spreads are mainly driven by changes in common factors. See, for example, Gomez-Puig M. (2006); Favero C., Pagano M. and von Thadden E.L. (2005); Beber A., Brandt M. and Kavajecz K.A. (forthcoming, Journal of Finance). See also the paper by Manganelli S. and Wolswijk G. (2007) in which a different specification with time-varying risk premium is preferred.

Chart 35 Stock Price Indices



Source: Reuters.  
 Note: The indices used are the Dow Jones EURO STOXX broad index for the euro area, the DAX 30 for Germany, the MILAN MIB 30 for Italy, the CAC 40 for France, the AEX Index for the Netherlands and the IBEX35 for Spain. The base date is 1 January 2008, when all the indexes equal 100.

Chart 37 Cross-country turnover velocity, average over dispersion ratio

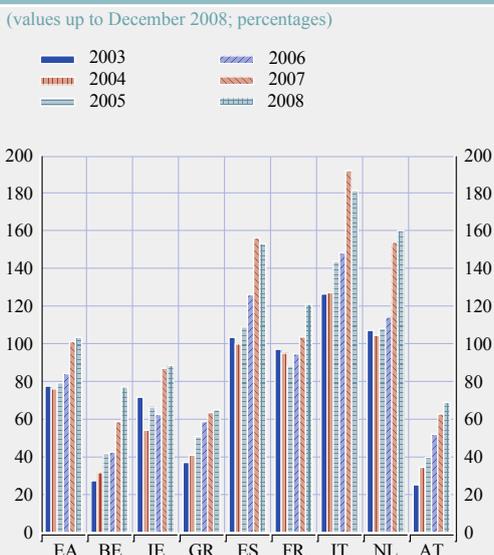


Sources: Thomson Financial Datastream, ECB calculations.

One way to assess the potential effects of the increased volatility of equities markets during

the turmoil is to examine an indicator of stock market velocity, consisting of the annual average of the trading value of domestic shares relative to market capitalisation.<sup>13</sup>

Chart 36 Stock Market Turnover Velocity



Source: Thomson Financial Datastream.

Developments in stock markets as measured by turnover velocity for each year from 2003 to 2008 are on an upward trend for all euro area countries included in the sample. The 2008 values are also broadly comparable with the values of the previous year, which were the highest values of the indicator recorded so far. Hence it appears that developments in equity markets in 2008 were slower than the previous year but remained at a relatively high level, as can be seen from Chart 37 summarising the turnover velocity. The chart plots the ratio of the average of the turnover velocity over its cross-country dispersion. An increase in this ratio corresponds to an increase in the average value relative to its dispersion.

13 This indicator is the turnover velocity in the statistical annex. The difference in data is attributable to differences in source. Here we use the data from Thomson Financial Datastream which are available with monthly frequency.

Intuitively, in lesser integrated markets, for example markets which feature very diverse structural aspects, one would expect the cross-country dispersion to increase relatively more and the ratio to show a downward trend.<sup>14</sup> The turmoil notwithstanding, the trend of the ratio remains moderately positive, thereby suggesting that equity markets remain highly integrated, broadly confirming the analysis in Chapter I (see Chapter I, Chart 15).

#### 4 BANKING MARKETS

Financial integration in banking markets has been characterised by clear differences as to the degree of integration in wholesale, securities and retail banking activities. These differences tend to change slowly since they are much affected by the related infrastructures.

The intensification of the financial crisis initiated a wave of state interventions in European banks. Recent stock price developments and the need for additional capital may also provide opportunities for M&A in the future. However whether such activity would be primarily domestic or cross-border is difficult to assess at this juncture.

The analysis below makes a preliminary assessment of the effect of the financial turmoil on the integration of banking markets. It first looks at the cross-border provision of banking services, considering both price and quantity-based indicators. The second part touches on the recent developments in cross-border consolidation.

#### CROSS-BORDER PROVISION OF SERVICES

The data on the cross-border provision of services within the euro area suggest a medium-term gradual trend towards integration, but also show signs of a setback in the second half of 2008, in particular in the interbank components.

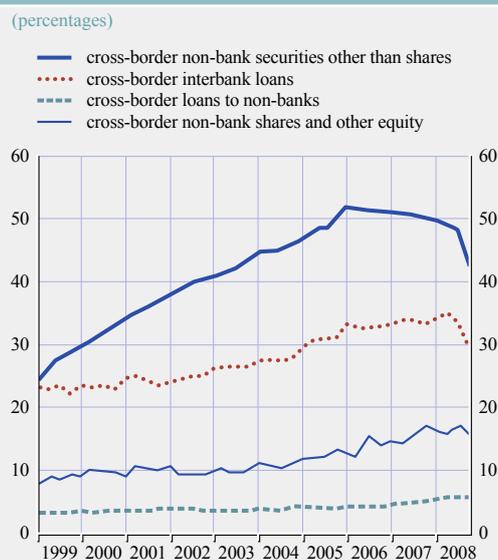
Starting with the price-based indicators, the cross-country heterogeneity of the short-term interest rates on loans to non-financial corporations shows that there have been no

major changes since July 2007. The rise in the standard deviations for the long-term rates in the first half of 2008 has since turned to a decline, the levels currently being similar to those in 2007 (see Chart C22 in the annex). Looking at the interest on loans to households, the cross-border standard deviations for short-term rates for house purchases have risen somewhat during the second half of 2008, whereas there has been no marked change in the long-term standard deviations since July 2007 for house purchase loans. Only the consumer credit rate dispersion has risen strongly since the second half of 2007; however, this indicator has been volatile since 2005 (see Chart C23 in the annex).

Measured by the quantity-based indicators, the upward trend of the share of cross-border loans has been preserved throughout the observation

<sup>14</sup> While it is clear that integration is a complex process, as underlined by the definition used by the ECB (see the preface), this does not preclude some simple observations that are, in fact, key aspects. Markets that differ in important structural ways, for example trading platforms or clearance procedures, are less likely to become integrated simply because of the larger hurdles they have to overcome. The obstacles are correspondingly lower for the integration of markets that share similar structural aspects.

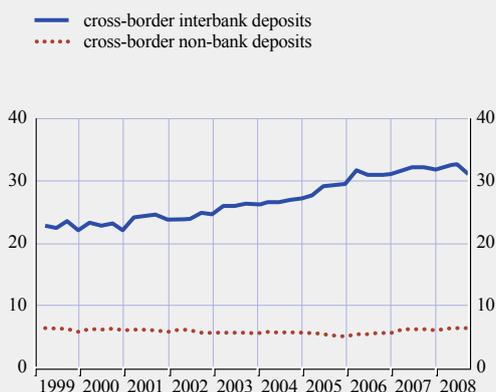
**Chart 38 Cross-border provision of financial services in the euro area – assets**



Source: ECB.  
Note: Cross-border activity is expressed as a percentage of the total euro area provision of financial services.

**Chart 39 Cross-border provision of financial services in the euro area—liabilities**

(percentages)



Source: ECB.

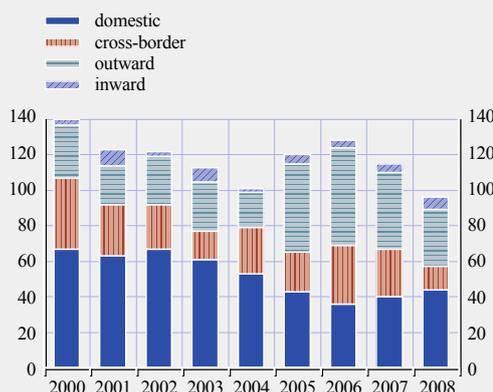
Note: Cross-border activity is expressed as a percentage of the total euro area provision of financial services.

period. The shares of euro area cross-border loans and deposits have remained stable, whereas loans to the rest of the EU have slightly decreased in relative terms (see Charts C26 and C27 in the annex). The cross-border provision of securities and interbank loans and deposits has decreased relative to total business in the second half of 2008. All in all, integration remains significantly more advanced in wholesale and capital market activities than in the retail banking market, characterised by a higher degree of inertia and more influenced by structural elements such as the regulatory framework and the related infrastructures.<sup>15</sup> This is clearly visible in Charts 38 and 39 above depicting the evolution of cross-border assets and liabilities in the euro area.

### CROSS-BORDER CONSOLIDATION

Despite the increased uncertainty in financial markets, M&A activity continued in the EU during 2007 and 2008. The first six months of 2008 in particular saw a large increase in the value of cross-border bank M&As in the euro area, owing to the ABN Amro acquisition by a European consortium comprising the Royal Bank of Scotland, Fortis and Santander.<sup>16</sup> Banks also concluded strategic acquisitions in

**Chart 40 Bank M&As in the EU: number of transactions**

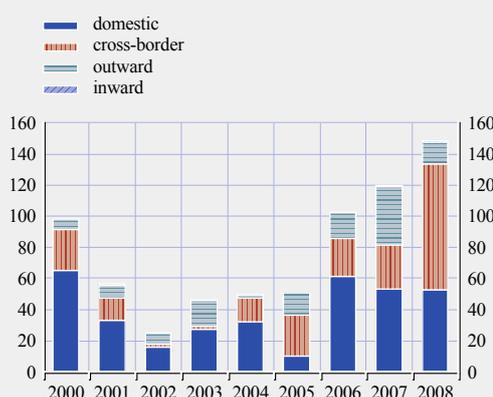


Source: Zephyr, Bureau Van Dijk.

Notes: M&As include both controlling and minority stakes. For some of the deals, the value is not reported. Cross-border M&A refers to intra-EU27 transactions involving a non-domestic acquirer. Inward refers to M&A by a non-EU27 bank in the EU27 and outward indicates M&A of EU27 banks outside the EU27.

**Chart 41 Bank M&As in the EU: value of transactions**

(EUR billions)



Source: Zephyr, Bureau Van Dijk.

Notes: M&As include both controlling and minority stakes. For some of the deals, the value is not reported. Cross-border M&A refers to intra-EU27 transactions involving a non-domestic acquirer. Inward refers to M&A by a non-EU27 bank in the EU27 and outward indicates M&A of EU27 banks outside the EU27.

<sup>15</sup> See Special Feature B on regulatory and supervisory harmonisation in the report "Financial Integration in Europe" (2007), and Special Feature D on infrastructures in the 2008 report. Chapter III of this report refers to a number of recent initiatives in which the Eurosystem is involved.

<sup>16</sup> Note that both the Royal Bank of Scotland and Fortis were subject to State recapitalisation measures later in 2008.

emerging markets, thereby continuing a trend that had already started in 2005 (see Charts 40 and 41).<sup>17</sup>

Following the intensified problems in the US financial markets and the drying up of the global money markets, the second half of 2008 saw a wave of state intervention in European banking markets (see Table 2). In order to avoid differences in approaches across countries distorting the level playing-field between financial institutions in the Single Market, these state interventions were carried out in accordance with a concerted plan agreed at EU level, and further guided by the indications issued by the European Commission and the Eurosystem.<sup>18</sup> The most affected banks were typically relying on wholesale funding, had tight capital ratios and were exposed to the

stretched property markets.<sup>19</sup> On the other hand, the deterioration in the equity prices of certain banks and the need for capital injections may provide opportunities for M&A activity. Indeed, profit opportunities in the host country largely seem to have motivated banks' internationalisation decisions in the EU in the past.<sup>20</sup> The recent acquisitions of parts of Fortis by BNP Paribas and parts of Bradford & Bingley by Abbey Santander are examples of significant cross-border actions in this direction. Whether the step towards higher state involvement is of a temporary nature, or whether it involves a more structural component, will become clearer in the medium term. In this regard, it should be noted that the guidance given by the European Commission and the Eurosystem recommends a clear exit perspective for any state recapitalisation measures.

**Table 2 Published national bank rescue packages with explicit commitments**

(EUR billions)

Country	Recapitalisation	Asset purchases/ swap	Funding guarantees
<b>Euro area</b>			
BE	<i>18.40<sup>1)</sup></i>	-	- <sup>2)</sup>
DE	80	-	400
IE	10	-	485
GR	5	8	15
ES	-	30-50	100
FR	40	-	320
IT	15-20	40	- <sup>2)</sup>
LU	<i>2.87</i>	-	<i>4.5</i>
NL	<i>36.80<sup>3)</sup></i>	-	200
AT	15	-	75 <sup>4)</sup>
PT	4	-	20
SI	-	-	12
FI	4	-	50
<b>Other EU</b>			
DK	13 (100 DKK)	-	-
LV	<i>0.60</i>	-	2 <sup>5)</sup>
HU	1 (300 HUF)	-	1 (300 HUF)
SE	4 (50 SEK)	-	13 (150 SEK)
UK	56 (50 GBP)	56 (50 GBP)	280 (250 GBP)

1) The amounts indicated in italics correspond to the amounts actually spent by the governments on rescue measures where there is no official, pre-established national plan.

2) The amounts of the Belgian and Italian funding guarantee plans remain unconfirmed as of February 2009.

3) This amount includes the €20 billion recapitalisation envelope announced by the Dutch Government, and the recapitalisation of Fortis Nederland for €16.8 billion outside the scheme.

4) The amount of €85 billion often reported includes €10 billion deposit insurance.

5) The envelope announced corresponds to a maximum of 10% of Latvian GDP.

17 See the ECB report "EU Banking Structures", October 2006. When comparing Charts 40 and 41 with Chart 20 in Chapter I, please note that the latter only considers euro area cross-border bank M&A activity.

18 See Chapter III of this report for more information. See also Box 10 and Special Feature A in the ECB "Financial Stability Review", December 2008.

19 In general, large and complex banking groups in the euro area display different funding structures and therefore have been affected in varying degrees. See Chapter 4 in the ECB "Financial Stability Review", December 2008.

20 See Box 2 in the ECB report "EU Banking Structures", October 2008.

## B. INSTITUTIONAL INVESTORS AND FINANCIAL INTEGRATION

*In the last few years, institutional investors – investment funds, insurance corporations and pension funds – have become the main collectors of households' funds and important shareholders of firms and banks.*

*Institutional investors diversify their portfolio across instruments and countries with the aim of maximising risk-adjusted expected returns. Therefore, the portfolio choices of institutional investors, and in particular the geographical diversification of their investment, have contributed to the financial integration of the euro area.*

*Holdings by euro area investment funds of foreign assets issued by other euro area countries increased remarkably between 1998 and 2007.*

*The current financial crisis is having an impact on these past observed trends. Available data suggest a sizeable shrinkage of the value of overall assets managed by institutional investors – investment funds in particular – over the last quarters, implying a decline in the relative importance of institutional investors vis-à-vis banks as collectors of households' funds. However, the data do not show significant changes in the equity portfolio allocation of these investors across euro area countries during the crisis. At the same time, instead, their investment in assets issued outside the euro area have decreased.*

*How lasting these movements will be remains to be seen. In the longer run, it is conceivable that institutional investors will resume their important contributing role to euro area financial integration along the lines observed in recent years, but the modalities and timing of this process are unknown at this juncture.*

## I INTRODUCTION

Financial systems play a key role in the functioning of modern economies. The capital markets, by allocating resources across space and time, are instrumental to the welfare of consumers. Barriers and obstacles to financial integration prevent the allocation of the

available resources to the most valuable projects at the lowest possible cost. As a consequence, promoting integration of euro area financial markets is a key priority.

Institutional investors are, together with banks, the most important financial intermediaries. They are defined as professional asset management institutions with discretionary control over assets. They collect funds from small investors and invest them to achieve a specific objective in terms of acceptable risk, return maximisation and maturity of claims. The most important institutional investors are mutual funds, pension funds and insurance companies.<sup>21</sup>

Institutional investors involved in international activities can be pivotal in reducing the information barriers preventing financial integration and thus in reducing the home bias.<sup>22</sup> They diversify their portfolio by holding assets from different countries and economic areas.<sup>23</sup> However, investing abroad entails costs, not only direct transaction costs but also information costs.

The introduction of the euro and other policies related to the creation of the Single Market has reduced the costs of investing in other euro area countries for individual and institutional investors. In fact, the evidence presented in this article shows that the biggest change since 1998 in the portfolio of euro area institutional investors was a remarkable increase in the holdings of foreign assets from other euro area

21 This definition is widely used in the literature: see, for instance, P. Davis and B. Steil (2001), "Institutional investors", MIT Press, and the ECB report "Corporate finance in the euro area", May 2007.

22 For the relationship between home bias and the benefits of financial integration see B. Sørensen, Y. Wu, O. Yosha and Y. Zhu (2007), "Home Bias and International Risk Sharing: Twin Puzzles Separated at Birth", *Journal of International Money and Finance*, Vol. 26 (June), pp. 587-605.

23 One of the most important benefits of financial integration via capital markets is the achievement of cross-country risk sharing, thus improving consumer welfare. For evidence on the impact of financial integration on risk sharing in the euro area, see S. Kalemli-Ozcan, S. Manganelli, E. Papaioannou and J.-L. Peydró-Alcalde (2008), "Financial Integration and Risk Sharing: The Role of the Monetary Union", presented at the Fifth ECB Central Banking Conference, Frankfurt, (<http://www.ecb.europa.eu/events/conferences/html/cbc5.en.html>).

countries.<sup>24</sup> This evidence points to an important contribution by these intermediaries to financial integration among the euro area countries.

Section 2 describes the importance of institutional investors in the euro area and in other major developed economies. Section 3 analyses the geographical breakdown of the euro area investment funds' portfolio. Section 4 analyses the equity ownership of major euro area banks and non-financial corporations as an example of the importance of non-domestic institutional investors.

## 2 INSTITUTIONAL INVESTORS IN THE EURO AREA

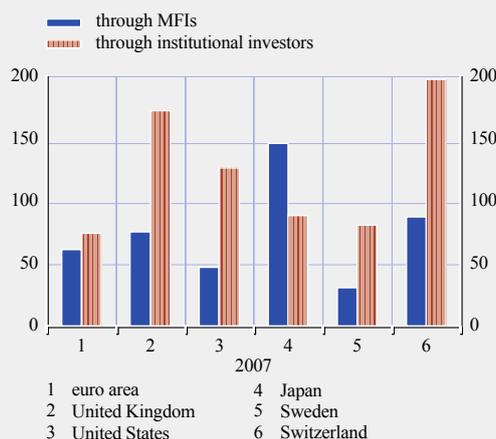
Households in developed countries hold the majority of their financial assets indirectly via financial intermediaries. Indeed, the direct holding of securities, shares in particular, constitutes a significant part of households' portfolio only in the United States. Among the various intermediaries, MFIs, which comprise banks and money market funds, collect a larger part of households' funds compared with other asset managers. In terms of magnitude, the value of financial assets held through financial intermediaries – both through MFIs and through institutional investors by euro area households was around 140% of GDP at the end of 2007, compared with 130% at the end of 1999.

The funds flowing towards institutional investors have been consistently high over the past few years, notwithstanding differences existing across countries, and have grown slightly in the major developed economies as a ratio of GDP.

The latest data show that a little less than half of the total financial assets in the euro area are invested through MFIs while the rest goes to institutional investors (see Chart 42). In Switzerland, the United States and the United Kingdom, funds flowing towards institutional investors are significantly larger. This mainly reflects investment in pension funds, presumably owing to the differences in public pension

**Chart 42 Household holdings of financial assets**

(in percentage of GDP; end-of-period)



Sources: ECB, Eurostat, Bank of Japan and the Federal Reserve Board.

Notes: Financial asset holdings through MFIs include currency and deposits. Financial asset holdings through institutional investors include mutual fund shares (for Japan, investment trust beneficiary certificates and trust beneficiary rights) as well as insurance and pension fund reserves. Data for Switzerland refer to end-2006.

schemes between these countries and most of the euro area countries. Households in Japan hold many more assets in banks than in other developed economies, although they still invest significant amounts in insurance corporations and pension funds.

Several factors have contributed to the increasing flow of funds to institutional investors. First, these are the result of significant changes in global financial markets, with a notable increase in the range of products and services offered to the public, which has tended to increase the overall investment in financial assets. At the same time global demographic trends – in particular population ageing across the developed economies – have imposed a large burden on public social security systems and have triggered pension reforms. The resulting reduction in benefits, in turn, has supported households' investment in private pension funds. This has been

<sup>24</sup> Increased financial integration in institutional ownership may lead to an increase in cross-border M&A activity. For evidence on this, see the article entitled "Cross-border bank M&As and institutional investors", ECB Monthly Bulletin, October 2008.

the case especially in the euro area, where the overall increase of capital flowing to institutional investors<sup>25</sup> resulted mainly from flows into the pension fund industry. In most euro area countries this industry remains nevertheless less developed than in some other major industrial countries.<sup>26</sup>

Owing to the large size of assets under management, institutional investors play a key role in global financial markets. They generally hold diversified portfolios, although the various types of institutional investor tend to allocate their portfolios differently, for example to respond to investment horizons of different lengths, as is the case for pension and investment funds. At the same time, portfolio allocation strategies differ across countries as well, partly owing to regulatory requirements.<sup>27</sup>

In general, institutional investors place a significant share of funds in equity. Investment funds in the euro area have increased the percentage invested in equity over the last few years to reach almost 50% by end-2007. This fraction remains significantly lower than

in the United States but higher than in the United Kingdom, where equity investment has decreased substantially since 1999 (see Chart 43). However, there are considerable differences across euro area countries. With the exception of Germany, Italy, Spain and Portugal, euro area investment funds held more than 40% of their portfolio in equity by end-2007, with investment in Finland over 60% and in Slovenia over 80%. The differences are somewhat less pronounced for the portfolio allocation of insurance corporations and pension funds (ICPFs), which on average tend to hold less equity, reflecting – inter alia – regulatory constraints (see Chart 44). In the euro area, only in Austria, Finland, France and the Netherlands is the percentage of the

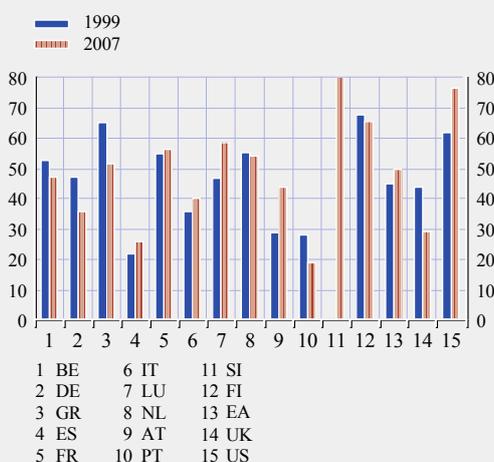
25 For the purpose of this Special Feature, hedge funds are not part of the set of institutional investors.

26 See A. Maddaloni, A. Musso, P. Rother, M. Ward-Warmedinger and T. Westermann (2006), “Macroeconomic implications of demographic developments in the euro area”, ECB Occasional Paper Series No 51, August.

27 For example, see the OECD publication entitled “Complementary and private pensions throughout the world 2008” for an overview of the legal requirements concerning private pension funds.

Chart 43 Investment fund holdings of equities

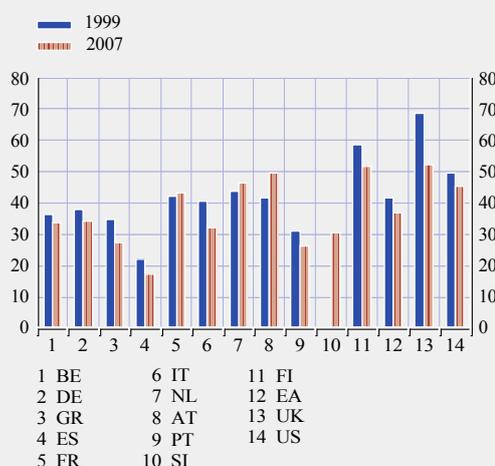
(in percentage of total assets; end-of-period)



Sources: ECB, Bank of England and the Federal Reserve Board. Notes: For the euro area countries and the United Kingdom data refer to holdings of “shares and other equity”, which include mutual fund shares; for the United States data refer to “corporate equities”.

Chart 44 Insurance corporations and pension fund holdings of equities

(in percentage of total assets; end-of-period)



Sources: ECB, Bank of England and the Federal Reserve Board. Notes: For the euro area countries and the United Kingdom data refer to holdings of “shares and other equity”, which include mutual fund shares; for the United States data refer to “corporate equities” and mutual fund shares. Latest available data for Finland are for end-2006.

portfolio invested in shares significant – more than 40% of the total assets – and similar to that in the United Kingdom and the United States, while in the other euro area countries pension funds tend to invest a larger fraction of their portfolio in debt securities.

Owing to the aforementioned differences in investment horizon and regulatory requirements, institutional investors allocate their portfolio differently across financial instruments. Chart 45 shows the portfolio allocation of other financial intermediaries (OFIs) in the euro area as compared to Japan, the United Kingdom and the United States. OFIs consist of financial institutions not belonging to the bank, insurance or pension fund sector, mainly investment funds.<sup>28</sup> The fraction of their portfolios invested in equities has declined slightly over the last few years, which may reflect also some valuation effects. At the same time the investment in bonds has declined significantly. The general low levels of yields over the same period are likely to have affected this trend, prompting investment fund managers to move towards more aggressive strategies, especially when facing a significant

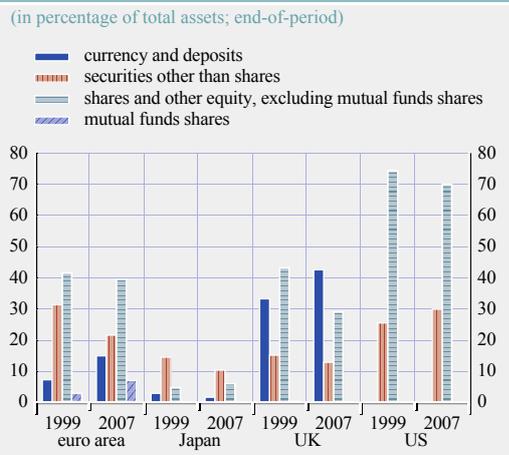
net withdrawal of funds. The investment in equity of ICPFs decreased slightly since 1999, while investment in securities other than shares increased over the same period (see Chart 46).

At the same time, investment in equity shows relevant features. In the euro area, around 40% of ICPFs' investment in equity is directed to mutual fund shares, which do not include money market shares. For OFIs, the majority of equity is held in quoted shares instead.

As far as geographical diversification is concerned, the introduction of the euro has made it easier to invest abroad, as the constraints linked to investment in foreign

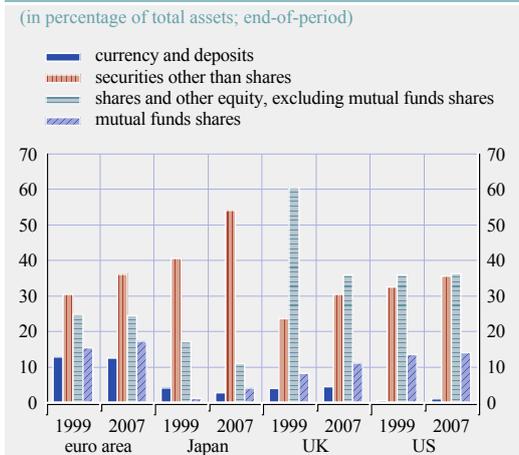
<sup>28</sup> Other financial intermediaries are defined as corporations or quasi-corporations (other than insurance corporations and pension funds), such as investment funds that are engaged mainly in financial intermediation by incurring liabilities in forms other than currency, deposits and/or close substitutes for deposits from institutional entities other than MFIs. These OFIs also include those entities engaged primarily in long-term financing, such as corporations engaged in financial leasing, financial vehicle corporations created to be holders of securitised assets, financial holding corporations, dealers in securities and derivatives (when dealing for their own account), venture capital corporations and development capital companies. See also [http://www.ecb.europa.eu/stats/pdf/eea/EAA\\_Glossary.pdf](http://www.ecb.europa.eu/stats/pdf/eea/EAA_Glossary.pdf).

**Chart 45 Portfolio allocation of OFIs**



Sources: ECB, Bank of Japan, Eurostat and the Federal Reserve Board.  
Notes: Data for the United States refer to mutual funds' balance sheet, which do not include mutual funds shares. Securities other than shares include securities and credit market instruments. In Japan, OFIs include also government intermediaries: their main activity is lending to institutions covered by the Fiscal Investment and Loans Program.

**Chart 46 Portfolio allocation of ICPFs**



Sources: ECB, Bank of Japan, Eurostat and the Federal Reserve Board.  
Notes: Data for the United States refer to the balance sheets of private pension funds, life insurance companies and property-casualty insurance companies. Securities other than shares include securities and credit market instruments. In Japan, postal life insurance is included among the ICPFs.

currency – for pension funds in particular – have been withdrawn and other barriers have been relaxed as well, at least for countries that have joined the euro area. On the other hand, the elimination of exchange rate risk limits the benefits of diversification, especially for investment in debt products.

The financial crisis that started in the summer of 2007 is having a significant impact on the trends observed since 1999. Financial accounts data, available until the third quarter of 2008, show that the value of assets invested by households in institutional investors has decreased since the beginning of 2008, especially concerning investment funds (see Chart 47). This result is attributable also to valuation effects in an environment of declining asset prices. At the same time, other data sources point to a significant withdrawal of euro area investors from investment funds. This withdrawal was particularly pronounced over the last months of 2008, notably during September and October, before stabilising in November.<sup>29</sup>

This massive withdrawal from investment funds resulted from a combination of high levels of global risk aversion and the effects of enhanced

government guarantees on bank deposits, which strengthened some forms of “flight to quality” towards banks and money market funds.<sup>30</sup> The shrinkage of mutual funds’ assets is likely to continue over the next few months although the reductions in policy rates may counteract somewhat the continued high levels of risk aversion. At the same time, flows towards ICPFs may be more stable given the longer investment horizon inherent in the offered products and certain characteristics of this investment, for example, guaranteed payments over a certain time period.

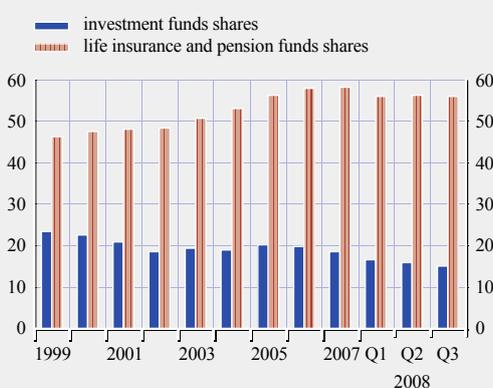
### 3 INSTITUTIONAL INVESTORS AND FINANCIAL INTEGRATION IN THE EURO AREA

The previous section has emphasised how over the last few years the importance of institutional investors has increased globally both as collectors of funds and as investors. These trends were common in all developed countries. They partly resulted from structural developments, such as population ageing and related pension reforms, and the increase in the importance of global financial intermediation and in households’ financial education. While these structural developments were somewhat more striking in some euro area countries, the increased role of euro area institutional investors as financial intermediaries, coupled with the introduction of the single currency and the effort towards a more consistent regulatory environment, had a significant impact on financial integration.

Interesting insights concerning financial integration in the euro area can be obtained

**Chart 47 Households’ investment in mutual funds and in life insurance and pension funds shares in the euro area**

(in percentage of GDP; end-of-period)



Source: ECB.

Notes: Data refer to the closing balance sheet of household and non profit institutions serving households in the euro area 15, at current prices, vis-à-vis the rest of the world, as a ratio of GDP. Investments in the first two quarters of 2008 are expressed as a percentage of annual GDP for 2008 (forecast).

<sup>29</sup> See, in particular, the December 2008 quarterly statistical release of the European Fund and Asset Management Association (EFAMA) and the Morgan Stanley Research report on hedge fund and mutual fund redemptions, 28 November 2008.

<sup>30</sup> In fact, there is empirical evidence showing that during crises banks tend to receive more funds than institutional investors owing to state guarantees on bank deposits. See E. Gatev, T. Schuermann and P. Strahan, “Managing bank liquidity risk: how deposit-loan synergies vary with market conditions”, forthcoming in the *Review of Financial Studies* and E. Gatev and P. Strahan (2006), “Banks’ advantage in hedging liquidity risk: theory and evidence from the commercial paper market”, *Journal of Finance*, vol. 61(2), pp. 867-92.

when looking at the assets of investment funds disaggregated by region of issuance.

When equity investment is considered, as it is shown in Chart 48, on average the fraction of portfolios invested in domestic equities has decreased from 42% at the end of 1998 to 32% by end-2007. The portfolio reallocation out of domestic equity has been common to all euro area countries except for Austria and Luxembourg. (The deviation from the trend in Austria may be related – inter alia – to domestic regulations.) At the same time, the decline in domestic equity investment was particularly pronounced in relatively small economies, such as Portugal and Slovenia.<sup>31</sup>

The most recent data referring to 2008 show that this trend came to a halt and, on average, the percentage of portfolio allocated to domestic equity increased slightly in 2008.

From 1999 to 2007 investment funds have been increasing the percentage of their investment

in foreign assets, including equity, in particular from other euro area countries. The overall percentage of assets invested in equities did not change much over the same period (as shown in Chart 43), with most of it being invested abroad. The current financial crisis – reflected in more recent, but still incomplete, data on asset allocation – has caused a temporary decline in equity allocation, also owing to the valuation effect.

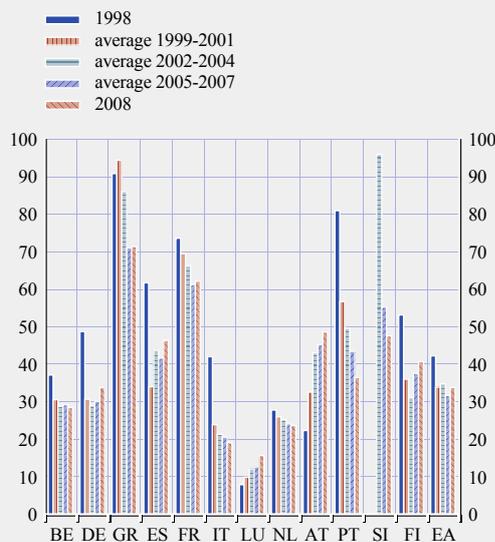
Among the various financial assets in the euro area, equity portfolios are likely to provide for higher possible geographical diversification compared with government and corporate bonds. Yields on government bonds converged in advance of the introduction of the single currency and traded in a relatively narrow range until summer 2007. More recently, as a consequence of the re-pricing of credit risk, spreads over the German yields have increased significantly since the beginning of the financial crisis for some countries. The market for corporate bonds has been strongly hampered over the last quarters by the generalised decline of asset prices that increased the cost of funding significantly, especially for riskier firms.<sup>32</sup> More generally, this segment of the market remains comparatively small in the euro area and seems to have capacity for further development in the future.

More than 40% of the equity portfolio of investment funds is invested in shares issued outside the euro area. This percentage increased slightly from the end of 1998 to end-2007, suggesting that the level of integration of the euro area institutional investors with the rest of the world, when looking at their equity investment, did not change much during this period (see Chart 49).

Important differences exist across countries of the euro area. The investment in equity issued

**Chart 48 Investment funds' holdings of domestic equities**

(in percentage of total assets; end-of-period)



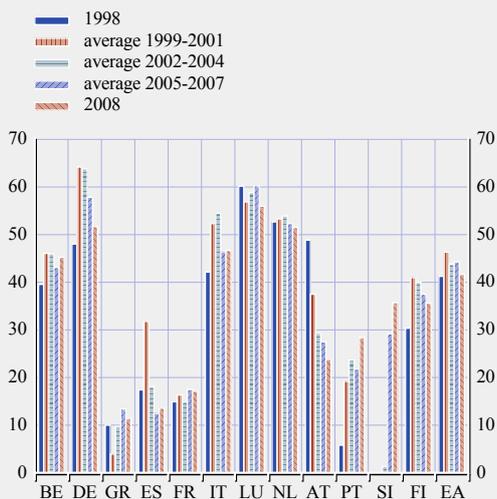
Source: ECB.  
Note: Data refer to holdings of "shares and other equity", which include mutual fund shares. 2008 refers to Q3.

31 For Slovenia, the data on investment funds allocation start only in 2000.

32 Towards the end of 2008 and in early 2009, however, strong issuance volumes of investment-grade corporate bonds, apparently supported by investors able to take a longer-term view, point to tentative improvements.

**Chart 49 Investment funds' holdings of shares issued extra-euro area**

(in percentage of total assets; end-of-period)

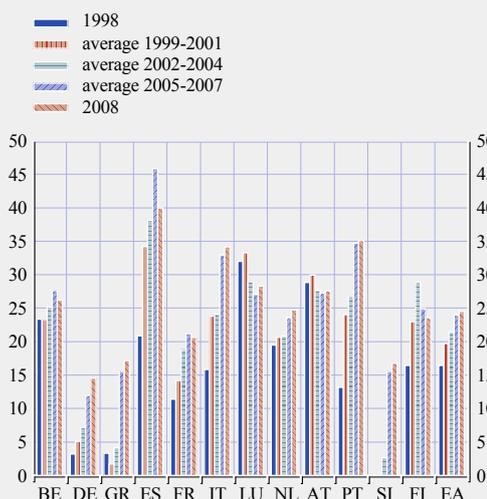


Source: ECB.

Note: Data refer to holdings of "shares and other equity", which include mutual fund shares. 2008 refers to Q3.

**Chart 50 Investment funds' holdings of shares issued in other euro area Member States**

(in percentage of total assets; end-of-period)



Source: ECB.

Note: Data refer to holdings of "shares and other equity", which include mutual fund shares. 2008 refers to Q3.

outside the euro area increased significantly in Portugal and in Slovenia over the time period considered. For Portugal, the increase was more pronounced above all during the early years of monetary union; the level of investment has not changed much more recently, suggesting that the introduction of the single currency had a significant short-term impact. In Slovenia, where data are available only since 2000, the latest information suggests also a significant increase in equity investment outside the euro area, which is likely to reflect the Slovenian economy's ties with neighbouring countries not yet part of the monetary union. Between 1998 and 2007 the investment in equity issued outside the euro area declined significantly in Austria, by around 22%, in Spain, by around 4%, and by only 1% in Luxembourg. The decline in Austria seems to be related to the regulatory constraints on equity investments of pension funds.

Data related to the third quarter of 2008 show, on average, a slight reduction of investment in shares issued outside the euro area, but the

differences across countries seem to persist and no common pattern has emerged.

A somewhat different picture emerges from data concerning the equity portfolio allocation in equity issued in other euro area countries. They show that this investment has increased significantly, on average by around 8 percentage points in the euro area between 1998 and 2007 and that the trend has been increasing throughout the entire period (see Chart 50). This evidence suggests that financial integration across euro area countries for what concerns equity investment has greatly increased over the last years.<sup>33</sup>

The increase has been widespread among all euro area countries with the exception of Austria and Luxembourg. The rise has been more pronounced for investment funds

<sup>33</sup> This result is consistent with the evidence for the euro area reported in Chart C17 in the annex. An indicator is constructed combining data from the Coordinated Portfolio Investment Survey (CPIS) of the International Monetary Fund (IMF) and Thomson Financial Datastream.

located in relatively smaller economies, such as Greece, Portugal and Slovenia. Among the biggest countries, more important changes were observed in Spain and Italy. Nevertheless, most of euro area investment funds invest less than 30% of their portfolio in foreign equity issued in other euro area countries – only in Spain is this percentage higher than 40%. Thus, in terms of overall allocation, a bigger part of foreign investment is allocated outside the euro area. This is likely to reflect also an effort to exploit diversification opportunities across currencies other than the euro.

The available data for 2008 show that the percentage of assets invested in foreign shares issued in other euro area countries remained stable notwithstanding the effect of the financial crisis.

The liabilities side of the balance sheets of investment funds provide some indications as to the extent of the withdrawal from investment funds in conjunction with the current financial crisis. In 2008 (data are available only up to the third quarter) funds were taken out of investment funds in all countries. The size of the withdrawal – relative to the total assets – was significant in Greece, Italy, Spain and Portugal. As outlined above, investment funds in these countries have

been particularly active over the last few years in diversifying their equity portfolio abroad.

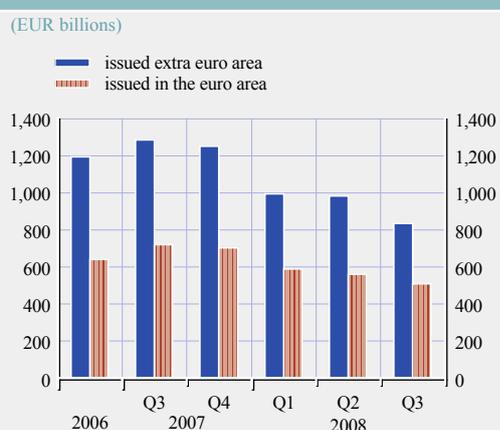
Concerning cross-country portfolio allocation, the current financial crisis seems to have reversed the trends observed over the last few years only in part. Chart 51 shows that the most remarkable drop in equity investment since summer 2007 is related to shares issued outside the euro area. The decline of investment in shares issued in other euro area countries has been comparably modest.<sup>34</sup>

#### 4 AN EXAMPLE: INSTITUTIONAL OWNERSHIP OF MAJOR BANKS AND NON-FINANCIAL FIRMS

In the previous section, the evidence presented shows that foreign institutional investors from other euro area countries have become more and more important in terms of holding domestic assets. However, as regards assets under management, the biggest institutional investors in global markets are legally based in the United States and in the United Kingdom. Therefore, institutional investors not resident in the euro area may also be important investors in the major euro area firms. This section analyses the shareholding of the largest euro area banks and the largest euro area non-financial corporations in terms of market capitalisation. Foreign institutional investors are important shareholders and, in particular, the extra-euro area vis-à-vis intra-euro area institutional ownership is analysed.<sup>35</sup>

As concerns the ownership of banks, institutional investors are the largest shareholders in all major

Chart 51 Euro area investment funds' holdings of shares



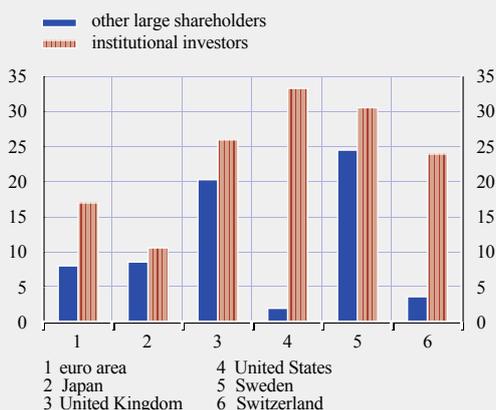
Source: ECB.  
Note: Data refer to holdings of "shares and other equity", which include mutual fund shares.

34 Particular caution should be used while analysing this data because of possible future revisions and the impact of exchange rate movements on the data. In addition, the most recent period of the financial crisis (after September 2008) is not covered.

35 Institutional investors and, in particular, non-domestic institutional investors are also important to strengthen corporate governance. See L. S. Gillan and L. T. Starks (2000), "Corporate governance proposals and shareholder activism: the role of institutional investors", *Journal of Financial Economics*, vol. 57, pp. 275-305; G. F. Davis, and E. H. Kim (2007), "Business ties and proxy voting by mutual funds", *Journal of Financial Economics*, vol. 85, pp. 552-70; and M. Ferreira and P. Matos (2008), "The colors of investors' money: the role of institutional investors around the world", *Journal of Financial Economics*, vol. 88, pp. 499-533.

**Chart 52 Institutional investors as large shareholders in major banks**

(in percentage of total shares; 2008)



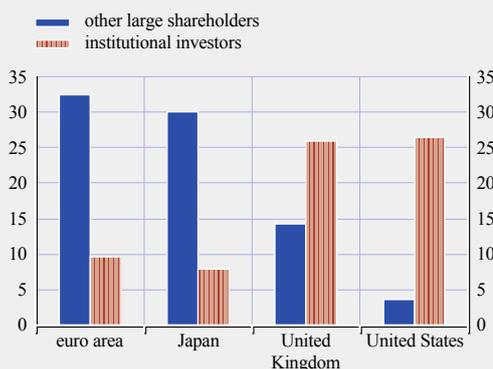
Source: Reuters.

Notes: Data retrieved in 2008. Data refer to the largest three banks in terms of market capitalisation.

Shareholding rights are the cumulated sum of rights held by the largest investors in each bank. Data are provided for the largest 20 stockholders in the pension fund and insurance corporations sector and for the largest 30 stockholders in the mutual funds sector; non-institutional investors are represented by the largest five shareholders in this category. For each geographical area, the indicator is calculated as an average of the shareholding rights by type of investor across banks, weighted by the market value of the banks concerned.

**Chart 53 Institutional investors as large shareholders in major non-financial corporations**

(in percentage of total shares; 2008)



Source: Reuters.

Notes: Data retrieved in 2008. Data refer to the largest three non-financial corporations in terms of market capitalisation as at 2007.

Shareholding rights are the cumulated sum of rights held by the largest investors in each bank. Data are provided for the largest 20 stockholders in the pension fund and insurance corporations sector and for the largest 30 stockholders in the mutual funds sector. Non-institutional investors are represented by the largest five shareholders in this category. For each geographical area, the indicator is calculated as an average of the shareholding rights by type of investor across corporations, weighted by the market value of the companies concerned.

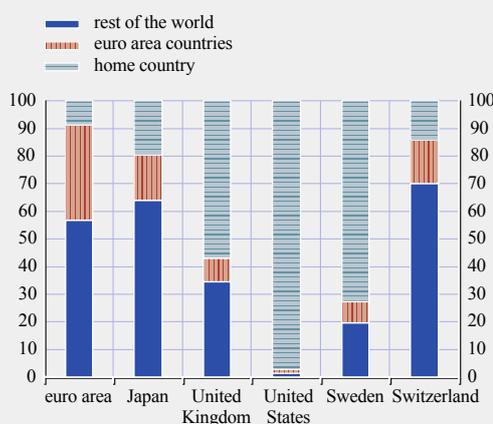
economies, although their importance is lower in the euro area and in Japan (see Chart 52). As expected, institutional investors are particularly important shareholders of banks and other companies in the United States and in the United Kingdom, where they manage a large pool of assets. They are also important in Sweden and Switzerland, probably owing to the role of pension funds in both these countries.

As concerns the ownership of large non-financial firms in the euro area and in Japan, the importance of institutional ownership is lower than in other developed countries (see Chart 53). In these regions, large shareholders other than institutional investors – acting as “insiders” – retain the control of such firms.

Chart 54 shows that when looking at the ownership of the largest euro area banks, non-domestic institutional investors resident outside the euro area are the most important

**Chart 54 Domestic versus foreign institutional investors as shareholders in major banks**

(in percentage of total shares; 2008)



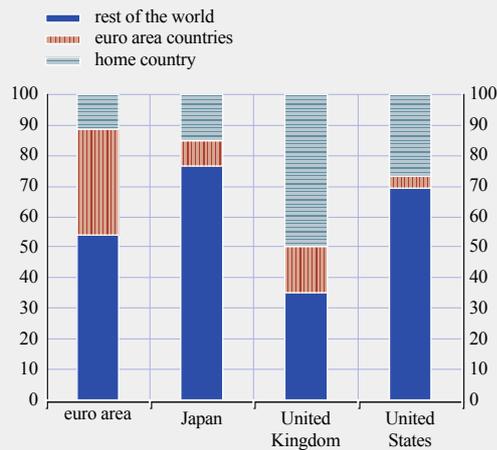
Source: Reuters.

Notes: Data retrieved in 2008. For the euro area, data refer to the largest ten banks in terms of market capitalisation; for Japan, United Kingdom and United States they are based on the three largest banks.

Shareholding rights are the cumulated sum of rights held by the largest investors in each bank. Data are provided for the largest 20 stockholders in the pension fund and insurance corporations sector and for the largest 30 stockholders in the mutual funds sector.

**Chart 55 Domestic versus foreign institutional investors as shareholders in major non-financial corporations**

(in percentage of total shares; 2008)



Source: Reuters.

Notes: Data retrieved in 2008. For the euro area, data refer to the largest ten non-financial corporations in terms of market capitalisation as at 2007; for Japan, United Kingdom and United States, they are based on the three largest banks.

Shareholding rights are the cumulated sum of rights held by the largest investors in each bank. Data are provided for the largest 20 stockholders in the pension fund and insurance corporations sector and for the largest 30 stockholders in the mutual funds sector.

in the euro area. However, the importance of non-domestic institutional investors based in other euro area countries has been increasing over the last few years, suggesting a move towards more integration.

shareholders. This observation holds true also for banks in Japan and Switzerland, but not for Sweden, the United Kingdom and the United States. As seen above, this reflects the importance of domestic institutional investors in the latter group of countries.

Foreign institutional investors as shareholders are more important in big non-financial corporations than in banks (see Chart 55), suggesting that non-financial corporations find their capital sources mostly through non-resident institutions. There are differences across countries, and only in the United Kingdom are domestic institutional investors the most important shareholders.

The findings of this section, based on a sample of the largest banks and non-financial corporations in each economic region, are consistent with the trends observed in the previous sections. Extra-euro area institutional investors are important shareholders in companies and banks

### C. FINANCING OF SMALL AND MEDIUM-SIZED ENTERPRISES AND YOUNG INNOVATIVE COMPANIES IN EUROPE

*Small and medium-sized enterprises (SMEs) and young innovative companies (YICs) are vital for the European economy. SMEs account for approximately two-thirds of European employment and their dependence on bank finance makes them important for the conduct of monetary policy. YICs account for a large part of European innovation and growth.*

*Both SMEs and YICs tend to face more stringent financial constraints, a higher cost of external finance and have higher debt levels than large firms. Evidence suggests that these constraints may be adversely affecting their ability to invest in capital and research and development (R&D), hence hampering their innovation efforts and growth prospects.*

*Policies improving the structure of credit markets and stimulating the still relatively less developed European venture capital (VC) industry may be valuable initiatives for facilitating SMEs' and YICs' access to finance. Such policies could include the promotion of banking competition and financial integration, as well as ensuring that any quantitative restrictions on European institutional investors investing in VC in excess of EU guidelines do not inappropriately limit the flow of funds into the VC industry.*

#### I INTRODUCTION

SMEs have been at the centre of attention of both academics and policy-makers for some time. They constitute up to 99% of all firms in the euro area, employ 72% of the euro area's employees and generate around 60% of value added. At the same time they have significantly higher gross job creation and destruction rates than large enterprises, and economies with a larger share of SMEs tend to have higher net job creation rates.<sup>36</sup> There are significant differences in the weight of SMEs across euro area countries. Their employment share is higher in Italy, Spain, Portugal and Greece (80% or more, based on 2000 data) and lower in Germany, the

Netherlands and Finland (around 60%). In terms of value added, the contribution is above average in Italy, Greece and Luxembourg (at around 70% or above), and considerably below average in Ireland (at 33%), Finland and France (at around 45%). SMEs play a comparatively important role in the construction and trade sectors.

A higher share of SMEs in the economy is also robustly associated with higher growth in subsequent years.<sup>37</sup> In addition, in many fields SMEs provide the channels along which new technology develops. A special class of firms – YICs – is particularly important. In fact, even in sectors such as biotechnology and information technology, relatively small numbers of small young firms are key suppliers of new technologies. Their ability to exploit new knowledge, and to respond quickly to changing market needs, gives SMEs in general and YICs in particular a pivotal role in the success of the European economy.

The importance of SMEs is also derived from some specificities of their financing that may have a distinct impact on the monetary policy transmission mechanism. SMEs are informationally more opaque and have a higher risk of failure than large firms. SMEs do not normally issue traded securities that are continuously priced in public markets. This prevents them from building a reputation and providing the market with information. As a result, SMEs rely more heavily on banks than large firms, and face a larger wedge between the cost of external finance and the opportunity cost of internal funds. In this respect, the credit channel of monetary policy and the information

<sup>36</sup> See the ECB Occasional Paper entitled "Corporate Finance in the euro area – including background material", No 63, 2007; the report "SMEs in Europe, including a first glance at EU candidate countries", Observatory of European SMEs, European Commission, 2002; and "SMEs and Employment Creation: Overview of Selected Quantitative Studies in OECD Member Countries", OECD Directorate for Science, Technology and Industry Working Paper 1996/4.

<sup>37</sup> See, for example, M. A. Carree and A.R. Thurik (1998), "Small Firms and Economic Growth in Europe", *Atlantic Economic Journal*, 26(2), pp. 137-46.

advantage of “relationship lending” appear to apply strongly to these firms.<sup>38</sup>

However, the dependence of the relationship has clear drawbacks and limitations, in particular when dealing with firms that are too young to have a successful track record with lenders. In particular, SMEs and YICs often lack the necessary collateral to back up their bank loans. Therefore, it is often argued that SMEs and YICs also face relatively higher costs of bank finance or higher loan rejection rates.<sup>39</sup> Other forms of finance, such as private equity (PE) and VC funds from business angels, as well as public finance, have picked up in recent years<sup>40</sup> as a source of funding for SMEs and especially for YICs, encouraged in part by EU-wide measures including the Risk Capital Action Plan, the Pension Funds Directive 2003/41/EC and the endorsement of international accounting standards, to name but a few. Nevertheless, there are still some legal and regulatory obstacles in Europe which hinder an increase in the flow of VC finance into SMEs. As a result, many European SMEs and YICs are forced to resort to different forms of finance when they are rationed in the bank loan market and risk capital is unavailable, such as trade credit.<sup>41</sup> This has raised the cost of finance for SMEs and YICs, restricted their investment opportunities and hampered their growth potential.

Many public programmes launched in recent years aimed at stimulating SME and YIC growth, have not fully succeeded in achieving their goal. For example, a recent study by the European Commission found that only 25% of SMEs in the EU15 and 21% of SMEs in the new Member States reported that public support was important in fostering their innovation projects.<sup>42</sup> While these numbers might be attributable to the misguided design and implementation of these programmes, they are still indicative of the fact that it is above all European corporate finance that can help unlock the growth potential of Europe’s small and high-growth enterprises rather than targeted public programmes.

This Special Feature summarises the state of knowledge regarding the types of financial

constraint that SMEs and YICs face, leading to sub-optimal investment, growth and innovation. It also identifies the main policies that could alleviate this market failure and foster these firms’ access to finance in a European context. This topic is important as regards financial development, in particular, the broadening and deepening of financial markets, and its effect on the real economy.

## 2 SME AND YIC FINANCING<sup>43</sup>

The corporate landscape of continental Europe is dominated by large established companies. Europe traditionally suffers from limited

38 Through repeated contracting, a bank builds up expertise about the business and the financial conditions of the borrower. This translates into both cheaper loans and liquidity insurance. Specifically, the literature has identified this kind of soft information with “relationship lending” (see A. Berger and G. Udell (2002), “Small business credit availability and relationship lending: The importance of bank organizational structure”, *Economic Journal*, vol. 112, pp. F32–F53).

39 T. Beck, A. Demirgüç-Kunt and V. Maksimovic (2005), “Financial and Legal Constraints to Growth: Does Firm Size Matter?”, *Journal of Finance*, 60(1), pp. 137–77. See also the article entitled “The financing of small and medium-sized enterprises in the euro area”, ECB Monthly Bulletin, August 2007.

40 Although the effect of the recent financial market developments on VC investment still remains to be seen.

41 See, for example, V. Cunat (2007), “Trade Credit: suppliers as debt collectors and insurance providers”, *Review of Financial Studies*, 20(2), pp. 491–527.

42 BEPA Monthly Brief – Issue 15, May 2008.

43 A clear-cut and broad definition for YICs does not exist. First, a definition of innovative companies must include the notion of age. In this Special Feature, high-tech and non high-tech industries are defined according to their R&D intensity, using information on R&D expenditures taken from the OECD STAN database and Eurostat. We define as high-tech those industries spending more than 2% of output on R&D (corresponding to the top quartile of the distribution of euro area industries in terms of R&D). This definition generally covers the following industries: chemical products; office machinery and computers; radio, TV and communication equipment; medical; precision and optical instruments; manufacturers of motor vehicles; other transport equipment; computer and related activities and research and development. As for the definition of SMEs, we follow the definition used by the European Commission, which is based on the number of employees and on a joint condition of either total assets or turnover. Small and medium-sized firms have less than 250 employees and generate a maximum annual turnover of EUR 50 million with annual total assets not exceeding EUR 50 million. Finally, we define as YICs firms that are in high-tech sectors, report intangible fixed assets in their balance sheets and are less than eight years old. It is important to note that YICs are not necessarily a sub-class of SMEs (that is, most YICs tend to be SMEs, but they may have, for example, more than 250 employees).

challenges by small and new firms to the established corporate giants. A recent study documented that the share of firms younger than two years in the euro zone in 2005-06 was 9.8% while it was 13.6% in the United States for the same period.<sup>44</sup> This partially accounts for the fact that the European “champions” are generally much older than their American counterparts. For example, the Fortune list of the world’s 500 largest companies includes only 12 European companies established in the second half of the century and 29 European companies which are more than 200 years old, compared with 51 US companies established in the second half of the century and only nine more than 200 years old. In addition, only three of the largest European companies were created during the post-1975 computer and internet era, compared with 26 in the United States.<sup>45</sup> At the same time, 66% of European employees are employed by firms that are classified as SMEs compared with 33% in Japan and 46% in the United States.<sup>46</sup> While it has often been pointed out that the small average size of European firms relative to US and Japanese ones is an efficient equilibrium result attributable to attitudes to risk, entrepreneurial culture, labour relations and an industrial structure particular to Europe, the argument has also been made that financial constraints have contributed to Europe’s corporate rigidity at least to the same extent as labour market rigidities.<sup>47</sup> In what follows we will examine the extent to which financial constraints hinder Europe’s small and young innovative firms.

## RESULTS BASED ON SURVEYS

EU and euro area-wide surveys tend to indicate that although the majority of firms are able to obtain the funds they need, different degrees of financial constraint remain, especially for SMEs and YICs. Survey evidence suggests that in the EU in general and the euro area in particular, SMEs and YICs are still somewhat financially constrained in their investment and innovation activities. In different surveys, around 23% of EU SMEs report being constrained in their access to finance compared with 12.5% of large firms. (The figures for the euro area are 19.3% and 5.9%

respectively.) In addition, 36% of SMEs with access to external finance report loan rates being too high compared with 18% of large firms. A massive 79% of SMEs use bank loans to finance their operations, while only 2% use VC.<sup>49</sup>

The Flash Eurobarometer survey also suggests significant cross-country differences: while in Ireland and Finland more than nine out of ten SMEs reported having sufficient financing, only two-thirds of SMEs in Portugal and Italy did. Access to bank financing is considered most important in France, where 64% of companies agree that without a bank loan their projects could not be successfully completed. In stark contrast, 78% of the firms in Finland disagree with this statement. Views about the ease of access to bank loans also differ. For instance, in Finland, 95% of firms reported that access was easy, compared with only 14% in Germany. Finally, 13.3% of YICs report being hampered in their innovation process by lack of sufficient external finance.<sup>49</sup>

By exploiting information derived from the World Business Environment Survey (WBES), it is possible to obtain a direct indicator of the financing constraints faced by firms from five major euro area countries (France, Germany, Italy, Portugal and Spain) and link it to some firms’ characteristics (such as age, size, sector and sales) in explaining the existence of financing obstacles.<sup>50</sup> In particular, it results that firms about which lenders have less information tend to face

44 A. Popov and P. Roosenboom (2008), “On the Real Effects of Private Equity Investment: Evidence from Firm Entry”, ECB mimeo.

45 See T. Philippon and N. Véron (2008), “Financing Europe’s Fast Movers”, *Bruegel Policy Brief*, 2008/01.

46 See European Commission report, 2002, “SMEs in Europe, including a first glance at EU candidate countries”, Observatory of European SMEs.

47 P. Aghion, T. Fally and S. Scarpetta (2007), “Credit Constraints as a Barrier to the Entry and Post-Entry Growth of Firms”, *Economic Policy* 22/52.

48 See Observatory of European SMEs, European Commission, 2003; “SME access to finance”, Flash Eurobarometer 174, European Commission, 2005.

49 See the 2004 Community Innovation Survey, Eurostat.

50 See C. Coluzzi, A. Ferrando and C. Martinez-Carrascal (2009), “Financing obstacles and growth: an analysis for euro-area non-financial corporations”, ECB Working Paper No 997 and information on the WBES dataset at <http://info.worldbank.org/governance/wbes/index.html#wbes>.

**Table 3 Survey evidence on financial constraints faced by SMEs and YICs**

(percentages)

Survey question	SMEs	YICs
Use bank finance	79.0	-
Finances new investment with external finance	-	39.4
Finances new investment with bank loans	-	18.3
Access to finance problematic	23.0	-
Cost of finance high	36.0	42.0
Firms constrained	46.6	52.3
Lack of finance hampers innovation	-	13.3

Sources: European Commission, BEEPS.  
Note: Aggregated data from different surveys used.

tighter financing constraints. More specifically, being young or small increases the probability of facing financing obstacles while a good economic performance has a negative impact on the likelihood of suffering financing obstacles.

A look at the financing patterns in the ten new Member States suggests that financial constraints for SMEs and YICs are much more stringent in these countries. The Business Environment and Enterprise Performance Survey (BEEPS), carried out jointly by the World Bank and the European Bank for Reconstruction and Development (EBRD),<sup>51</sup> defines “financially constrained” firms in two ways: firms which report that access to finance is a “moderate obstacle” or a “major obstacle”, and firms which report that the cost of financing is a “moderate obstacle” or a “major obstacle”. According to these two criteria, 46.6% and 54.2% respectively of SMEs report being financially constrained, while only 32.9% and 36.9% of firms larger than 250 employees do so.

The BEEPS also suggests that YICs are more reliant on external finance than companies whose ratio of R&D spending to sales is less than 15%. Non-YICs finance 64.9% of investment and 68% of working capital from retained earnings, while the corresponding figures for YICs are 61.1% and 60.6%. Moreover, while there is no information on VC finance in the survey, the numbers for bank finance are informative. While for YICs, 18.3% of new investments and 17% of working capital are financed from local and foreign

commercial banks, the corresponding figures for non-YICS are 13.2% and 10.2% respectively. Table 3 summarises the results of these surveys.

## FINANCIAL POSITIONS OF SMES AND YICS <sup>52</sup>

There is a general consensus in the literature that information plays a crucial role in determining which source of finance firms choose.<sup>53</sup> For instance, some firms may have limited access to external funds because of asymmetric information (the lender has less information than the firm about the quality of the investment project) or agency problems (the interests of the firm and the lender are not necessarily aligned). As a result, firms may be forced to rely largely on internally generated funds as a source of financing. Second, even firms with access to external funds are more likely to rely on cash flow as a source of finance, given that external funds imply additional costs such as administrative fees or potential bankruptcy costs.<sup>54</sup>

Such financial constraints may be particularly pronounced for SMEs owing to the fact that they are less diversified, can offer less collateral and have less bargaining power on account of their size.

Accordingly, one might expect smaller firms to rely more on internal financing than large firms

51 See the 2005 Business Environment and Enterprise Performance Survey.

52 The analysis presented in this section relies on firm-level data, which is derived from the AMADEUS database of Bureau van Dijk. The sample comprises mostly non-listed non-financial enterprises, excluding firms in the agriculture, forestry, fishing and mining sectors, from Austria, Belgium, Finland, France, Germany, Greece, Italy, the Netherlands, Spain and Portugal. The sample contains around half a million firms that are present at least for three consecutive years during the period between 1995 and 2007. Around 25,000 are classified as young innovative companies. Among them, only 6% are large firms and 50% are less than four years old. By definition, when a company becomes eight years old, it is no longer considered a YIC in the dataset. A caveat in the interpretation of the results contained in this section is the possible existence of biases in the dataset owing to the survival of the best performing firms and to the selection process in obtaining external finance.

53 See also the Special issue on SMEs (2006), *Journal of Banking and Finance*, 30(11), pp. 2931-3256.

54 See C. A. Hennessy and T. M. Whited (2007), “How Costly is External Financing? Evidence from a Structural Estimation”, *Journal of Finance*, 62(4), pp. 1705-45.

and, thus, to show lower levels of indebtedness. However, if small firms are less profitable, their levels of indebtedness could be higher than those of larger firms. In addition, with regard to external financing, small firms may not have access to capital markets at all and may thus be forced to rely more on credit markets and trade credit. It is therefore to be expected that, in terms of external financing, they use comparatively more short-term financial debt and trade credit than large firms.

Turning to YICs, as the development of new technology products is associated with a risk of technological failure of the project as well as a commercial risk that are difficult for non-specialised investors to evaluate, informational problems should be more binding for traditional suppliers of funds. Moreover, the fact that innovative companies devote more assets to intangibles<sup>55</sup> reduces the amount of available collateral that could be used to raise external funds.

A method of assessing whether there are differences in the financial position of firms related to their size and innovative activities is to examine relevant financial indicators

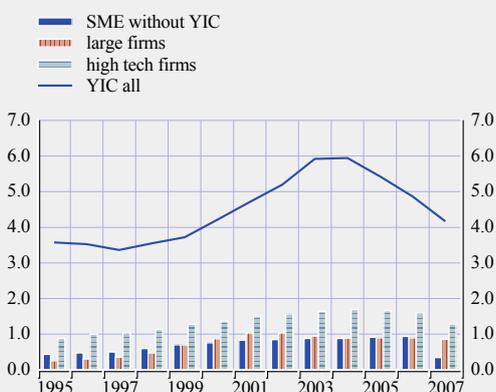
directly derived from balance sheet data of a sample of euro area non-financial corporations – distinguishing between large firms, SMEs and YICs – and compare them to whole high-tech sectors. A significance test on the differences of means across groups was performed for each indicator in order to check, for instance, whether the sector of activity has an impact that could explain differences or similarities in financial ratios across size groups.

Chart 56 displays the ratio of intangible fixed assets to total assets for the median firm across groups. The ratio confirms that YICs are characterised by a larger share of intangible assets than other SMEs or large firms. Moreover, this share is even higher than for a median firm in the high-tech sectors, indicating that YICs are also among the most innovative within those sectors. A sample t-test confirms that differences across groups are statistically significant except in the case of SMEs and large firms, whose ratios are statistically not different. Looking at developments over the years, the amount of intangibles has increased over time, reaching 6% of total assets in 2003, and has declined ever since.

55 Such as R&D, patents, licences, etc.

Chart 56 Intangible fixed assets to total assets

(percentages)

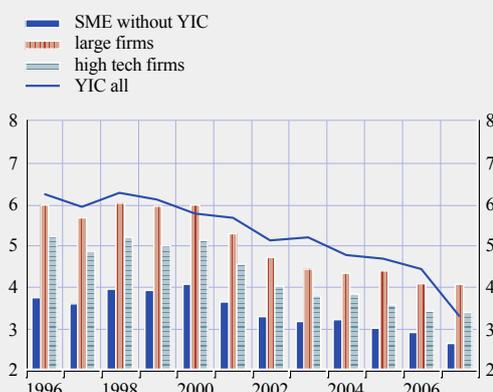


Sources: Bureau van Dijk (Amadeus database) and ECB calculations.

Note: See footnote 43 for the definition of SMEs, YICs, large and high-tech sectors. The ratio reported in the figure is of the median firm.

Chart 57 Investment to total assets

(percentages)



Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.

Notes: The ratio reported in the figure is of the median firm. Investment is defined as the difference between present and past total fixed assets.

The development of new products implies that YICs are investing relatively more in terms of fixed assets than traditional firms, irrespective of their size (Chart 57). However, investment ratios are not different between YICs and large firms.

At the same time, YICs are facing higher growth opportunities than other firms. Chart 58 shows that, on average, their real sales rate of growth is continuously above that of other types of firm and is statistically different from those of the other groups.

In the literature it is often stated that small firms, even with promising growth opportunities, find it difficult to raise external capital on favourable terms and that they finance their growth to a large extent through retained earnings.<sup>56</sup> Hence, the past profitability of a firm, accumulated in the form of liquid funds, and its current earnings available to be retained should represent an important source of financing. Higher profitability can therefore be considered as a sign that the firm is able to invest in its positive net value projects and there are fewer barriers to its growth. Regardless of its accessibility to external sources and the presence of asymmetric

information, higher profitability is thus an indicator of better financing conditions.

Looking at various measures of profitability,<sup>57</sup> it appears that YICs' performance is mainly linked to developments in the sectors in which they are specialised and, overall, YICs are more profitable than SMEs.

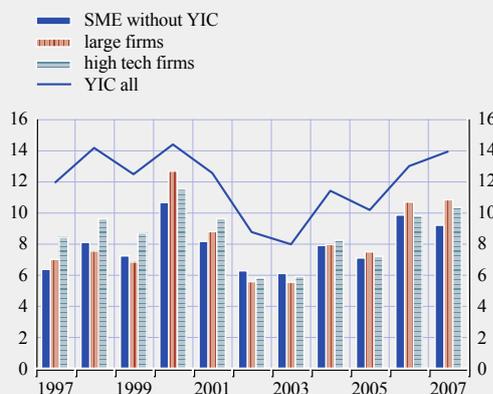
In terms of operating profits, profitability has displayed a similar pattern for large firms, SMEs and YICs by remaining generally unchanged in the course of the mid-1990s until 1999 and by declining afterwards, in line with the slowdown in economic growth in the euro area. Since 2003 profitability recovered considerably for

56 See, for instance, R. Carpenter, S. Fazzari and B. Petersen (1994), "Inventory Investment, Internal-Finance Fluctuation, and the Business Cycle", *Brookings Papers on Economic Activity*, vol. 25(1994-2), pp. 75-138; and R. Carpenter and B. Petersen (2002), "Is The Growth Of Small Firms Constrained By Internal Finance?", *Review of Economics and Statistics*, vol. 84(2), pp. 298-309.

57 Two measures of profitability have been computed: the ratio of profit for the period over sales and the ratio of operating profit over sales. Profit for the period is the result of all types of activity in the given year and it sums up the operating, financial and extraordinary profits and losses, after interest payments, depreciation and taxation. Operating profits are defined as operating revenues minus operating expenses.

Chart 58 Sales growth in real terms

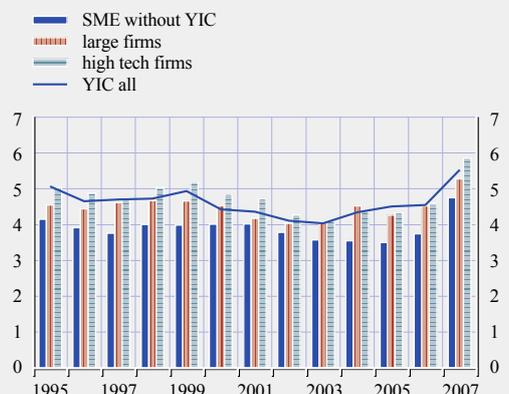
(percentages)



Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.  
Notes: The ratio reported in the figure is of the median firm. Figures have been deflated using the GDP deflator at country level.

Chart 59 Operating profit to sales

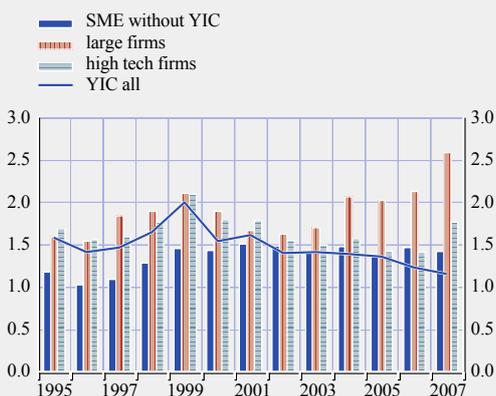
(percentages)



Source: Bureau van Dijk (AMADEUS database) and ECB calculations.  
Note: The ratio reported in the figure is of the median firm.

Chart 60 Profit for the period to sales

(percentages)

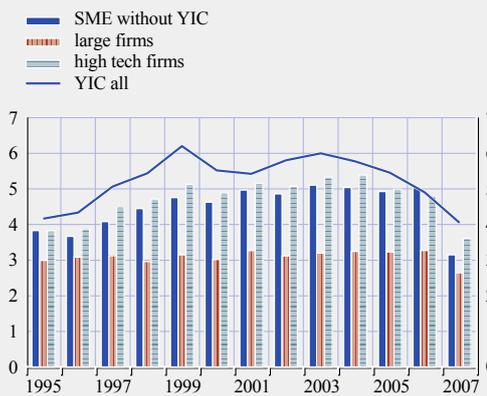


Source: Bureau van Dijk (AMADEUS database) and ECB calculations.

Note: The ratio reported in the figure is of the median firm.

Chart 61 Cash holding to total assets

(percentages)



Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.

Note: The ratio reported in the figure is of the median firm.

large firms and YICs. The t-test indicates that operating profits to sales of YICs are statistically not different from those of large companies.

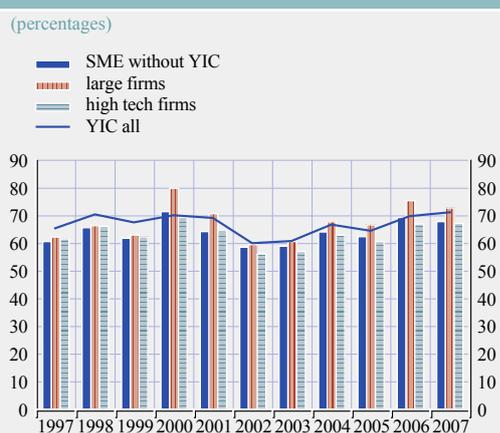
In terms of profits for the period, the decrease in profitability at the beginning of the millennium was more accentuated for YICs compared with large firms, indicating that a large part of the losses was attributable to financial losses and extraordinary expenses. After the peak in 1999, the profit levels of YICs and SMEs were more similar, as suggested also from the t-test which detects no difference between the two groups.

On the assets side, the empirical and theoretical literature has often emphasised the potential link between firms' characteristics and cash holdings decisions.<sup>58</sup> It is often found that firms with strong growth opportunities, higher business risk and smaller size hold more cash than other firms. Firms also hold excess cash to ensure that they will be able to keep investing when cash flow is too low, relative to investment, and when outside funds are expensive. In other words, higher cash reserves might indicate that firms face higher costs of raising outside funds or converting other assets into cash. Given the precautionary motive for holding cash, one can expect that liquid funds will be higher if there is

a higher probability of a shortage of funds in the future. This link suggests that smaller firms should hold more cash since they are more affected by financing constraints. Likewise, large firms are often said to be more financially sophisticated and hence may hold more diversified portfolios. Looking at our sample of firms, the hypothesis of a positive link between size and cash holding seems to be confirmed: SMEs hold a high proportion of cash while large firms hold a very low one. In both cases, the share of cash and securities held by those firms seems to be very stable over the period under consideration. In the case of YICs, cash holding displays the highest values, growing dramatically until 1999, then stabilising at high levels until 2003 and declining afterwards (Chart 61). They are indeed characterised by high investment opportunities (as shown in Chart 58), which can lead to accumulating cash even in the absence of financing constraints.

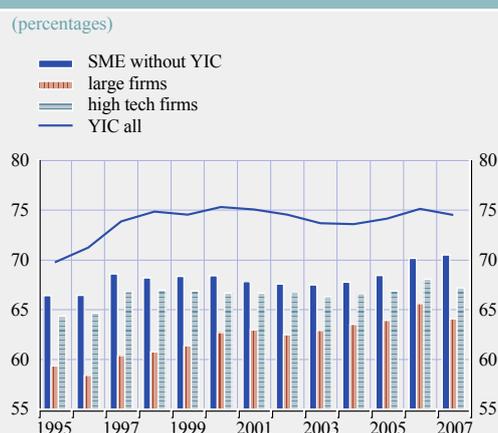
58 T. Opler, L. Pinkowitz, R. Stulz and R. Williamson (1999), "The Determinants and Implications of Corporate Cash Holdings", *Journal of Financial Economics*, vol. 52, pp. 3-46. See also M. A. Ferreira and A. S. Vilela (2004), "Why Do Firms Hold Cash? Evidence from EMU Countries," *European Financial Management*, 10(2), pp. 295-319, and R. Pál and A. Ferrando (2006), "Financial constraints and firms' cash policy in the euro area", ECB Working Paper No. 642.

**Chart 62 Firms growing faster than predicted by their internal sales growth rate**



Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.  
Note: see footnote 59.

**Chart 63 Indebtedness ratio**



Source: Bureau van Dijk (AMADEUS database) and ECB calculations.  
Notes: This is defined as the ratio of outstanding debt to total assets. The ratio reported in the figure is of the median firm.

In order to have an idea of the importance of external financing for firms, Chart 62 reports the percentage of firms that uses external financing to fund growth, especially long-term external financing.<sup>59</sup> Since the ratios are very close across groups, a t-test has been performed to check whether the figures are statistically different among the various groups. It results that YICs and large firms are similar: this relationship also holds when large firms are not included in the sample of YICs.

In accordance with the theoretical literature, large firms tend to be less constrained than SMEs. However, YICs – which are mostly also SMEs in our sample – appear to be consistently less constrained than SMEs, potentially pointing to a relatively easily accessible market of risk capital taking advantage of their high growth opportunities. This is confirmed by a simple estimation whereby the access to finance indicator presented in Chart 62 is regressed against a measure of VC at country level. The relationship is positive and economically significant, and it is larger for YICs than for SMEs.

Turning to the liabilities side, YICs appear to be more indebted than other firms (Chart 63).

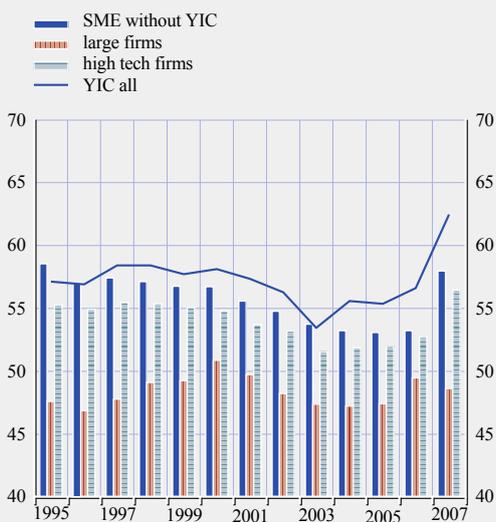
Moreover, size appears to matter considerably for specific sources of external funds. YICs, together with small and medium-sized firms, rely more on short-term financial debts (mainly bank loans) and trade credit than large firms (see Chart 64). According to the pecking order theory, these two sources of external finance rank among the cheapest sources of external finance for firms. It is interesting to note that this pattern is not affected by their sectoral activity as suggested by a simple t-test.

Not only indebtedness but also the amount of funds devoted to debt repayments out of internally generated funds affect the level of financial pressure faced by firms and, hence, the external finance premium. According to the debt-to-cash flow ratio, which provides a measure of the ability of a firm to repay its debt, large firms display a sounder financial situation than SMEs. YICs – mainly owing to their high

59 Following the approach of A. Demirgüç-Kunt and V. Maksimovic (1998, 2002), we use the “percentage of sales” financial planning model (see also Higgins, 1977) to estimate for each firm its maximum rate of growth when only internal funds or short-term borrowing are available. See also A. Ferrando, P. Köhler-Ulbrich and R. Pál (2007), “Is the growth of euro area small and medium-sized enterprises constrained by financing barriers?”, Industrial Policy and Economic Reforms Papers No 6, DG Enterprise and Industry.

Chart 64 Current liabilities to total assets

(percentages)

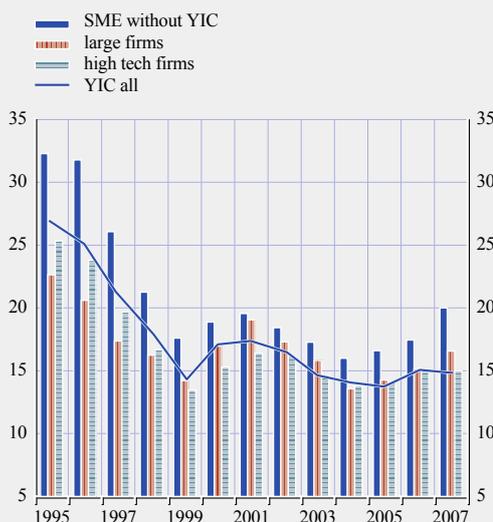


Source: Bureau van Dijk (AMADEUS database) and ECB calculations.

Notes: Current liabilities are defined as short-term financial debts (mainly bank loans) and trade credit. The ratio reported in the figure is of the median firm.

Chart 66 Debt burden

(percentages)



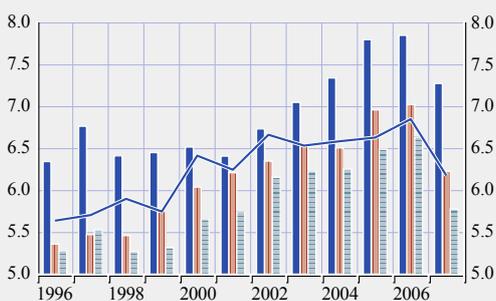
Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.

Notes: Debt burden is defined as the ratio of interest payments to earnings before interest, taxes, depreciation and amortisation plus financial revenues. The ratio reported in the figure is of the median firm.

cash-flow – also seem to be in a better position than SMEs, mainly reflecting developments in the sectors in which they are active (Chart 65).

Chart 65 Debt to cash flow

— SME without YIC  
 — large firms  
 — high tech firms  
 — YIC all



Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.

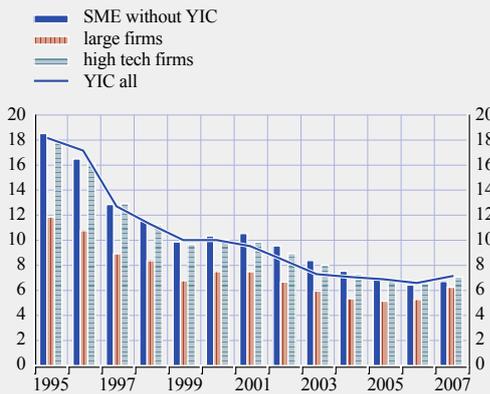
Note: The ratio reported in the figure is of the median firm.

Another indicator of the financial health of a firm is its capacity to meet interest payments with the results it generates (see Chart 66). This is given by the debt burden ratio, which reflects the impact of changes in interest rates (related to general credit conditions at country level), company profitability and its indebtedness.

As can be seen from Chart 66, this ratio showed a downward trend in the second half of the 1990s, in line with decreasing interest rates, and increased slightly afterwards in the period 2000-01, when a reduction in profitability was recorded in most euro area countries. Over the sample period, the typical high-tech firm shows the lowest debt-burden ratio, while the typical SME shows the highest ratio, in line with the higher indebtedness and lower profitability ratios observed for this group of firms. The debt burden of YICs is more in line with that of large firms – as confirmed also by the t-test on the difference of means across groups – and is mostly determined by the high profitability typical of these firms.

**Chart 67 Interest paid to total debt**

(percentages)



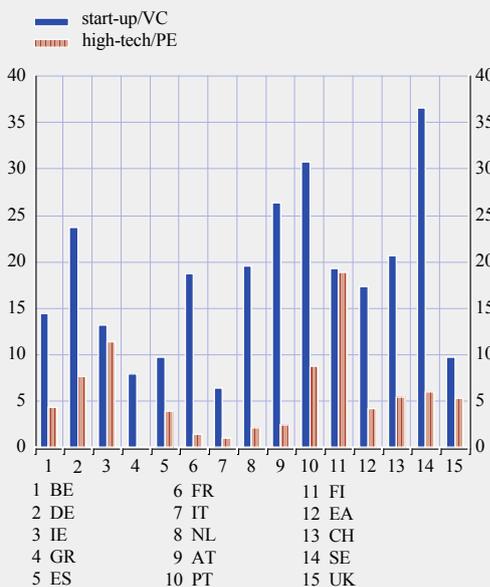
Sources: Bureau van Dijk (AMADEUS database) and ECB calculations.

Note: The ratio reported in the figure is of the median firm.

Moreover, SMEs pay the highest interest charges over the whole period, even if they exhibit a convergence towards the levels paid by larger firms (Chart 67). Overall, the data show a decreasing trend of the interest paid to total debt for all size categories.

**Chart 68 Venture capital to start-up and high-tech companies**

(percentages)



Source: European Venture Capital Association 2007 yearbook.

Finally, a look at the VC financing pattern across the euro area implies that there are large differences in the share of VC investment directed at financing early-stage and high-tech firms rather than less risky enterprises (Chart 68). While some of these differences are arguably attributable to variations in the demand for funds, Section 4 will argue that others are caused by constraints in the supply of VC funds.

Overall, the analysis of the financial conditions indicates that compared with large firms, SMEs are less profitable and thus less capable of relying on internal funds. As a consequence, and because of their difficulty in tapping stock markets, SMEs tend to be more indebted than large firms. Debt repayments also represent a greater part of their income because SMEs pay on average higher interest charges on debt. SMEs tend to hold more cash than large firms, which may indicate a higher perception of a shortage of external funds. Compared with SMEs in general, YICs appear to be somewhat more profitable. YICs' higher growth opportunities and/or higher investment needs compared with SMEs translate into a higher leverage of YICs. Even if they are more indebted than traditional SMEs, YICs have a higher capacity to meet their interest payments, essentially because they generate more cash flow. Another striking feature of YICs is the larger proportion of intangible assets on their balance sheets. This reduces the amount of available collateral that could be used to raise external funds.

### 3 THE EFFECTS OF FINANCIAL CONSTRAINTS ON SMES AND YICS

The empirical literature has provided even stronger evidence that SMEs and YICs face specific constraints in their financing cycles than the surveys cited in Section 2 appear to imply. When firms are able to pledge their assets as collateral, investment and borrowing become endogenous: pledgeable assets support more borrowings that in turn allow for further investment in pledgeable assets. Small firms and especially young firms in high-tech sectors have little tangible collateral to pledge, which

results in restricted access to external finance. This section will summarise the effect of these constraints on firm investment and growth.

### CAPITAL INVESTMENT

According to the empirical literature, credit constraints lead firms to under-invest in productive capital. Numerous studies have confirmed that firms that are rationed in the credit market exhibit investment patterns that are highly sensitive to retained earnings and trade credit.<sup>60</sup> Cash flow is usually insufficient to fund an optimal investment plan and trade credit is relatively more expensive, so firms are forced to resort to sub-optimal capital investment. Empirical studies for the euro area confirm that capital investment is sensitive to financial constraints.<sup>61</sup> The problem tends to be exacerbated for European SMEs which generally rely on bank credit as a main source of capital investment.<sup>62</sup>

### R&D INVESTMENT

Investment in R&D is the main criterion which sets SMEs and YICs apart. As previously pointed out, most European SMEs remain small owing to entrepreneurial risk aversion, are comfortable in their local business niche and demonstrate no desire to grow or innovate. Emerging innovative firms, however, have declared high growth ambitions by definition, and their progress relies on R&D-funded growth, either in already existing or in emerging industries. In the United States such firms often manage to outgrow the formal definition of a SME.<sup>63</sup> Problematic from the point of traditional finance in their case is the fact that the accompanying inputs to R&D investment cannot normally be used as collateral, and the output of R&D investment is usually intangible. It is therefore only logical that constraints to external finance are not only more severe, but also relatively more detrimental to young innovative companies. To a lesser degree this also applies to SMEs in general, as they have little pledgeable collateral.

Research on the effect of capital constraints in the European context has confirmed that euro

area (in particular, German) SMEs are indeed sensitive to external financial constraints in their R&D activities.<sup>64</sup>

### INNOVATION

The concerns expressed in the previous section have often been dismissed as irrelevant in the context of European industrial innovation. Indeed, countries such as Germany, for example, have been very successful in financing R&D in-house from reinvested profits, without the contribution of finance being seen as crucial. An associated influential school of thought has pointed to this fact to maintain that large companies are better able to innovate because they can hedge risks internally and cross-subsidise innovation with surpluses from mature non-innovative divisions.<sup>65</sup>

However, an alternative school of thought commonly associated with Joseph Schumpeter, maintains that “creative destruction” is the main engine of innovation. The idea is that industrial innovation is born when large incumbent companies are vigorously challenged by innovative newcomers. In addition to that, innovation is often disruptive rather than incremental,<sup>66</sup> and so it is often associated with

60 For example, S. Fazzari, R. Hubbard and B. Petersen (1988), “Financing Constraints and Corporate Investment”, *Brooking Papers on Economic Activity*, vol. 19 (1988/1), pp. 141-206.

61 For example, P. Vermeulen (2003), “Investment and Financing Constraints: What Does the Data Tell?”, EIFC Technology and Finance Working Papers No 25; and C. Martinez-Carrascal and A. Ferrando (2008), “The impact of financial position on investment: an analysis for non-financial corporations in the euro area” ECB Working Paper No 943.

62 See S. Carbó-Valverde, F. Rodriguez-Fernandez and G. F. Udell (2008), “Bank Lending, Financial Constraints, and SME Investment”, Federal Reserve Bank of Chicago working paper, WP-2008-4.

63 See T. Philippon and N. Véron (2008), “Financing Europe’s Fast Movers”, Bruegel Policy Brief 2008/01.

64 For instance, S. Bond, D. Harhoff and J. Van Reenen (1999), “Investment, R&D and financial constraints in Britain and Germany”, IFS Working Papers, W99/05.

65 For example, “Pour une nouvelle politique industrielle”, Report of the Committee chaired by J. L. Beffa on behalf of the French government, La Documentation Francaise, 2005.

66 D. Acemoglu, P. Aghion and F. Zilibotti (2006), “Distance to Frontier, Selection, and Economic Growth”, *Journal of the European Economic Association*, 4(1), pp. 37-74.

the creation of entirely new industries rather than the growth of existing ones.

Recent studies have confirmed that the presence of financial constraints significantly reduces the probability that a firm undertakes an innovative project, and that the probability of facing such constraints decreases with firm size, implying that SMEs are the most severely hit by this effect.<sup>67</sup>

In addition, innovative effort tends to be stimulated by the emergence and deepening of risk capital markets. VC finance is ideally suited to innovation in an entrepreneurial firm rather than a large industrial setting, and hence its presence relaxes the financial constraints on innovative effort. Indeed, there is increasing evidence in recent years that European private equity investment in general and VC investment in particular have a considerable effect – economically speaking – on industrial innovation (as measured by ultimately successful patent applications).<sup>68,69</sup>

#### FIRM SURVIVAL AND GROWTH

The aforementioned Schumpeterian theory of creative destruction maintains that market entry by innovative firms is the main engine of economic growth. If financial constraints slow down entry and innovation, this will result in lower economic growth as new disruptive technologies – which would otherwise have been introduced by new firms – will be kept out of the market. Incumbent firms will have less of an incentive to innovate where there is diminished competition of ideas.

Empirical studies in this area have found strong evidence that financial constraints are indeed associated with lower levels of growth of firms and macroeconomic growth, especially in economies which are more heavily populated with small and medium-sized enterprises. It has been shown, for example, that less active stock markets and less developed banking sectors are associated with slower firm growth than is predicted by a measure of growth potential

(similar to that presented in Chart 62).<sup>70</sup> In particular, access to finance is most important for the entry of small firms and especially in sectors that are heavily dependent on external finance. This effect is robust to accounting for other standard determinants of entry, such as labour market rigidities and entry barriers. Both private credit and stock market capitalisation are relevant for firms' entry as well as for the post-entry growth of new entrants. Moreover, financial development has been shown to have either no or even a negative effect on the entry of large firms.<sup>71</sup>

Once again, VC markets are ideally suited to the promotion of new firms in certain industries in which conventional bank loans are unavailable owing to extreme information opacity and intangibility of the end product. Studies have confirmed that active VC markets in Europe are associated with higher entry and growth of firms (especially of small firms), and the econometric techniques used suggest that this link is causal.<sup>72</sup>

67 See V. Hajivassiliou and F. Savignac (2007), "Financing constraints and a firm's decision and ability to innovate: establishing direct and reverse effects", Discussion Paper, Financial Markets Group, London School of Economics and Political Science; and Stoneman and Canepa (2002), "Financial Constraints on Innovation: a European Cross Country Study", EIFC – Technology and Finance Working Papers No 11.

68 See D. Engel and M. Keilbach (2007), "Firm-level Implications of Early Stage Venture Capital Investment – An Empirical Investigation", *Journal of Empirical Finance*, vol. 14, pp. 150-67; and A. Popov and P. Roosenboom (2008), "Does Private Equity Spur Innovation? Evidence from Europe", ECB mimeo.

69 While much research in this field has remained silent on the questions of "cherry-picking" and survivorship bias, other papers have shown that private equity and venture capital have an effect on innovation even when selection is accounted for (for instance, J. Lerner, M. Sorensen and P. Strömberg (2008), "Private Equity and Long-Run Investment: The Case of Innovation", NBER Working Papers No. 14623).

70 For instance, A. Demirgüç-Kunt and V. Maksimovic (1996), "Financial constraints, uses of funds, and firm growth: an international comparison", Policy Research Working Paper Series 1671, The World Bank.

71 P. Aghion, T. Fally and S. Scarpetta (2007), "Credit Constraints as a Barrier to the Entry and Post-Entry Growth of Firms", Working Paper 2007/6, *Economic Policy*, vol. 22, pp.731-779.

72 For example, A. Popov and P. Roosenboom (2008), "On the Real Effects of Private Equity Investment: Evidence from Firm Entry", ECB mimeo.

## 4 ALLEVIATION OF FINANCIAL CONSTRAINTS

This section will summarise the best practices and policies to alleviate the financial constraints on the funding of SMEs in general and YICs in particular. The emphasis will be on policies that level the playing-field between firms of different sizes. While the argument has been made in the literature that a number of reforms in other aspects of the economic sector are equally important in nurturing the success of SMEs and YICs – such as labour market reforms, competition policy or the creation of “knowledge networks” – we will only focus on how to make financial markets more efficient when it comes to those types of firm.

## HIGHER BANK COMPETITION

Bank lending is one of the cheapest sources of external funding, and for that reason, SMEs tend to be heavily dependent on it.<sup>73</sup> Therefore it is important to understand the effect of the structure of the banking sector on access to credit for small and medium-sized enterprises. In theory, the effect of banking sector competition on the availability of credit is ambiguous. Information theories argue that competitive banking sectors lead to diffused information about firms and weakened relationship building between banks and firms, resulting in lower credit availability.<sup>74</sup> Market power theories, on the other hand, argue that more concentrated markets are associated with credit rationing and higher costs of credit. The empirical literature has provided mixed results, but recent European studies have used alternative measures of concentration to show that banking concentration may in some cases have been detrimental to business lending to SMEs. Other studies have confirmed that bank concentration increases obstacles to obtaining finance, but mostly in countries with lower levels of economic and institutional development.<sup>75</sup> In all, the empirical literature leans towards the conclusion that the type of bank regulation which severely limits competition tends to worsen the financing conditions for firms, especially small and medium-sized ones.

## FINANCIAL INTEGRATION

Financial integration, a rapid phenomenon in Europe after the introduction of the euro, increases the supply of funds for investment opportunities in less financially developed regions of the integrating area. The integration process increases competitive pressure and thereby the efficiency of the financial system in less developed regions. It reduces the cost of financial services and thus expands the size of the local financial markets. All of these phenomena point to the alleviation of financial constraints by reducing the cost of capital and allocating funds more efficiently.

The empirical literature has provided ample evidence of this in recent years. For example, it has been shown that financial integration has stimulated growth in firm sales, assets and leverage in the new Member States via the foreign-owned bank lending channel, and that this has had a strong impact especially on young firms (arguably the less politically connected firms have benefited most from foreign bank entry). Foreign bank presence has reduced the cost of capital and allocated credit more efficiently; however, while SMEs generally have benefited more from this, the impact has been somewhat dampened for the smallest firms.<sup>76</sup> Financial integration via the channel of foreign direct investment has also been beneficial to the entry of new businesses, and especially of small and medium-sized firms.<sup>77</sup>

Another important phenomenon in that respect is money market integration. This type of

73 In addition, the information requirements of securities markets tend to be too high for SMEs.

74 See M. A. Petersen and R. G. Rajan (1995), “The effect of credit market competition on lending relationships”, *Quarterly Journal of Economics*, 110(2), pp. 407-43.

75 For instance T. Beck, A. Demirgüç-Kunt and V. Maksimovic (2004), “Bank Competition and Access to Finance: International Evidence”, *Journal of Money, Credit and Banking*, vol. 36(3), pp. 627-48.

76 M. Giannetti and S. Ongena (2005), “Financial integration and entrepreneurial activity: evidence from foreign bank entry into emerging markets”, ECB Working Paper No 498.

77 L. Alfaro and A. Charlton (2007), “International Financial Integration and Entrepreneurial Firm Activity”, NBER Working Paper No 13118.

integration enables banks to lend and borrow in an interbank market at more beneficial conditions, which are passed on to business borrowers. Recent studies have shown that SMEs in the new Member States have benefited from money market integration in terms of lower loan rates, the probability of obtaining a loan with a short-term maturity, and a decrease in the number of days it takes to negotiate a loan. However, this effect has been recorded only in markets with relatively competitive banking sectors.<sup>78</sup>

### TAX POLICY

It has been suggested that tax policy reform in Europe would help remove current distortions, especially between equity and debt. One avenue could be to revise the current tax framework which allows for tax deductibility of interest payments while generally submitting interest income and dividends to different and often complex tax treatment.<sup>79</sup> Efficiency would be much increased if debt and equity received similar tax treatment at the corporate and individual level.<sup>80</sup> Such harmonisation would be likely to disproportionately benefit young innovative firms if, for example, subordinated debt no longer rests on tax arbitrage relative to equity, but rather on its intrinsic value as a flexible tool for high-growth firms.

Another tax reform which could be pursued in the context of developing active VC markets is to lower corporate gains taxes as a means of attracting more private equity funds and increasing the wedge between personal income taxes and taxes for entrepreneurial activity, thus providing an incentive for a larger share of the population to consider entrepreneurial activity as an alternative to employment. There is evidence from recent years that lower capital gains taxes have indeed been associated with more active VC markets.<sup>81</sup>

### PRUDENTIAL REGULATION

Another way to lower the cost of finance to young innovative firms via an increased flow

of venture funds is to maintain a prudential regulatory framework which does not hamper investment in private equity in general and VC in particular by institutional investors such as pension funds and insurance companies. The first evidence of the beneficial effect of such a reform to the “prudent man” rule came from the United States, where in 1979 the Department of Labor encouraged pension funds to invest in VC as part of a prudent diversification strategy. This led to a ten-fold increase in VC investment in the following decade.<sup>82</sup> Recent evidence from Europe has confirmed that national differences in the regulation of investment activity by pension funds in particular explain to a large extent the variation in investment by venture capitalists across countries in the 1990s.<sup>83</sup> The European Directive on pension funds (2003/41/EC) and the forthcoming Solvency II regime for insurance companies are expected to greatly reduce previous restrictions on investment activities, as they do not impose any limits on investment at the EU level. However, national governments have the discretion to impose quantitative restrictions on investments of pension funds, provided they are prudentially justified. If set too tightly, such restrictions may have significant implications for the amount of funds that can be invested in VC and thus for the contribution of the financial system to productivity and growth. Studies as recently as 2006 have confirmed that certain restrictions remain in some countries, potentially hampering the development of a dynamic VC industry.<sup>84</sup>

78 A. Popov (2008), “Money Market Integration, Credit Market Competition, and Bank Loans”, ECB mimeo.

79 The current wedge may be one of the reasons why YICs have taken on disproportionately more debt, according to Chart 63.

80 See T. Philippon and N. Véron (2008), “Financing Europe’s Fast Movers”, *Bruegel Policy Brief* 2008/01.

81 For example, M. Da Rin, G. Nicodano and A. Sembenelli, (2006), “Public policy and the creation of active venture capital markets” *Journal of Public Economics*, 90(8-9), pp. 1699-1723.

82 See P. Gompers and J. Lerner (2000), “What Drives Venture Capital Fundraising?”, *Brookings Papers on Economic Activity – Microeconomics*, pp. 149-92.

83 See, for example, L. Jeng and P. Wells (2000), “The determinants of venture capital funding: evidence across countries”, *Journal of Corporate Finance*, vol. 6, No 3, pp. 241-89. See “Benchmarking European Tax and Legal Environments”, European Private Equity and Venture Capital Association, 2006.

84 See “Benchmarking European Tax and Legal Environments”, European Private Equity and Venture Capital Association, 2006.

### EXISTENCE OF VIABLE EXIT MARKETS

Recent empirical literature examining the creation of the European high-tech sector has concluded that one of the policies that is the most beneficial to the emergence and success of YICs, as well as to the creation of a VC industry,<sup>85</sup> is the creation of stock markets targeting young high-growth firms.<sup>86</sup> More specifically, it has been reported, on studying a sample of European countries, that the opening of a “new” stock market raises the high-tech VC ratio by 10%, thus reducing the cost of funds to YICs.<sup>87</sup> It must be emphasised that there are significant positive externalities to opening such stock exchanges: for instance, during the 1990s high-tech boom, the Neuer Markt became a focal point for listing continental European high-tech firms. The high-tech start-up segment of the London Stock Exchange has been the main exit market of interest for high-tech firms in recent years.

85 It needs to be emphasised however that venture capitalists invest, above all, in those innovative firms characterised by very high expected returns.

86 See M. A. Desai, P. A. Gompers and J. Lerner (2003), “Institutions, Capital Constraints and Entrepreneurial Firm Dynamics: Evidence from Europe”, NBER working paper 10165.

87 M. Da Rin, G. Nicodano and A. Sembenelli (2006), “Public Policy and the Creation of Active Venture Capital Markets,” *Journal of Public Economics*, 90(8/9), pp. 1699-1723.





## CHAPTER III

### EUROSYSTEM ACTIVITIES FOR FINANCIAL INTEGRATION

*The Eurosystem generally distinguishes between four types of activity through which it contributes to the enhancement of financial integration: (i) giving advice on the legislative and regulatory framework for the financial system and direct rule-making; (ii) acting as a catalyst for private sector activities by facilitating collective action; (iii) enhancing knowledge, raising awareness and monitoring the state of European financial integration and (iv) providing central bank services that also foster European financial integration. The following sections provide an overview of the Eurosystem's contributions in these areas, focusing on the initiatives pursued during 2008.*

#### I LEGISLATIVE AND REGULATORY FRAMEWORK FOR THE FINANCIAL SYSTEM

While the Eurosystem considers financial integration to be first and foremost a market-driven process, the legislative and regulatory framework for the financial system plays an important facilitative role. With a view to supporting the efficient and effective conduct of cross-border financial activities, the EU framework should be aimed at lowering legal or regulatory impediments and at providing a level playing-field. In addition, strong mechanisms for information-sharing and coordination between home and host authorities are needed to ensure that potential cross-border financial vulnerabilities are adequately monitored and addressed.

Against this background and in line with their advisory and regulatory functions,<sup>1</sup> the ECB and the Eurosystem monitor and actively contribute to the development of the EU legislative and regulatory framework.

More specifically, the ECB and the Eurosystem provide input for strategic policy reflections – such as the overall EU financial services policy strategy or the further development of the EU framework for financial regulation and supervision – via the publication of Eurosystem position papers on the

websites of the ECB and of the NCBs or informal discussions with the regulatory and supervisory committees. Furthermore, the ECB and the Eurosystem provide both formal opinions and informal input to Community legislation in the area of financial services. They may also contribute to the ex post evaluation of regulatory measures.

During 2008 the respective activities of the ECB and the Eurosystem related in particular to the following issues.

#### EU SUPERVISORY ARRANGEMENTS

The Lamfalussy process<sup>2</sup> for financial regulation and supervision was designed to speed up the regulatory decision-making process and to enhance convergence and cooperation in the supervision of European financial institutions. In order to reap the full benefits of the process, in December 2007 the Council of Economic and Finance Ministers (ECOFIN) carried out a review of the Lamfalussy process, to which the Eurosystem also contributed.<sup>3</sup>

- 1 The ECB is to be consulted, within its fields of competence, on any Community act or any draft legislative provision proposed by national authorities. Furthermore, the ECB has the right to issue regulations in certain areas, for example in the fields of payment systems and statistics.
- 2 With the objective of a more efficient and flexible EU legislative process and more consistent regulation and supervision across Member States, the Lamfalussy process provides for four levels of financial services legislation. At level 1, the basic principles of the legislation are laid down via the normal co-decision procedure. Implementing measures for level 1 legislation are adopted at level 2. This process benefits from the input of a special regulatory committee that comprises representatives of the Member States and the European Commission. Level 3 encompasses initiatives by a committee of national supervisors to ensure a consistent and timely implementation of legislative measures at the national level. Finally, level 4 refers to Commission measures to strengthen the enforcement of EU law, underpinned by enhanced cooperation among Member States, their regulatory bodies and the private sector. In 2005, Directive 2005/1/EC extended the Lamfalussy committee structure from the securities sector to include banking, insurance and investment funds.
- 3 In forming its view, ECOFIN took into account the assessments of various EU institutions and fora, such as the Inter-Institutional Monitoring Group, the Commission, the European Parliament and the Lamfalussy level 3 committees. The Eurosystem, which has actively supported the establishment of the Lamfalussy process from the outset and has been closely involved in its monitoring, published a contribution to the 2007 review of the Lamfalussy process, focusing on the banking sector. See “Review of the Lamfalussy framework. Eurosystem contribution”, available on the ECB's website at <http://www.ecb.europa.eu/pub/pub/prud/html/index.en.html>

In 2008 the emphasis shifted towards the implementation of the recommendations by ECOFIN, which itself evaluated the progress made in May 2008.<sup>4</sup> The level 3 committees of supervisors have introduced into their respective charters the possibility of using qualified majority voting, with the obligation on members not complying with the non-binding measures to publicly explain their decisions. Furthermore, these committees must transmit their yearly work programmes to the Commission, the EU Council and the European Parliament, thereby enhancing the accountability of their activities. In order to foster supervisory convergence and cooperation further, the European Commission revised the decisions establishing the level 3 committees to include specific tasks, such as mediation or facilitation of information exchange. Finally, ECOFIN invited the Member States to introduce a European dimension into the mandates of their national supervisors by mid-2009.

In November 2008 the Eurosystem adopted an opinion on a draft Commission decision establishing the Committee of European Banking Supervisors (CEBS), the level 3 committee for banking.<sup>5</sup> The ECB welcomed the amendments introduced by the Commission to the Commission Decision adopted in November 2003. More specifically, the opinion examined the provisions of the draft decision relating to: (i) the new tasks conferred upon CEBS; (ii) the division of work between CEBS and the Banking Supervision Committee of the ESCB (BSC), having regard to their respective mandates; (iii) the issue of the participation of the ECB as observer at meetings of the newly created Joint Committee on financial conglomerates and (iv) CEBS voting procedures.

The financial crisis has intensified the debate surrounding the EU supervisory architecture and financial stability arrangements. In October 2008 the European Commission set up an independent High Level Group to develop proposals to strengthen the supervision of European financial institutions and markets and financial stability arrangements. The Group

presented a report to the European Commission in February 2009, with a view to submitting it for the Spring European Council in 2009.<sup>6</sup>

#### GOVERNMENT MEASURES TO SUPPORT BANK DEBT ISSUANCE AND RECAPITALISATIONS

In October 2008 the European Council adopted a common set of high-level principles to coordinate national stabilisation measures in the areas of bank recapitalisation and funding.<sup>7</sup> These principles aim at avoiding that differences in approaches across countries distort the level playing-field between financial institutions in the Single Market. The application of these principles in the design and implementation of concrete measures at the national level is being closely monitored by the European Commission and the ECB. In line with its competencies, the ECB in particular aims to ensure the consistency of national plans with the management of liquidity by the Eurosystem and their compatibility with the Eurosystem operational framework. In this regard, the ECB has provided numerous opinions on the draft legislation of the Member States.<sup>8</sup> A Eurosystem recommendation was issued in October 2008 on government guarantees for bank debt, supporting a common approach to the pricing of funding guarantees. In addition, in November the Eurosystem issued recommendations for the specification of conditions relating to recapitalisation measures, with particular regard to the pricing of the instruments to be purchased by governments for banks' capital injections.<sup>9</sup>

4 See the Council conclusions on the EU supervisory framework and financial stability arrangements, 2866<sup>th</sup> Economic and Financial Affairs Council meeting, Brussels, 14 May 2008.

5 See Opinion of the European Central Bank of 7 November 2008 on a draft Commission decision establishing the Committee of European Banking Supervisors (CON/2008/63).

6 The report is available at [http://ec.europa.eu/internal\\_market/finances/docs/de\\_laroisiere\\_report\\_en.pdf](http://ec.europa.eu/internal_market/finances/docs/de_laroisiere_report_en.pdf).

7 See Brussels European Council, 15 and 16 October 2008, Presidency conclusions.

8 See <http://www.ecb.europa.eu/ecb/legal/opinions/html/index.en.html>.

9 See "Recommendations of the Governing Council of the European Central Bank on government guarantees for bank debt", 20 October 2008, and "Recommendations of the Governing Council of the European Central Bank on the pricing of recapitalisations", 20 November 2008, at <http://www.ecb.europa.eu/pub/pub/prud/html/index.en.html>.

### EU LEGAL FRAMEWORK FOR PAYMENT SERVICES

To address the legal obstacles to the creation of a single retail payments market, including the provision of cross-border payments services, the European Parliament and Council adopted in November 2007 the Payments Services Directive (PSD).<sup>10</sup> The PSD is to be transposed into Member States' national legislation by 1 November 2009. To ensure a harmonised transposition, the European Commission has established a transposition working group, in which the ECB has participated.

Another Community legislative process which is expected to foster financial integration in Europe is the review of Regulation (EC) 2560/2001 on cross-border payments in euro.<sup>11</sup> The ECB welcomes the recently published proposal by the European Commission to adapt the Regulation to market developments, i.e. by extending its scope to include direct debit transactions, a payment instrument which is of vital importance in the creation of SEPA. The ECB's opinion on the proposal was published on 12 January 2009.

Moreover, it is proposed to review the E-money Directive<sup>12</sup> – which establishes the legal framework for e-money institutions' activities – with a view to facilitating the provision of e-money. A review is welcomed in principle by the ECB. However, the draft proposal raises some concerns, especially as regards the proposed changes to the prudential framework and the institutional status of e-money institutions, which may have serious consequences from a monetary policy point of view. The ECB's opinion on this legal proposal was published on 5 December 2008.

### SECURITIES CLEARING AND SETTLEMENT SYSTEMS

Financial market integration needs to be complemented and supported by the integration of the underlying infrastructures for securities transactions. While the European post-trading market structure is evolving, it is still fragmented and has not yet reached the level of efficiency,

integration and soundness compatible with the requirements of the Single Market and the single currency.

Among the private and public sector initiatives aimed at fostering the integration of the post-trading market infrastructure in the EU, the main contributions of the Eurosystem in 2008 were related to the Code of Conduct for Clearing and Settlement, the removal of the Giovannini barriers and work on the ESCB-CESR recommendations.

The Code of Conduct for Clearing and Settlement, signed by the European industry associations for exchanges and post-trading infrastructures in November 2006, is an initiative that will have a bearing on the entire trading and post-trading infrastructure for cash equities. The Code is essentially aimed at allowing users to choose freely their preferred service provider at each layer of the transaction chain. To this end, the Code provides for commitments by the signatories within three areas: price transparency, access and interoperability, and service unbundling and accounting separation.

Given that the Code is a self-regulatory tool, a strict monitoring mechanism has been set up to ensure that all the measures are implemented properly and on time. The mechanism relies on external auditors and an ad-hoc Monitoring Group composed of the European Commission, the Committee of European Securities Regulators (CESR) and the ECB. The Monitoring Group met four times in the course of 2008. Together with the European Central Securities Depositories Association (ECSDA), the ECB conducted an analysis on price transparency and provided some suggestions on how to improve price comparability.

10 Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC.

11 See [http://ec.europa.eu/internal\\_market/payments/crossborder/index\\_en.htm](http://ec.europa.eu/internal_market/payments/crossborder/index_en.htm).

12 See [http://ec.europa.eu/internal\\_market/payments/emoney/index\\_en.htm](http://ec.europa.eu/internal_market/payments/emoney/index_en.htm).

Good progress has been made towards implementing the Code of Conduct. In particular, some CCP clearing houses and CSDs have reduced fees as a result of increased competition. Moreover, the pace of market restructuring has accelerated and a considerable number of requests for links between service providers have been made.

In terms of price transparency, more and more providers have moved to implementing price simulators and there are an increasing number of examples of tariff harmonisation. Both measures help to improve price comparability. In terms of service unbundling and separate cost accounting, work is progressing and the signatories of the Code assured the Monitoring Group that no problems have emerged so far that might be an obstacle to implementing the relevant measures.

In terms of access and interoperability, there has been a significant demand for links between infrastructures. However, there have been delays in implementing such links, owing to a lack of regulatory approval. Therefore, the Commission has mandated the CESR to conduct a mapping exercise to identify possible regulatory impediments to the establishment of links. The Commission underlined that any regulatory action must be compliant with both the Treaty and the MiFID. Finally, the ESCB-CESR recommendations that are expected to be endorsed in spring 2009 will also contribute to harmonising regulatory activities in the post-trade field.

As the Code of Conduct ultimately aims to establish freedom of choice, it must be complemented by the full removal of the so-called “Giovannini barriers” to efficient clearing and settlement. The first Giovannini Report of 2001 identified 15 Giovannini barriers to integration in EU post-trading systems. These relate to technical standards and market practices, legal uncertainty and differences in tax procedures. The second Giovannini Report of 2004 set out a strategy for removing these barriers.

The technical and market practice-related barriers are addressed within the context of the Clearing and Settlement Advisory and Monitoring Expert Group (CESAME). The fiscal barriers have been addressed by the Clearing and Settlement Fiscal Compliance expert group (FISCO), while the Legal Certainty Group (LCG) has worked on the legal barriers.

The work on removing the Giovannini barriers has progressed well and is continuing. On 8 December 2008, CESAME issued a comprehensive report on its four years of work on removing industry-related barriers to the cross-border clearing and settlement of securities transactions.

Overall, the report concludes that there has been noticeable progress in dismantling the industry-related barriers. Less progress has been achieved regarding public sector barriers. The industry therefore called for more involvement of Member States and regulatory authorities in the work of the so-called CESAME II group. CESAME II, the successor of CESAME, in which the ECB is represented, has been established to follow up the removal of private-sector related barriers, i.e. technical arrangements and market practices. The Legal Certainty Group (in which the Eurosystem is represented) presented its “Second Advice” in August 2008. This final Advice comprises 15 recommendations addressing the removal of legal barriers three, nine and 13. The work of the FISCO group addressing tax-related barriers has also progressed.

Finally, in order to promote closer convergence of national securities clearing and settlement systems towards the highest standards of safety and efficiency, the ESCB and the CESR have worked together since 2001 to develop the ESCB/CESR recommendations for SSSs and CCPs. The ESCB-CESR adapted the CPSS-IOSCO (Committee on Payment and Settlement Systems - International Organization of Securities Commissions) recommendations for SSSs – and from 2004 the recommendations for CCPs – to the specific features of the

EU environment. The work was frozen in 2005 owing to three open issues regarding the scope, content and legal basis of the ESCB-CESR recommendations.

On 3 June 2008 ECOFIN formally invited the ESCB and CESR to adapt and finalise the draft “Standards for Securities Clearing and Settlement in the EU”, respecting a number of principles, namely: (i) the adopted text should take the form of non-binding recommendations solely addressed to public authorities and not to market participants; (ii) its scope should include international CSDs (ICSDs), and exclude custodian banks and (iii) on credit and liquidity risk controls, the benchmark accepted by the G10 – namely the CPSS-IOSCO Recommendation 9 for securities settlement systems of 2001 – should be adopted.

In accordance with ECOFIN’s mandate, the Group resumed its work and prepared a set of draft recommendations. A public consultation was launched from 23 October 2008 until 23 January 2009. A public hearing was held on 9 December 2008. The European Parliament, the Commission, CEBS, relevant market participants and associations were closely associated with this work at various stages.

The final approvals of the revised recommendations by CESR, the Governing Council of the ECB and by the governors of the non-euro area central banks are expected in 2009.

The recommendations, once finalised, will be used by central bank overseers and securities regulators with a view to ensuring both the soundness and efficiency of securities clearing and settlement in the EU as well as a level playing-field for the respective infrastructures. The ESCB-CESR Recommendations are regarded as one of the pillars in the enhancement of EU post-trading services, complementing the initiatives on T2S, the Code of Conduct for Clearing and Settlement and the dismantling of the Giovannini barriers.

### STATISTICS ON INSTITUTIONAL INVESTORS

In addition to the statistics collected on monetary financial institutions (MFIs), the ECB also develops and compiles statistical information on other financial corporations, focusing on investment funds and financial vehicle corporations (securitisation vehicles). Given the growing financial role of institutional investors in the euro area, improved statistics on these actors are not only increasingly relevant from a monetary policy perspective, but will also help the monitoring of the financial integration process. (See, for example, Chapter I of this report.)

In 2008 the ECB, together with the NCBs, worked on (i) updating the statistical requirements addressed to MFIs concerning balance sheet items and interest rates and (ii) collecting statistical data on MFIs’ securitisation and financial vehicle corporations’ balance sheet statistics. Two regulations addressing these requirements were adopted by the Governing Council of the ECB on 19 December 2008 and published in the Official Journal of the European Union on 20 January 2009.<sup>13</sup> A third regulation addressing the requirements with regard to MFI interest rates was approved by the Governing Council of the ECB on 13 March 2009. As set out in these regulations, reporting will begin by mid-2010 with monthly and quarterly data for December 2009 (for securitisation data) or June 2010 (remaining data).

In addition, the ECB, together with the NCBs, is currently implementing an approach to produce euro area quarterly statistics on insurance corporations and pension funds based on data collected for other, e.g. supervisory, purposes.

<sup>13</sup> Regulation (EC) No 24/2009 of the European Central Bank of 19 December 2008 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (ECB/2008/30) OJ L 15, 20.1.2009, p. 1; and Regulation (EC) No 25/2009 of the European Central Bank of 19 December 2008 concerning the balance sheet of the monetary financial institutions sector (Recast) (ECB/2008/32), OJ L 15, 20.1. 2009, p. 14.

## 2 CATALYST FOR PRIVATE SECTOR ACTIVITIES

While public authorities have the responsibility to provide an adequate framework conducive to financial integration, progress in European financial integration ultimately depends on private sector initiatives making full use of the cross-border business opportunities. Competition among market players is a major driving force in this regard. In addition, progress made in the field of financial integration also depends on effective collective action, notably where heterogeneous market practices and standards need to be overcome. However, possible coordination problems may hamper such cooperative approaches among market participants. In such cases, public sector support for private coordination efforts may help to overcome possible difficulties.

Given its institutional characteristics, the Eurosystem is particularly well placed to play an active role as a catalyst for private sector activities in the field of European financial integration. The ECB is both a public authority with a pan-European remit and, in its capacity as the central bank of the euro area, an active market participant, with knowledge of and business contacts in the financial markets.

Over the past few years, the ECB has acted as a catalyst in many fields. For example, the ECB calculates and provides the EONIA for the unsecured money market, based on confidential contributions from banks.

In 2008 the catalytic activities of the ECB and the Eurosystem have focused mainly on the following initiatives: the STEP initiative, the SEPA project, and the proposals by the European Financial Markets Lawyers Group (EFMLG) on close-out netting, substantive rules regarding intermediated securities and efficiency for financial services claims.

### STEP INITIATIVE

The STEP initiative of the Financial Markets Association (ACI) and the EBF seeks to promote

the integration and development of a pan-European short-term paper market through the voluntary compliance of market players with a core set of standards. These standards are contained in the STEP Market Convention, signed on 9 June 2006. The STEP market is also accepted as a non-regulated market for collateral purposes in Eurosystem credit operations. In December 2008 the outstanding amount of euro-denominated STEP securities reached EUR 380 billion in 95 STEP-compliant programmes, up from EUR 320 billion in December 2007. Among the issuers, some 40% were entities other than credit institutions. A substantial share was denominated in euro. Further information on STEP and STEP-labelled programmes can be found on the STEP Market website.<sup>14</sup>

The ECB and the Eurosystem have supported the STEP initiative since its inception in 2001, by acting as a catalyst to facilitate coordination among market players. This support is currently two-fold. On the one hand, the ECB provides statistics on volumes and yields on the STEP market, based on a permanent arrangement and publishes these figures on its website.<sup>15</sup> Moreover, the Eurosystem continues to assist the STEP Secretariat with the STEP labelling process, on the basis of a temporary arrangement which will expire in June 2010. The ultimate responsibility for granting and withdrawing the STEP label rests fully with the STEP Secretariat.

The STEP Market Committee has launched a review of the STEP Market Convention, with the aim of making it easier to apply – from a technical point of view – for a larger number of markets, while maintaining or even enhancing the Market Convention standards. The ECB welcomes such a review. First, as markets evolve, the Market Convention must adapt accordingly. Second, it is a good opportunity to take stock of the processes and procedures applied since the start of the STEP market in June 2006 and to make any necessary improvements to the Market Convention.

<sup>14</sup> <http://www.stepmarket.org>.

<sup>15</sup> See the ECB's website at <http://www.ecb.europa.eu/stats/money/step/html/index.en.html>

In October 2008, to address the tensions in financial markets, the Eurosystem expanded its collateral framework on a temporary basis, until December 2009. Among other measures, it allowed debt instruments issued by credit institutions which are traded on accepted non-regulated markets to be eligible as collateral in Eurosystem credit operations. These include certificates of deposit (CDs) when traded on one of the accepted non-regulated markets, including the STEP market. This may further increase the attractiveness of the STEP label and contribute to further integration of the short-term paper market.

#### SEPA INITIATIVE

The SEPA initiative, led by the European Payments Council (EPC), is aimed at achieving a fully integrated market for retail payment services in the euro area with no distinction between cross-border and national payments. SEPA will enhance the automation of payments throughout Europe, which should result in substantial benefits for users.<sup>16</sup> SEPA will also contribute to the integration of retail banking markets more generally.

Since its inception, the Eurosystem has played a role of catalyst with regard to the SEPA project. The launch of the SEPA initiative in 2002 was itself inspired by the shared vision of the Eurosystem and the European Commission to reap the full benefits of a single currency via the establishment of a fully integrated market for cashless retail payments.<sup>17</sup>

Concerning activities undertaken during 2008, on 28 January the Eurosystem and the European Commission published a joint statement welcoming the official launch of the SCT and acknowledging the substantial preparatory work undertaken by European banks to create SEPA, under the aegis of the EPC. On this occasion the Eurosystem, the European Commission and the EPC, as the key promoters of SEPA, held a joint high-level SEPA launch event, entitled "SEPA GOES LIVE".<sup>18</sup> In addition to the successful launch of the SEPA Credit Transfer, most

ACHs that were processing credit transfers in euro have become SCT scheme-compliant. Also SEPA for cards started in January 2008.

SEPA will create huge benefits, as demonstrated by two studies carried out by the ECB and the European Commission. In particular, the study carried out by the Commission shows that the potential benefits from SEPA in payments markets alone could exceed EUR 123 billion over the next six years, and a further EUR 238 billion if SEPA can be used as a platform for electronic invoicing. The two studies also indicate that the process of SEPA migration will be a challenge, especially for banks. According to the ECB study, banks may significantly reduce their costs but will face increased competition. SEPA will also offer banks an opportunity to market new, value-added services related to the payment chain. Therefore, the ECB and the Commission called on banks to maintain momentum in the SEPA process so that users can migrate quickly in a market-led process to the new SEPA payment instruments and the costs of dual payments are kept to the minimum.

To facilitate progress on the SEPA project, the Eurosystem organised meetings with various stakeholders including end-users, infrastructure providers and card schemes. The ECB also participated as an observer at EPC Plenary meetings and in the working groups that report to the EPC Plenary. Furthermore, throughout 2008 the Eurosystem continued to provide assistance to the banking industry regarding the design and preparation of the new SEPA instruments and frameworks. It also assisted the banking industry on a range of horizontal issues related to SEPA, especially concerning the aspects of standardisation required and governance.

16 It is noted that whereas the Payment Services Directive targets the existing legal barriers to the cross-border provision of payment services, the SEPA initiative is aimed at harmonising technical standards and market practices to support those activities.

17 Detailed information about the activities of the Eurosystem in this regard is provided on the ECB's website at <http://www.ecb.int/paym/pol/sepa/html/index.en.html>.

18 Further information on this event is provided at <http://www.ecb.europa.eu/events/conferences/html/sepa.en.html>.

In a joint press release on 4 September 2008, the ECB and the European Commission encouraged the EPC to move ahead with the launch of the SEPA Direct Debit (SDD) scheme, an important SEPA building block essential for moving the majority of euro payments to SEPA instruments by the end of 2010. Under this scheme, bank customers will be able to arrange euro direct debits to pay companies with bank accounts in any of the 31 European countries participating in SEPA.<sup>19</sup> The ECB and the European Commission recognised the potential advantages of the SEPA Direct Debit scheme, in terms of economies of scale and increased competition liable to drive efficiency and innovation in the area of payments to the benefit of European consumers and companies, and suggested a way forward in the ongoing debate about a multilateral interchange fee (MIF).

On 24 November 2008 the Eurosystem published the sixth SEPA Progress Report.<sup>20</sup> In this report, the Governing Council of the ECB acknowledged that a number of substantial positive achievements in the SEPA project were made during 2008. The report emphasised the fact that continued efforts of financial market participants (such as banks, corporate entities, public administrations, national banking communities and merchants) were needed to ensure SEPA's success. Despite the mostly positive developments of the SEPA project, further work needs to be done. In particular, the Eurosystem expects at least one additional European card scheme to emerge in the coming years. The Eurosystem has been discussing this topic with major European banks and stakeholders since April 2008 and has observed increasing understanding and support.

Whereas the SEPA Credit Transfer is the first achievement in SEPA, in order to stimulate the uptake of SCT, banks must ensure more communication, clear product offerings and the delivery of a consistent customer experience. As regards SDD, preparations have continued well and the last obstacles to a timely launch on 1 November 2009 should be overcome, including the development of a business model

for the new payment instrument. Setting a realistic but ambitious end date for migration to SCT and SDD was mentioned in the report as a key issue to progress with the SEPA project. While greatly appreciating the work of the European banking industry for SEPA, managed by the EPC, the Eurosystem noted that the project had entered a critical phase in which concerted efforts by all stakeholders are needed to maintain the momentum of the project and to realise the benefits of SEPA at an early stage.

In the next few years, the banking community will move beyond core and basic products and will finalise other building blocks of SEPA, such as the standards for card payments and standards for the messages between the customers and their banks. Moreover, to provide further clarity with regard to the tasks that the Eurosystem expects to be fulfilled, a list of ten "Milestones for SEPA implementation and migration" and a series of necessary tasks for their fulfilment have been identified and published in the Sixth Progress Report. The fulfilment of these milestones will be decisive for the success of SEPA migration.

#### **EFMLG PROPOSALS ON CLOSE-OUT NETTING, SUBSTANTIVE RULES REGARDING INTERMEDIATED SECURITIES AND EFFICIENCY FOR FINANCIAL SERVICES CLAIMS**

In a letter to the European Commission sent in April 2008, the European Financial Markets Lawyers Group (EFMLG), jointly with the International Swaps and Derivatives Association (ISDA), submitted a proposal for the adoption of a specific EU netting directive. The proposal, which aims at improving the existing EU legal framework for netting, is currently being examined by the Commission. The protection of netting arrangements is of paramount importance to the financial markets. It reduces credit risk and can also contribute to reducing settlement and

<sup>19</sup> Currently, there are separate national direct debit schemes and it is not possible to establish direct debit arrangements across borders in Europe.

<sup>20</sup> The sixth SEPA Progress Report can be found on the ECB's website at <http://www.ecb.europa.eu/press/pr/date/2008/html/pr081124.en.html>.

liquidity risk and, as a consequence, systemic risk.

Furthermore, the EFMLG wrote in April to the European Commission on the issue of the overlaps between the EU's Legal Certainty Project and the parallel global initiative by the International Institute for the Unification of Private Law (UNIDROIT) on substantive rules for intermediated securities, asking for caution regarding possible inconsistencies. Endorsing this approach, the European Commission will ensure coordination of the projects in the EU. The finalisation of the draft UNIDROIT Convention has been postponed until September 2009 in order to allow a careful assessment of the compatibility of both projects.

Finally, in early 2007, the ECB approached the EFMLG and asked it to assess the efficiency of the courts in resolving claims from financial institutions and, in the event it found shortcomings, to advise how the situation could be improved. In July 2008 the EFMLG adopted a report entitled "Towards improved judicial efficiency for financial services claims" in response to ECOFIN's request to monitor and assess the relevant institutional features that hinder the efficient functioning of the financial system, and to pursue efforts aimed at improving the financial market framework conditions. The EFMLG report is intended to raise awareness of these issues among policy-makers in order to improve the courts' efficiency in resolving financial claims.

### **3 KNOWLEDGE ABOUT THE STATE OF FINANCIAL INTEGRATION**

A sound analysis of the economic benefits of financial integration and its development over time forms a prerequisite for effectively targeted action that can support further progress.

The ECB is in a unique position to provide in-depth economic analysis and comprehensive statistics regarding the state of financial integration in the euro area and its development.

In particular, the ECB is able to sponsor coordinated analytical research – together with other members of the Eurosystem and academics – and can make use of its experience and knowledge as an active market participant. Enhancing knowledge and raising awareness regarding the need for European financial integration, and measuring the progress achieved in this regard, therefore form a major part of the ECB's contribution to fostering financial integration.

During 2008 the activities of the Eurosystem with respect to enhancing knowledge, raising awareness and monitoring the state of financial integration were mainly focused on the following initiatives.

#### **INDICATORS OF FINANCIAL INTEGRATION IN THE EURO AREA**

Quantitative measures of financial integration provide essential tools for monitoring the progress made in financial integration. Since September 2005 the ECB has published quantitative indicators of integration in the euro area financial and banking markets.<sup>21</sup> These price and quantity-based indicators cover the money market, the government and corporate bond markets, the equity market and the banking markets. The latter include the cross-border presence of euro area banks. Since financial infrastructures play a significant role in the ongoing process of financial integration, indicators on market infrastructures have been allocated to the main financial markets that they serve.

The range of indicators is expected to be extended on the basis of further advances in research and economic analysis, together with an improved availability of statistics, especially with regard to non-bank financial institutions including investment funds, securitisation vehicles, insurance corporations and pension funds. All indicators are updated and published

<sup>21</sup> See Chapter I, as well as the ECB reports entitled "Indicators of financial integration in the euro area", September 2005 and 2006, available on the ECB's website.

semi-annually (March/September) on the ECB's website.<sup>22</sup> The last update was carried out in March 2009.

### ECB-CFS RESEARCH NETWORK ON CAPITAL MARKETS AND FINANCIAL INTEGRATION IN EUROPE

In April 2002 the ECB and the Center for Financial Studies (CFS) in Frankfurt launched the ECB-CFS Research Network to promote research on "capital markets and financial integration in Europe".<sup>23</sup> The Research Network is aimed at coordinating and stimulating top-level and policy-relevant research that significantly contributes to the understanding of the European financial system and its international linkages. European financial integration is one of the three main focal areas in this regard.<sup>24</sup>

The Research Network has successfully established itself as a highly dynamic network of researchers working in various areas related to financial integration. The second phase of research activity – lasting from 2005 to the Symposium held in February 2008 in Frankfurt – focused on eight priority areas (with the last three being new relative to the first phase): (1) bank competition and the geographical scope of banking; (2) international portfolio choices and asset market linkages between Europe, the United States and Japan; (3) European bond markets; (4) European securities settlement systems; (5) the emergence of new markets in Europe and start-up financing; (6) the relationship between financial integration and financial stability; (7) EU accession, financial development and financial integration and (8) financial system modernisation and economic growth in Europe.

After an in-depth discussion in July 2006, the Steering Committee proposed the extension of the work of the ECB-CFS Network by another three years. Further to this development, in February 2008 the Steering Committee met again to modify the Network's research agenda in view of the ongoing financial market turmoil. It was particularly emphasised that network

research should focus on the implications for financial stability and monetary policy under a set of new priorities. The following three priority areas emerged from these discussions: (1) financial systems as risk managers, risk distributors and risk creators; (2) integration and development of retail financial services and the promotion of innovative firms and (3) financial modernisation, governance and the integration of the European financial system in global capital markets. The first area assesses, among other things, the effects of new financial instruments on economic efficiency and policy, the link between monetary liquidity and market liquidity, and the optimal regulatory architecture to address financial crisis propagation. The second area investigates, for example, why venture capital financing in many European countries is relatively low and how to foster more integration in these financial markets. An example of a topic covered by the last area is the importance of global coordination of financial sector reforms among the major economies.

On 13-14 February 2008 the ECB hosted the Second Symposium of the Research Network on "Capital Markets and Financial Integration in Europe", which, as mentioned above, concluded the second phase of the Network and featured presentations related to all of the above-mentioned priority areas.

On 20-21 October 2008 Česká národní banka hosted in Prague the first conference of the third phase of the ECB-CFS Network on "The Market for Retail Financial Services: Development, Integration and Economic Effects". Research presentations and panel discussions focused exclusively on priority (2) in the context of the market turmoil.

Finally, the ECB-CFS Research Network also awards five "Lamfalussy Fellowships" every

<sup>22</sup> See <http://www.ecb.int/stats/finint/html/index.en.html>.

<sup>23</sup> <http://www.eu-financial-system.org>.

<sup>24</sup> In addition, the ECB-CFS Research Network studies financial system structures in Europe and financial linkages between the euro area/EU, the United States and Japan.

year to promising young researchers whose projects are related to financial integration.

#### PROVISION OF FINANCIAL MARKETS STATISTICS

Increasing transparency fosters integration, as it facilitates the comparison of products across the economic area. Since 10 July 2007 the ECB publishes nominal yield curves of AAA-rated euro-denominated euro area central government bonds, with a residual maturity from three months to 30 years. In addition, the ECB releases daily yield curves covering all euro area central government bonds and publishes the spreads between both curves.<sup>25</sup>

A yield curve shows the relationship between the market remuneration rate and the remaining time to maturity of bonds with a similar risk profile at a certain moment in time. From an ECB monetary policy perspective, the main benefit of the euro area yield curve is that it provides a proper empirical representation of the term structure of euro area interest rates, which can be interpreted in terms of market expectations on monetary policy, economic activity and inflation. Publishing a consistent and comparable set of yield curves based on euro-denominated central government bonds also provides reference information for the wider public and financial market participants, who previously had to rely on references to bonds of individual issuers.

Since the introduction of the euro, there has been increasing demand from the public and institutions for timely and accurate statistical data on the euro money market activity. To satisfy this need, the Eurosystem has been collecting second quarter euro money market activity data annually since 1999. The data collected includes daily average turnover for a variety of market segments (the unsecured market, repo market, derivatives market and short-term securities market) and maturity ranges (from overnight to over ten years). These data are then compiled, published and released to the general public as the Euro Money Market

Study which also presents, in alternate years, a full study of money market activity.

#### 4 CENTRAL BANK SERVICES THAT FOSTER INTEGRATION

The provision of central bank services is another way in which the Eurosystem seeks to promote financial integration. Although the main purpose of such services is the pursuit of the Eurosystem's basic central banking tasks, the Eurosystem pays close attention to ensuring that such services, where possible, are specified in such a way that they are also conducive to supporting the financial integration process.

During 2008 the Eurosystem focused its activities in the area of central bank services on the following initiatives. First, it completed the migration to TARGET2, which provides real-time services for the settlement of euro payments. The new system provides a better and uniform service to all its customers and allows them to integrate their euro liquidity management. Second, the Eurosystem decided to set up a technical platform, TARGET2-Securities, providing integrated settlement services to CSDs throughout Europe. The platform will promote competition between CSDs, enable economies of scale to be realised and facilitate the harmonisation of securities post-trading services. Third, the Eurosystem also decided to establish a second generation single platform Eurosystem collateral management service, CCBM2. The new system will provide a single set of procedures for mobilising any eligible collateral with the Eurosystem. The three above services are complementary elements of the core infrastructure for the euro financial system and, once all available, are expected to provide significant combined benefits.

<sup>25</sup> The yield curves and a description of the methodology used to estimate them can be found on the ECB's website at <http://www.ecb.int/stats/money/yc/html/index.en.html>.

## TARGET2

The TARGET system started operations in January 1999 and facilitated a rapid integration of the euro money market. It was replaced in May 2008 by an enhanced second generation system, TARGET2. While TARGET was initially based on a technically decentralised structure made up of several systems, TARGET2 is based on a Single Shared Platform (SSP) for the processing of euro payments and the management of accounts opened for financial institutions with participating central banks. In the past, only a few national user communities could benefit from modern real-time gross settlement (RTGS) services. The launch of TARGET2 enables the entire European user community to benefit from the same comprehensive and advanced RTGS services. TARGET2 offers broad access to credit institutions and ancillary systems.

TARGET2 represents a decisive contribution by the Eurosystem to European financial integration. The first market infrastructure to be completely integrated and harmonised at the European level, TARGET2 has eliminated the fragmented situation that previously existed in the management of central bank liquidity and the real-time settlement in central bank money of euro payments. The move to a single platform, TARGET2, represents a significant step towards a more efficient, competitive, safe and fully integrated European payments landscape, offering all market participants equal conditions and services regardless of their location. The harmonised service level of TARGET2, offered at a single price structure, ensures a level playing-field for all participants across Europe.

The central banks and their respective user communities migrated to TARGET2 in three consecutive country windows, on 19 November 2007, 18 February 2008 and 19 May 2008 respectively. As a result of extensive testing activities and careful monitoring by the central banks, the move to TARGET2 was very smooth and successful. In January 2009 Slovakia

adopted the euro and Národná banka Slovenska joined TARGET2. In all, 21 NCBs of the EU and the ECB, including their respective user communities, are able to use the same system and benefit from the same services for the real-time central bank settlement of payments in euro.

Data collected after the full migration in May 2008 confirmed most of the Eurosystem's forecasts during the project phase in terms of volume, cost and revenues. The SSP operated smoothly with a high level of performance. Participants quickly became acquainted with TARGET2 and its advanced RTGS services.

Since June 2008, which was the first complete month of operation of TARGET2, a daily average of 364,000 transactions for an average value of EUR 2.7 trillion were settled in TARGET2. This figure positions TARGET2 as one of the largest wholesale payment systems in the world, alongside Fedwire in the United States and Continuous Linked Settlement (CLS), the international system for settling foreign exchange transactions.

Observations made with regard to the use of advanced TARGET2 services (liquidity pooling, payment prioritisation, liquidity reservation, sender limits, etc.) confirm that they were rapidly adopted by a wide range of participants and that they contribute to the smoother settlement of transactions. In general, the usage of the new features confirms the adequacy of the TARGET2 specifications in terms of participants' expectations. TARGET2 and its new features have both enabled and driven organisational changes by credit institutions that operate in several European countries, by allowing these entities to rationalise their back office functions and consolidate their management of euro liquidity.

TARGET2 provides a harmonised set of cash settlement services in central bank money for all kinds of ancillary systems, such as retail payment systems, money market systems, clearing houses and securities settlement systems. The main

advantage for ancillary systems is that they are now able to access any account in TARGET2 via a standardised interface with standardised settlement procedures, thus providing for a substantial harmonisation of business practices.

To facilitate the migration of ancillary systems to TARGET2, some central banks opted to maintain local systems – referred to as proprietary home account (PHA) applications – for a transition period of maximum four years. The phasing-out of such applications has already begun. Consequently, a number of ancillary systems have moved to settle on the SSP. Moreover, some new ancillary systems have joined TARGET2.

In June 2008 the volume of TARGET2 transactions settled on the local PHAs was very limited and only accounted for around 3% of total TARGET2 traffic. This percentage is expected to decrease further. Two central banks have already taken action to move all their payment activities to the SSP well before the end of the transition period (Portugal in March 2009 and Belgium in June 2009).

#### TARGET2-SECURITIES

Despite the single currency, the European securities post-trading landscape remains highly fragmented. Fragmentation and non-harmonised procedures among systems contribute to high costs, especially for cross-border securities transactions in the EU, which constitutes a considerable competitive disadvantage for European capital markets. At the same time, demand for an integrated and harmonised European settlement infrastructure is increasing. The T2S project was proposed by the Eurosystem as a means of overcoming the current fragmentation of the settlement infrastructure. T2S is complementary to the Code of Conduct, the efforts to remove the so-called Giovannini barriers and to the ESCB-CESR Recommendations for SSSs and CCPs.

T2S will be a multi-currency technical platform to be used by CSDs for the settlement, in

central bank money, of securities transactions in Europe. It will bring technical consolidation to the European post-trade landscape by providing a single resilient, secure and efficient settlement platform. It will reduce costs through economies of scale and also through synergies with other Eurosystem services: with TARGET2 in terms of payments in euro and with CCBM2 in terms of collateral management as part of Eurosystem credit operations. The participating CSDs will maintain the same legal and commercial relations with their customers and will continue to perform custody and notary functions.

T2S will bring further harmonisation to the financial industry, since market participants will be subject to the same set of rules through single settlement and optimisation procedures for all transactions, an efficient single auto-collateralisation mechanism for all euro markets and common daily operating time schedules for all settlement processes. Finally, T2S will also enhance competition by eliminating national specificities.

The Eurosystem continued its work on the T2S initiative throughout 2008. A first draft version of the T2S User Requirements (UR), defining the features that CSDs and financial market participants require in T2S, was completed in December 2007. They were the result of six months of intensive cooperative work by hundreds of experts from CSDs, banks and central banks, coordinated by the ECB which also drafted the UR documents. On 18 December 2007 the Eurosystem published the draft UR, together with the methodology of the economic impact analysis, for comments by 2 April 2008. The input gathered from stakeholders was subsequently taken into account in preparing a proposal to join T2S that the Governing Council of the ECB made to European CSDs on 23 May 2008.

This proposal comprised a set of documents containing all the necessary elements enabling the CSDs to evaluate the convenience of joining T2S, namely the economic impact analysis; the detailed T2S User Requirements;

a legal assessment of T2S and an outline of the contractual arrangements that would be proposed to CSDs; a description of T2S Governance for the specification phase and a presentation on harmonisation efforts in the context of T2S. CSDs were invited to respond to the ECB by 4 July 2008. All but one small CSD of the euro area CSDs expressed, subject to certain conditions, their support for the continuation of the T2S project and their readiness to enter into legally binding arrangements. The non-euro area European CSDs were given more time to consider their participation and to discuss with their central bank whether their local currency could be made available in T2S. These CSDs were invited to reply before the end of 2008.

On 3 June 2008 ECOFIN concluded that the ECB had so far broadly met the conditions it had set in February 2007.<sup>26</sup> Considering, inter alia, the support from CSDs and ECOFIN, the Governing Council of the ECB formally approved the T2S project on 17 July 2008. It also mandated the Deutsche Bundesbank, Banco de España, Banque de France and Banca d'Italia to develop and operate T2S on behalf of the Eurosystem.<sup>27</sup> On 23 July 2008 the EU Presidency and Commission welcomed the launch of T2S in a joint press release.<sup>28</sup>

T2S is scheduled to go live by 2013. In its design and development, special attention is being devoted to harmonisation aspects, since T2S will not only harmonise settlement processes in Europe but it will also contribute to triggering further harmonisation in aspects of the trading and post-trading environments that, although not falling within the scope of T2S, should in any event be enhanced when T2S goes live. To this purpose a harmonisation plan is being designed in cooperation with market participants.

In addition to operational harmonisation of processes at CSD level, legal and regulatory harmonisation cannot take place within T2S alone but need to be complemented by private and public sector action. In this regard, the relevant groups within the T2S project organisation interact actively with the various

bodies currently working on the EU post-trade harmonisation agenda. The ECB regularly reports on progress to CESAME II, the advisory group working with the Commission, Member States and other relevant bodies on the removal of the Giovannini barriers and any other barriers for which the private sector has sole or joint responsibility.<sup>29</sup>

The T2S pricing scheme, currently under discussion, will be in the spirit of the Lisbon strategy objective of financial integration in Europe by providing one single coherent and transparent fee structure for the provision of technical settlement services to CSDs across Europe, thus creating a level playing-field in prices for such services in securities settlement. Given that T2S pricing will be based on a cost recovery and not a “for profit” principle, T2S will enable all market participants to benefit from the economies of scale that it will realise.

#### CORRESPONDENT CENTRAL BANKING MODEL (CCBM)

The CCBM for the cross-border transfer of collateral within the Eurosystem, established in 1999, is another Eurosystem service conducive

26 In February 2007 ECOFIN stressed, inter alia, that “T2S should be open to non-euro area central securities depositories and currencies, subject to agreement between the concerned parties; The existing securities settlement systems as they are currently operated, either interfaced or integrated, should not be put into question during the migration phase until T2S is implemented, thus the migration phase should be competitively neutral; The governance structure, for the development and the future operation of T2S respectively, should provide solutions for the handling of potential conflicts of interest [...]”.

27 <http://www.ecb.int/press/pr/date/2008/html/pr080717.en.html>

28 EC Press release IP/08/1193 EU Presidency and Commission welcome launch of TARGET2-Securities “T2S” project, available at [www.europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1193&format=PDF&aged=0&language=EN](http://www.europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1193&format=PDF&aged=0&language=EN).

29 Besides CESAME II, a non-exhaustive list of bodies involved in the process of dismantling the Giovannini Barriers include: the LCG and the FISCO; the ECSDA; the European Securities Services Forum (ESSF); the European Credit Sector Associations (ECSAs); the European issuers organisations (European Association of Listed Companies, EALIC, and the Union of Issuers Quoted in Europe, UNIQUE; these organisations merged in January 2008 to form the body EuropeanIssuers); S.W.I.F.T. srl and its Securities Market Practice Group (SMPG), etc. The ECB also participates in international fora dealing with securities post-trading harmonisation, such as UNIDROIT or the Hague Conference on Private International Law.

to fostering financial integration. It permits counterparties to use assets eligible as collateral with the Eurosystem, independently of the location of the asset and the counterparty. This allows for portfolio diversification and the integration of collateral markets.

Over time CCBM has become the major channel for the cross-border use of collateral for Eurosystem credit operations. Despite this success, market participants have identified some drawbacks in this procedure which mainly relate to the lack of standardisation of existing procedures, both domestically and at a cross-border level.

Against this background, the Governing Council of the ECB decided on 8 March 2007 to review the current Eurosystem collateral management handling procedures, in particular the CCBM. Market participants, through public consultations and ad-hoc meetings, were involved in defining the principles and the user requirements for a single technical platform for Eurosystem collateral management – called CCBM2.

Given the positive feedback on the Eurosystem initiative, the Governing Council of the ECB decided, on 17 July 2008, to launch the CCBM2 project. The development and operation of CCBM2 was assigned to the Nationale Bank van België/Banque Nationale de Belgique and De Nederlandsche Bank, with a view to commencing live operations earlier than, or at the latest together with, T2S.

The objective of CCBM2 is to consolidate and increase the efficiency of the Eurosystem's internal systems for collateral management. In particular, it aims, to the extent possible, to address the abovementioned drawbacks of the current set-up by optimising the cost of mobilising collateral and by enhancing liquidity management.

The scope of CCBM2 goes beyond that of the current CCBM, as CCBM2 aims to establish common efficient collateral mobilisation and management procedures not only for cross-border but also for domestic use. In particular,

CCBM2 will be able to handle all eligible collateral, including credit claims, and support all different collateralisation techniques and methods (such as pledge, repo, assignment as well as pooling and earmarking), depending on the practices of each central bank.

CCBM2 will be based on a modular approach. It will consist of several modules, whereby only the first module – the message router – will be compulsory for those Eurosystem central banks participating in the platform. This mandatory module will ensure harmonised and standardised interaction between the Eurosystem and counterparties. The other modules, which deal with the actual handling of marketable and non-marketable assets, will remain optional. This modular approach gives national central banks the flexibility to choose the CCBM2 modules that suit their own requirements and market needs.

CCBM2 will in the future be able to adjust to changes in the Eurosystem's collateral and operational framework, as well as to adapt to market developments in a smooth and swift manner.

CCBM2 will be fully compatible with TARGET2 and T2S, in particular with the communication interfaces of both these platforms and with the settlement procedures of T2S for the delivery of securities.

In the current project phase, user detailed functional specifications are being developed by the Eurosystem on the basis of the approved user requirements.<sup>30</sup> The Eurosystem will maintain an open dialogue with market participants throughout the subsequent phases of the CCBM2 project.

<sup>30</sup> See [http://www.ecb.europa.eu/press/pr/date/2008/html/pr080717\\_1\\_en.html](http://www.ecb.europa.eu/press/pr/date/2008/html/pr080717_1_en.html).



# STATISTICAL ANNEX

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Chart C2: Cross-country standard deviation of average interbank repo rates across euro area countries S4

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## BOND MARKET INDICATORS

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#### Price-based indicators

Chart C22: Cross-country standard deviation of MFI interest rates on loans to non-financial corporations	S 16
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#### Quantity-based indicators

Chart C26: MFI loans to non-MFIs: outstanding amounts by residency of the counterparty	S 18
Chart C27: MFI loans to MFIs: outstanding amounts by residency of the counterparty	S 18

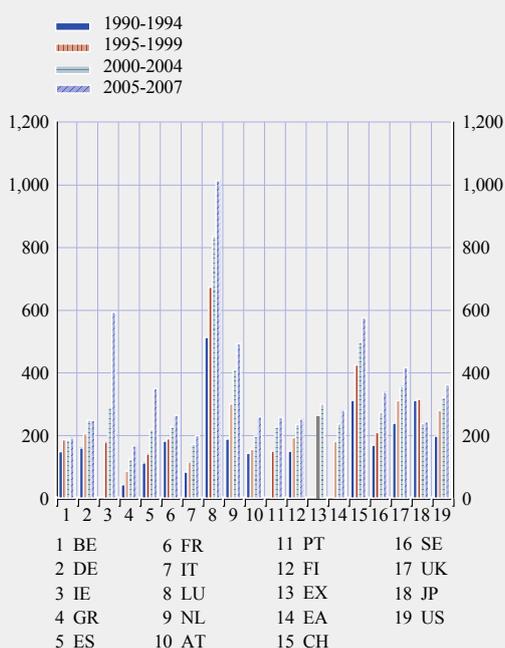
#### Infrastructure indicators for retail payment systems

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GENERAL INDICATORS

Chart CIS Size of capital markets

(percentages of GDP)



Sources: World Federation of Exchanges (WFE), IMF, ECB, Datastream, Eurostat, ECB calculations.

Description

This indicator is calculated as the sum of (i) stock market capitalisation, (ii) bank credit to the private sector and (iii) debt securities issued by the private sector, divided by GDP.

Euro area (EA) and Euronext countries (EX) figures are averages of country data weighted by GDP.

Stock market capitalisation: data for Belgium start 1991 and are calculated for 2005 to 2007. Data for Finland are calculated for 2005 to 2007. Data for France start in 1991 and are calculated for 2005 to 2007. Data for the Netherlands start in 1991 and are calculated for 2002 to 2007. Data for Portugal start in 1995 and are calculated for 2002 to 2007. Data for Sweden are calculated for 2005 to 2007. Figures for Japan refer to the Tokyo Stock Exchange. Figures for the United States include AMEX, NYSE and NASDAQ. EA stock market capitalisation is the sum of the values for Euronext and for euro area countries not included in Euronext. Stock market capitalisation includes only shares issued by domestic companies; it does not include shares issued by foreign companies.

Debt securities issued by the private sector: for euro area (EA) countries, data are from the ECB. Data for Greece, Ireland and Luxembourg start in 1993. For Ireland, BIS data are used for the years 1993 to 2002 for monetary financial institutions and for the years 1993 to 2007 for other issuers. For Luxembourg, BIS data for the years 1993 to 2007 are used for non-MFI issuers. For non-EA countries, BIS data are used (sum of international and domestic amounts outstanding of bonds issued by corporate issuers and financial institutions).

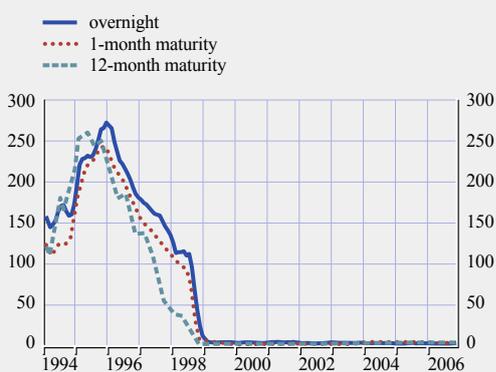
Bank credit to the private sector: EA figures include cross-border loans between EA countries.

## MONEY MARKET INDICATORS

### PRICE-BASED INDICATORS

**Chart C1 Cross-country standard deviation of average unsecured interbank lending rates across euro area countries**

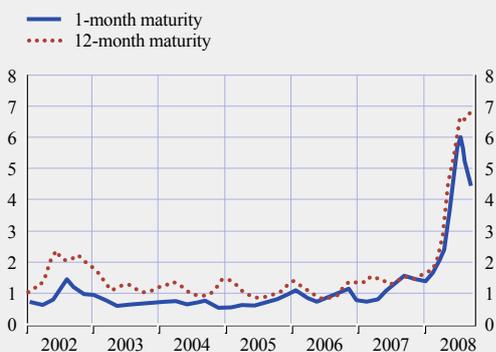
(61-day moving average; basis points)



Sources: EBF, ECB calculations.

**Chart C2 Cross-country standard deviation of average interbank repo rates across euro area countries**

(61-day moving average; basis points)



Sources: EBF, ECB calculations.

### Description

The EBF makes available (daily) business frequency data for a panel of individual institutions for both unsecured and secured short-term interbank debt or deposits. These data cover the EONIA and the EURIBOR (unsecured lending) as well as the EUREPO for different maturities.<sup>1</sup> Data on the EONIA SWAP INDEX can also be used.

For each dataset, the indicator is the unweighted standard deviation ( $D_t$ ) of average daily interest rates prevailing in each euro area country. Reported rates are considered to be the national rates of country  $c$  if the reporting bank is located there. However, the counterparty of the transaction is not known, and the reported interest rate could thus potentially (in part) refer to transactions with a bank outside country  $c$ .

The number of euro area countries ( $n_t$  in the formula below) reflects the number of countries that had adopted the euro in the reference period:

$$D_t = \sqrt{\frac{1}{n_t} \sum_c (r_{c,t} - r_t)^2}, \quad (1)$$

where  $r_{c,t}$  is the unweighted average of the interest rate  $r_{i,t}^c$  reported by each of the  $m_c$  panel banks at time  $t$  in a given country  $c$ :

$$r_{c,t} = \frac{1}{m_c} \sum_{i,t} r_{i,t}^c. \quad (2)$$

The euro area average  $r_t$  is calculated as the unweighted average of the national average interest rates  $r_{c,t}$ .

The data are smoothed by calculating a 61 (business) day centred moving average of the standard deviation, transformed into monthly figures and taking the end-of-month observation of the smoothed series.

<sup>1</sup> For further information, see <http://www.euribor.org/default.htm> and <http://www.eurepo.org/>. See also "The contribution of the ECB and the Eurosystem to European financial integration" in the May 2006 issue of the ECB's Monthly Bulletin, p. 67.

For indicative series prices (EURIBOR, EUREPO), the data are corrected for obvious outliers.

The computed indicator has a monthly frequency.

**Additional information**

The EONIA is the effective overnight reference rate for the euro. The banks contributing to the EONIA are the same as the EURIBOR panel banks (composed of banks resident in the euro area and in other EU Member States, as well as some international banks).

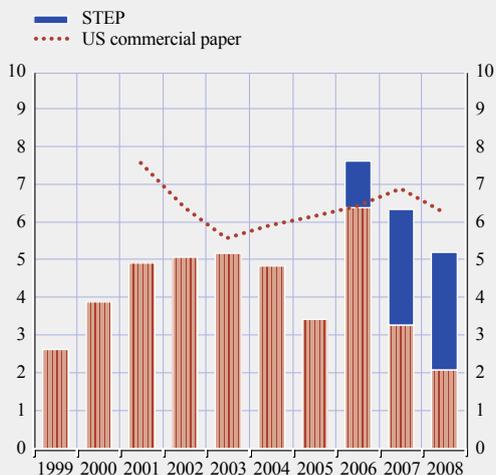
The EURIBOR is the benchmark rate of the large unsecured euro money market for maturities longer than overnight that has emerged since 1999.

The EUREPO is the benchmark rate of the euro repo market, and has been published since March 2002. It is the rate at which one prime bank offers funds in euro to another prime bank when the funds are secured by a repo transaction using general collateral.

**QUANTITY-BASED INDICATORS**

**Chart C2S Outstanding amounts of commercial paper**

(percentages of GDP)



Sources: ECB, Euroclear, Banque de France, Dealogic and Federal Reserve.

**Description**

The height of the bar for Europe is the sum of euro commercial paper (ECP), and the commercial paper outstanding in the Belgian, German, Dutch, Spanish and French markets. Certificates of deposit and asset-backed commercial paper are excluded. The red area indicates the fraction of commercial paper that has the STEP label. Since issuance in the ECP market is mainly undertaken by residents in the euro area and the United Kingdom, the outstanding amounts of euro commercial paper are expressed as a percentage of the sum of euro area and UK GDP.

**INFRASTRUCTURE INDICATORS FOR LARGE-VALUE PAYMENT SYSTEMS (LVPS)**

**Chart C3 TARGET: the share of payments between Member States in total payments**

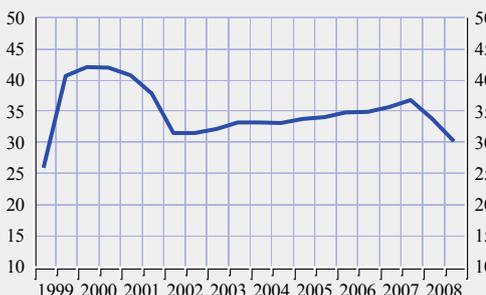
(by volume; percentages)



Source: ECB.

**Chart C4 TARGET: the share of payments between Member States in total payments**

(by value; percentages)



Source: ECB.

### Description

The first indicator shows the share of the volume of payments between euro area Member States (inter-Member State payments) in the total number of payments processed in the TARGET system.

The second indicator shows the share of the value of payments between euro area Member States (inter-Member State payments) in the total value of payments processed in the TARGET system.

Both indicators have a half-yearly frequency.

### Additional information

The TARGET system is the RTGS system for the euro. A second-generation system operating on a single shared platform was launched in November 2007 and fully replaced the former decentralised TARGET system in May 2008.

A TARGET inter-Member State payment is defined as a payment between counterparties who maintain accounts with different central banks participating in TARGET. An intra-Member State payment is defined as a payment between counterparties who maintain accounts with the same central bank.

## BOND MARKET INDICATORS

### GOVERNMENT BOND MARKET

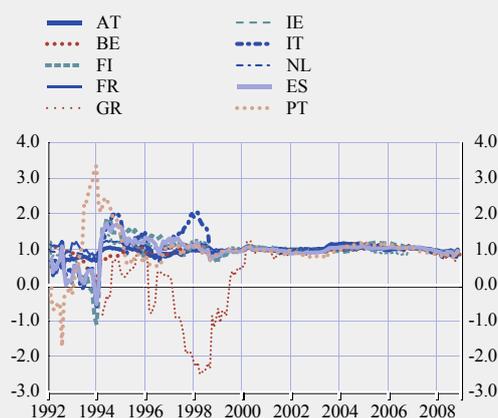
#### PRICE-BASED INDICATORS

### Description

If bond markets are fully integrated and no country-specific changes in perceived credit risk occur, bond yields should only react to news common to all markets. That is, bond yields of individual countries should react exclusively to common news, which is reflected in a change in the benchmark government bond yield. To separate common from local influences, the following regression is run:

$$\Delta R_{c,t} = \alpha_{c,t} + \beta_{c,t} \Delta R_{ger,t} + \varepsilon_{c,t} \quad (3)$$

Chart C5 Evolution of beta coefficients for ten-year government bond yields



Sources: Reuters and ECB calculations.

where  $\alpha$  denotes a country-varying and time-varying intercept;  $\beta$  is a country-dependent and time-dependent coefficient;  $\Delta R_{ger,t}$  is the change in the benchmark (German) bond yield and  $\varepsilon$  is a country-specific shock. In this framework, and in the context of complete market integration,  $\alpha$  and  $\beta$  would have the values of zero and one respectively.

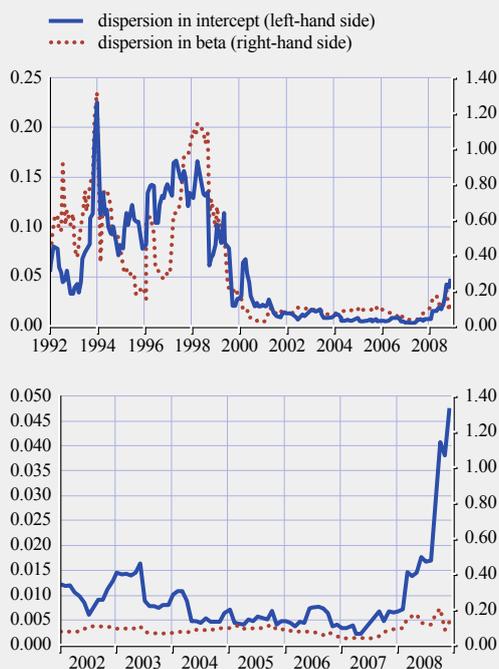
The conditional betas are derived by estimating the above regression using the first 18 months of monthly averages. Subsequently, the data window is moved one month ahead and the equation is re-estimated until the last observation is reached. A time series for  $\beta_{c,t}$  is then obtained.

The model-based indicator has a monthly frequency.

### Additional information

The outcome of the econometric specification depends on the selection of the most appropriate benchmark bond, in this case the ten-year German government bond. In addition, one should not expect common factors to be able to fully explain changes in local bond yields, as “local news” concerning credit and liquidity risks will continue to have an impact on local yields.

**Chart C6 Average distance of intercept/beta from the values implied by complete integration for ten-year government bond yields**



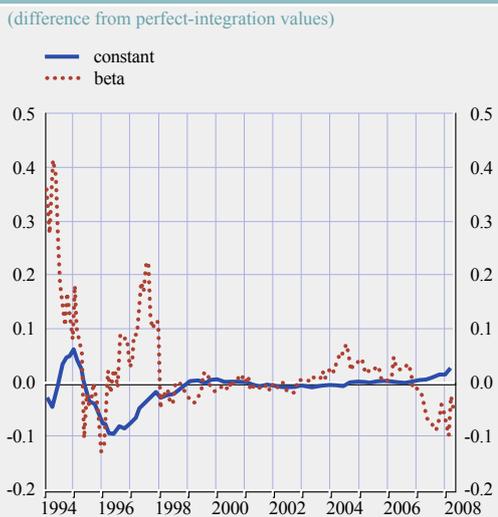
Sources: Reuters and ECB calculations.

**Description**

This indicator is derived using regression (3), as for the previous indicator. From the individual country regressions, the unweighted average  $\alpha_{c,t}$  and  $\beta_{c,t}$  values are calculated and measured as a difference to the values implied by complete market integration (0 and 1 respectively). The analysis is based on monthly averages of government bond yields.

The model-based indicator has a monthly frequency.

**Chart C7 Evolution of intercept and beta coefficients for ten-year government bond yields, adjusted for sovereign risk**



Sources: Reuters and ECB calculations.

**Description**

Sovereign risk is controlled for by proxying it with rating dummies and by modifying regression (3) as follows:

$$\Delta R_{c,t} = (\alpha_{c,t} + \sum_{r \in \{AA+, \dots, A\}} \alpha_{r,t} D_{c,t}^r) + (\beta_{c,t} + \sum_{r \in \{AA+, \dots, A\}} \beta_{r,t} D_{c,t}^r) \Delta R_{ger,t} + \varepsilon_{c,t} \quad (4)$$

where  $D_{c,t}^r$  is a dummy for rating  $r$  and country  $c$ , at time  $t$ .

A potential problem with this regression is that coefficients are not identified when there is not sufficient cross-sectional variation in the ratings. To avoid this problem, the above regression is estimated without fixed effects, i.e.:

$$\Delta R_{c,t} = (\alpha_t + \sum_{r \in \{AA+, \dots, A\}} \alpha_{r,t} D_{c,t}^r) + (\beta_t + \sum_{r \in \{AA+, \dots, A\}} \beta_{r,t} D_{c,t}^r) \Delta R_{ger,t} + \varepsilon_{c,t} \quad (5)$$

Coefficients are made time-varying using a rolling regression (18-month rolling window).

The coefficients  $(\alpha_t, \beta_t)$  now capture the average country reactions to changes in the German government bond yields, after controlling for credit risk factors. Values are calculated and measured as a difference to the values implied

by complete market integration (0 and 1 respectively, assuming no other variable besides sovereign risk is affecting the change in yield).

The chart reports the estimation results for a sample starting in the second half of 1995.

### CORPORATE BOND MARKET

**Chart C3S Debt securities issued by non-financial corporations**

(percentage of GDP)

- 1990-1994
- 1995-1999
- 2000-2004
- 2005-2007



- |      |       |       |       |
|------|-------|-------|-------|
| 1 BE | 6 FR  | 11 PT | 16 SE |
| 2 DE | 7 IT  | 12 FI | 17 UK |
| 3 IE | 8 LU  | 13 EX | 18 JP |
| 4 GR | 9 NL  | 14 EA | 19 US |
| 5 ES | 10 AT | 15 CH |       |

Sources: BIS, ECB, Eurostat and IMF.

This indicator shows the outstanding amounts of debt securities issued by non-financial corporations, as a percentage of GDP.

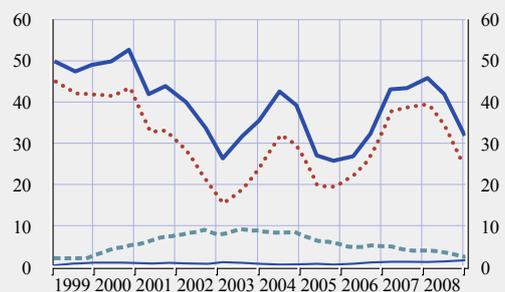
For euro area countries, data are from the ECB. EA and Euronext (EX) country figures are averages of country data weighted by GDP. For Ireland and Luxembourg, BIS data are used. Data for Greece, Ireland and Luxembourg start in 1993. For non-EA countries, BIS data are used (sum of international and domestic amounts outstanding of bonds issued by corporate issuers).

### PRICE-BASED INDICATORS

**Chart C8 Proportion of cross-sectional variance explained by various factors**

(percentages)

- explained by regression
- explained by rating effect
- explained by common, maturity, coupon, liquidity and industry effects
- explained by country effect



Sources: Merrill Lynch, Bloomberg and ECB calculations.

### Description

This indicator is derived by estimating the following equation using the ordinary least squares (OLS) regression technique:

$$SP_{c,r}^i(\tau, t, z_t) = \alpha_t + \sum_{r=1}^k \gamma_r CR_{i,t}^r + \sum_{s=1}^2 \delta_s S_{i,t}^s + \varphi_t z_t + \sum_{c=1}^N \beta_c C_{i,c,t} + e_{i,t} \quad (6)$$

where  $SP_{c,r}^i(\tau, t, z_t)$  is the yield spread for corporate bond  $i$  at time  $t$  issued in country  $c$  with  $\tau$  years to maturity, with credit rating  $r$  and set of instruments  $z_t$ .  $\alpha$  is an intercept common to all corporate bonds,  $CR_{i,t}^r$  is a rating dummy which takes a value of one when corporate bond  $i$  belongs to rating category  $r$  at time  $t$ , and zero otherwise, and  $S_{i,t}^s$  is a sector dummy which takes a value of one for financial corporations, and zero for non-financial corporations. The parameter vector  $\varphi$  groups the sensitivities of the various corporate bonds to the instruments contained in  $z_t$ , namely time to maturity, liquidity, and coupon of the  $i^{th}$  bond. As a proxy of liquidity, we use the ratio of days that the bond has been traded relative to the total number of trading days within each time interval.  $C_{i,c,t}$  is a country dummy that equals one when corporate bond  $i$  belongs to country  $c$  at time  $t$ , and zero otherwise.

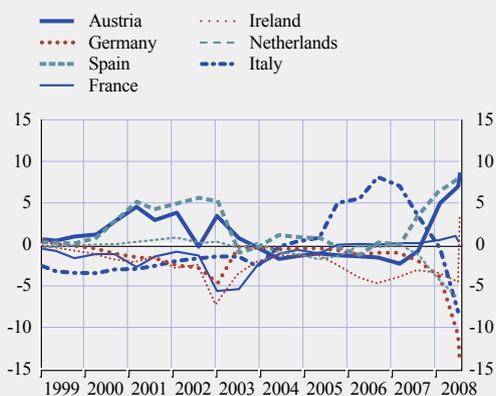
The proportion of variance explained by common, maturity, coupon, liquidity and industry effects can be seen as a measure of integration in the corporate bond market, as opposed to firm-specific (rating) and country effects.

The sample is composed of 2,751 individual bonds incorporating euro-denominated investment-grade bonds with a minimum issue size of EUR 100 million. Bonds rated below investment grade and asset-backed bonds are excluded from the analysis. In addition, bonds with less than one year to maturity and bonds which were traded less than once per week in a given four-week time interval are excluded. All euro-denominated bonds not issued in a euro area country are eliminated, as well as data for countries that do not have at least ten corporate bonds in each time interval. This results in an analysis based on a sample of bonds issued in seven countries: Austria, France, Germany, Ireland, Italy, the Netherlands and Spain.

The indicator represents the six-month average of the proportion of cross-sectional variance that can be explained by the various components (common, rating, sector, maturity, liquidity coupon and country effects) over time.

Chart C9 Estimated coefficients of country dummies

(basis points)



Sources: Merrill Lynch, Bloomberg and ECB calculations.

**Description**

As a test for integration, it is tested whether the country parameters  $\beta_{c,t}$  in equation (6) are zero, or at least converge towards zero.

Chart C10 Cross-sectional dispersion of country parameters



Sources: Merrill Lynch, Bloomberg and ECB calculations.

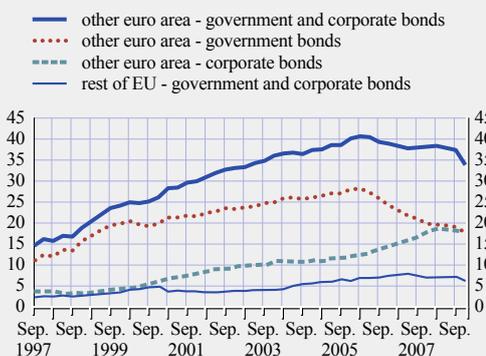
**Description**

This indicator is derived by calculating the average size of the estimated country dummies derived from equation (6). An overall decrease in the dispersion of the country effects would be an indication of increasing integration in the corporate bond market.

**QUANTITY-BASED INDICATORS FOR GOVERNMENT AND CORPORATE BOND MARKETS**

Chart C11 Share of MFI cross-border holdings of debt securities issued by euro area and EU non-MFIs: outstanding amounts by residency of the issuer

(as a share of total holdings, excluding the Eurosystem; percentages)



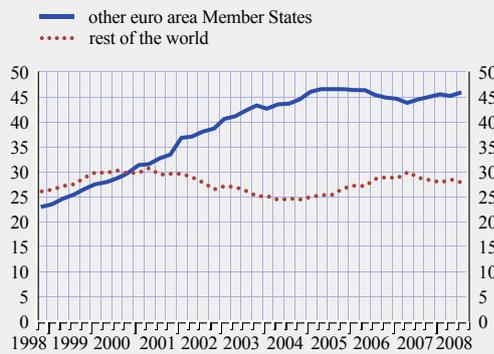
Source: ECB.

### Description

For this indicator, see the description of indicators C26 and C27.

**Chart C12 Investment funds' holdings of debt securities issued in other euro area countries and the rest of the world**

(as a share of total holdings of debt securities; percentages)



Source: ECB.

### Description

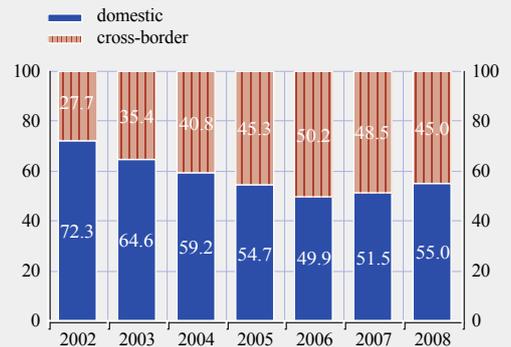
This indicator shows the share of investment funds' total holdings of all securities other than shares (including money market paper) issued by residents of other euro area countries and by residents of the rest of the world. The composition of the two areas is the one prevailing during the reference period.

The computed indicator has a quarterly frequency.

## INFRASTRUCTURE INDICATORS

**Chart C13 Share of domestic and cross-border collateral used for Eurosystem credit operations**

(as a percentage of the total collateral provided to the Eurosystem)



Source: ECB.

### Description

This indicator measures the proportions of eligible assets used domestically, i.e. within the same country, and across national borders, i.e. between euro area countries, to collateralise Eurosystem credit operations. The indicator aggregates the data reported monthly by Eurosystem NCBs to the ECB on the domestic use and cross-border use of collateral (composed of both the CCBM and links data). An increase in the cross-border use of collateral points towards greater integration in the collateral market. The ability to use any eligible assets as collateral with any Eurosystem component promotes portfolio diversification by counterparties.

The computed indicator has an annual frequency.

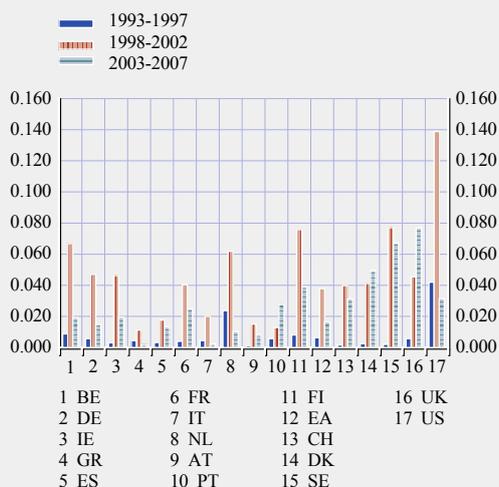
### Additional information

In the current framework, counterparties may transfer cross-border collateral to the Eurosystem via two main channels: the CCBM, which is provided by the Eurosystem, and the links, which represent a market-led solution. The CCBM remains the principal channel, although the proportion of collateral transferred through links has increased.

EQUITY MARKET INDICATORS

**Chart C4S Venture capital financing (early investment stage)**

(percentage of GDP; by country of management)

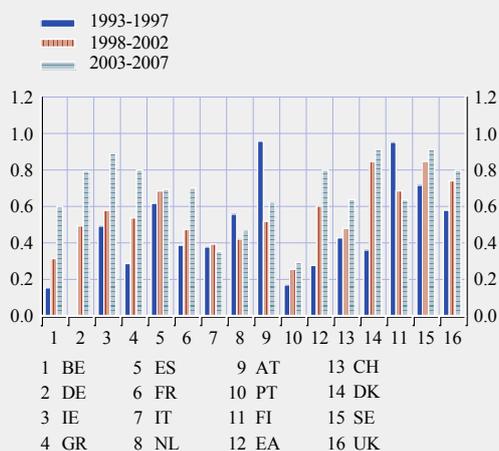


Sources: European Private Equity and Venture Capital Association, PricewaterhouseCoopers and Eurostat.

Description

No data are available for Luxembourg, Malta, Slovenia or Japan. Data for Greece and the United States start in 1995. Euro area figures are averages of country data weighted by GDP.

**Chart C5S Private equity investment by independent funds as share of total private equity investment, by country of management**



Sources: European Private Equity and Venture Capital Association.

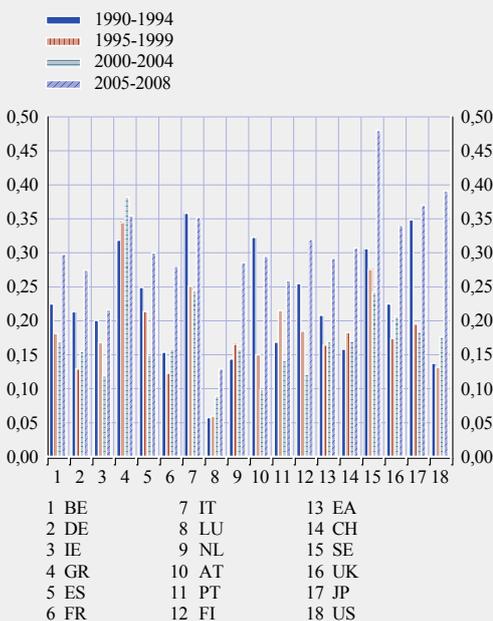
Description

Independent private equity investment is provided by private equity firms that are not themselves owned by another financial institution. Data report investments made by companies in each country. No data are available for Luxembourg, Malta, Slovenia, Japan and the United States. Data for Greece are not available for 1993 and 1994. Euro area figures are averages of country data weighted by GDP.

PRICE-BASED INDICATORS

**Chart C6S Pricing of firm-specific information in the stock market**

(R<sup>2</sup> statistics)

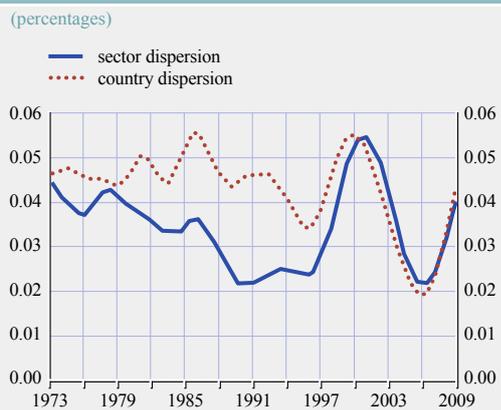


Sources: Datastream and ECB calculations.

Description

Average R<sup>2</sup> statistics for each country are obtained by regressing firms' stock returns on market factors, i.e. the returns on domestic, euro area, US and emerging countries' stock market indices. Typically, low values of the indicator suggest that stock returns contain more firm-specific information. Euro area figures are averages of country R<sup>2</sup> statistics weighted by stock market capitalisation.

**Chart C14 Filtered country and sector dispersions in euro area equity returns**



Sources: Thomson Financial Datastream and ECB calculations.

#### Description

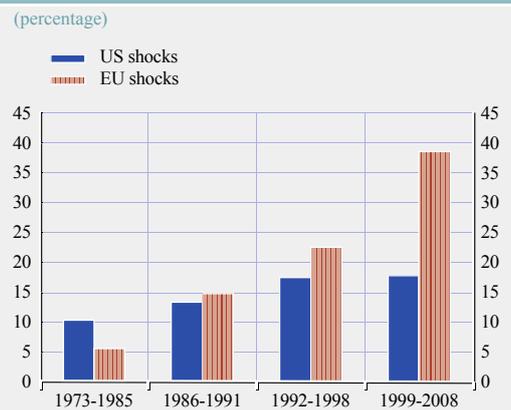
This indicator is derived by calculating the cross-sectional dispersion in both sector and country index returns for the euro area countries.<sup>2</sup> Data are calculated on a weekly basis from January 1973 onwards. They include (reinvested) dividends and are denominated in euro. The indicator has a monthly frequency.

The cross-sectional dispersions are filtered using the Hodrick-Prescott smoothing technique, which provides a smooth estimate of the long-term trend component of the series. The smoothing parameter  $\lambda$  is equal to 14,400.

#### Additional information

The indicator reflects structural changes in the aggregate euro area equity market.

**Chart C15 Proportion of variance in local equity returns explained by euro area and US shocks**



Sources: Thomson Financial Datastream and ECB calculations.

#### Description

To compare the relevance of euro area and US shocks for average changes in country returns, the indicators report the variance ratios, i.e. the proportion of total domestic equity volatility explained by euro area and US shocks respectively. The model-based indicator is derived by assuming that the total variance of individual country-specific returns is given by:

$$\sigma_{c,t}^2 = h_{c,t} + (\beta_t^{eu})^2 \sigma_{eu,t}^2 + (\beta_t^{us})^2 \sigma_{us,t}^2 \quad (7)$$

where  $h_{c,t}$  is the variance of the local shock component.<sup>3</sup> The euro area variance ratio is then given by:

$$VR_{c,t}^{eu} = \frac{(\beta_t^{eu})^2 \sigma_{eu,t}^2}{\sigma_{c,t}^2} \quad (8)$$

and correspondingly for the United States. The conditional variances are obtained from a standard asymmetric GARCH (1,1) model.

For each period, the indicators report the unweighted average of the relative importance of euro area-wide factors, other than US equity

<sup>2</sup> This indicator is based on an approach first presented by K. Adjaouté and J.P. Danthine (2003), "European financial integration and equity returns: A theory-based assessment", see V. Gaspar et al., "The transformation of the European financial system", Second ECB Central Banking Conference.

<sup>3</sup> See Baele et al. (2004) "Measuring financial integration in the euro area", ECB Occasional Paper No 14, pp. 19-21.

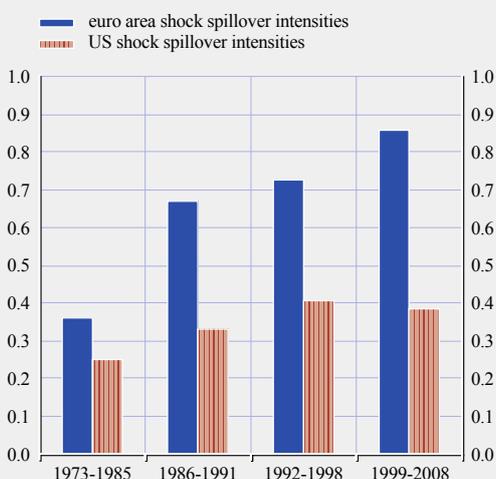
market fluctuations, for the variance of individual euro area countries' equity market indices (the "variance ratio"), and the unweighted average of the relative importance of US equity market fluctuations for the variance of euro area equity markets.

Data refer to the EMU global sector indices, and have been calculated on a weekly basis from January 1973 onwards.

**Additional information**

The variance ratio is derived by assuming that local shocks are uncorrelated across countries and that they are similarly not correlated with the euro area and US benchmark indices.

**Chart C16 Euro area and US shock spillover intensity**



Sources: Thomson Financial Datastream and ECB calculations.

**Description**

To calculate the relative importance of euro area-wide and US stock market fluctuations for local stock market returns, the stock market returns of individual countries are modelled as having both an expected component as well as an unexpected one,  $\varepsilon_{c,t}$ <sup>4</sup>. The unexpected component is then decomposed into a purely local shock ( $e_{c,t}$ ) and a reaction to euro area news ( $\varepsilon_{eu,t}$ ) and world (US) news ( $\varepsilon_{us,t}$ ):

$$\varepsilon_{c,t} = e_{c,t} + \beta_{c,t}^{eu} \varepsilon_{eu,t} + \beta_{c,t}^{us} \varepsilon_{us,t} \tag{9}$$

where  $\beta$  represents the country-dependent sensitivity to euro area or US market changes (of the unexpected component of equity returns).

In order to investigate the development of the betas over time, four dummy variables are introduced representing the periods 1973-1985, 1986-1991, 1992-1998 and 1999-2008.

For each period, the indicators report the unweighted average intensity by which euro area-wide equity market shocks, other than those from the United States, are transmitted to local euro area equity markets, as well as the unweighted average intensity by which US equity market shocks are transmitted to local euro area equity markets.

Data refer to the EMU global sector indices, and are calculated on a weekly basis from January 1973 onwards.

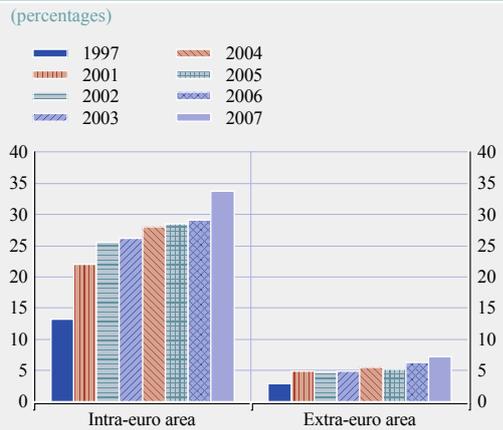
**Additional information**

To distinguish global shocks from purely euro area shocks, it is assumed that euro area equity market developments are partly driven by events in the US market. It is furthermore assumed that the proportion of local returns that is not explained by common factors is entirely attributable to local news.

4 The expected return is obtained by relating euro area and US returns to a constant term and to the returns in the previous period. The conditional variance of the error terms is governed by a bivariate asymmetric GARCH (1,1) model.

## QUANTITY-BASED INDICATORS

**Chart C17 The degree of cross-border holdings of equity issued by euro area residents**



Sources: IMF, Thomson Financial Datastream and ECB calculations.

### Description

This indicator measures the degree of cross-border holdings of equity securities among euro area Member States.

*Intra-euro area* is defined as the share of equity issued by euro area residents and held by other euro area residents (excluding central banks):

$$\frac{\sum_i \sum_{j \neq i} Outstock_{ij,t}}{\sum_i MKT_{i,t} + \sum_i TOutstock_{i,t} - \sum_i TInstock_{i,t}} \quad i, j \in \{\text{euro area countries}\} \quad (10)$$

where  $Outstock_{ij}$  denotes the value of equity issued by residents of euro area Member State  $i$  and held by residents of euro area Member State  $j$  ( $i \neq j$ );  $MKT_i$  stands for stock market capitalisation in country  $i$ ;  $TOutstock_i$  is the total foreign equity held by country  $i$  and  $TInstock_i$  is the total foreign liabilities of country  $i$ .

*Extra-euro area* is defined as the share of euro area equity held by non-residents of the euro area (excluding central banks). The measure takes the following form:

$$\frac{\sum_i \sum_r Outstock_{ir,t}}{\sum_r MKT_{r,t} + \sum_r TOutstock_{r,t} - \sum_r TInstock_{r,t}} \quad \begin{matrix} i \in \{\text{euro area countries}\} \\ r \in \{\text{rest of the world}\} \end{matrix} \quad (11)$$

where  $Outstock_{ir}$  denotes the value of equity issued by residents of euro area Member State  $i$  and held by non-residents of the euro area  $r$  (rest of the world);  $MKT_r$  stands for market capitalisation in country  $r$ ;  $TOutstock_r$  is the total foreign equity held by country  $r$  and  $TInstock_r$  is the total foreign liabilities of country  $r$ .

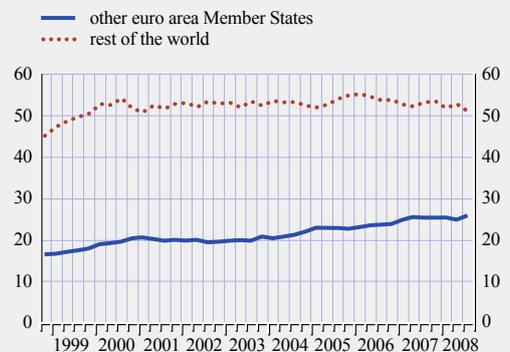
The computed indicator has an annual frequency.

### Additional information

The indicators are based on the IMF's Coordinated Portfolio Investment Survey (CPIS), which is conducted by national statistics compilers on an annual basis.

**Chart C18 Investment funds' holdings of equity issued in other euro area countries and the rest of the world**

(as a share of total holdings of equity; percentages)



Source: ECB.

### Description

The indicator shows the share of investment funds' total holdings of all shares and other

equity (excluding investment fund shares/units) issued by residents of the euro area outside the Member State in which the investment fund is located and by residents of the rest of the world. The composition of the two areas is the one prevailing during the reference period. The indicator has a quarterly frequency.

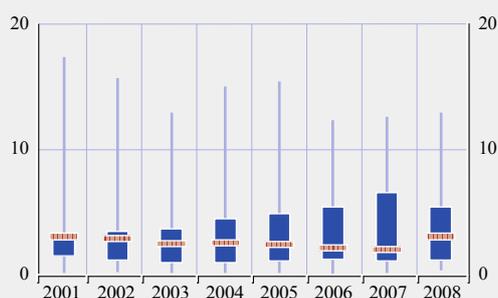
share of the total assets of the euro area banking sector. The level and dispersion of the country data are described by the following dispersion measures: the minimum, the first quartile (25th percentile), the median value (50th percentile), the third quartile (75th percentile), and the maximum. These computed indicators have an annual frequency.

## BANKING MARKET INDICATORS

### CROSS-BORDER PRESENCE INDICATORS

**Chart C19 Dispersion of the total assets of euro area bank branches across euro area countries**

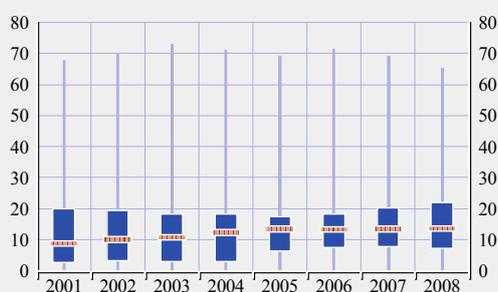
(as a percentage of the total assets of the euro area banking sector)



Source: ECB.

**Chart C20 Dispersion of the total assets of euro area bank subsidiaries across euro area countries**

(as a percentage of the total assets of the euro area banking sector)



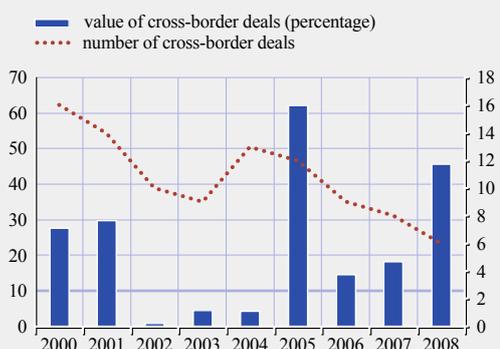
Source: ECB.

### Description

These two indicators describe the development over time of the assets of foreign branches and subsidiaries of euro area banks within euro area countries other than the home country as a

**Chart C21 Euro area cross-border bank M&A activity**

(as a percentage of the total value of euro area banking system M&As, left-hand axis; and in absolute numbers, right-hand axis)



Sources: Bureau van Dijk (Zephyr database) and ECB calculations.

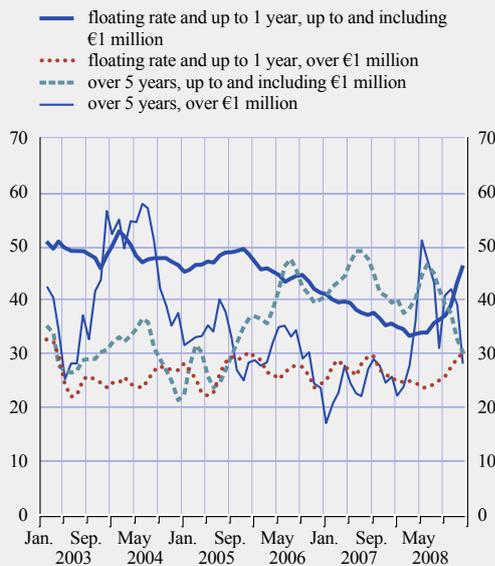
### Description

This indicator shows euro area bank M&A activity as a further measure of the degree of cross-border integration of euro area banking markets. The numerator is composed of the value of all intra-euro area cross-border bank M&As. The denominator is composed of the value of all euro area banking system M&As (i.e. domestic, intra-euro area cross-border and where the acquirer is resident in the euro area and the counterparty is outside the euro area). The absolute number of euro area cross-border M&As per year is also shown. M&A deals include both controlling and minority stakes. All acquisition transactions are taken into account provided the resulting stake is above 10%. This also applies to transactions where the value has not been disclosed as long as the resulting stake is published (and amounts to more than 10%). Acquisitions carried out in multiple transactions are reported in the year in which the ownership exceeds 50%.

## PRICE-BASED INDICATORS

**Chart C22 Cross-country standard deviation of MFI interest rates on loans to non-financial corporations**

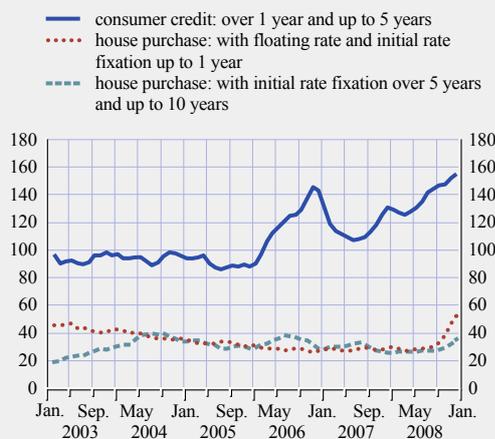
(basis points)



Source: ECB.

**Chart C23 Cross-country standard deviation of MFI interest rates on loans to and deposits from households**

(basis points)



Source: ECB.

## Description

These price measures for credit market integration are based on MFI interest rates (MIR) on new business reported to the ECB, at monthly frequency as from January 2003.

For the purpose of measuring financial integration, it might be preferable to compute the dispersion of rates as measured by the standard deviation using unweighted interest rates at the level of individual MFIs. However, these data are not available at the ECB, and therefore weighted rates and standard deviations are calculated instead.

The following general notation is used for each of the above categories of loans or deposits:

$r_{c,t}$  = the interest rate prevailing in country  $c$  in month  $t$

$b_{c,t}$  = business volume in country  $c$  corresponding to  $r_{c,t}$

$w_{c,t} = \frac{b_{c,t}}{B_t}$  is the weight of country  $c$  in the total

euro area business volume  $B$

$$B_t = \sum_c b_{c,t}$$

The euro area MIR is computed as the weighted average of country interest rates  $r_{c,t}$ , taking the country weights  $w_{c,t}$

$$r_t = \sum_c w_{c,t} r_{c,t} \quad (12)$$

The euro area weighted standard deviation takes the following form:

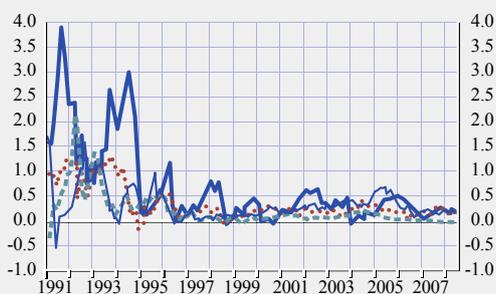
$$M_t = \sqrt{\sum_c (r_{c,t} - r_t)^2 w_{c,t}} \quad (13)$$

The monthly data are smoothed by calculating a three-month centred moving average of the standard deviation.

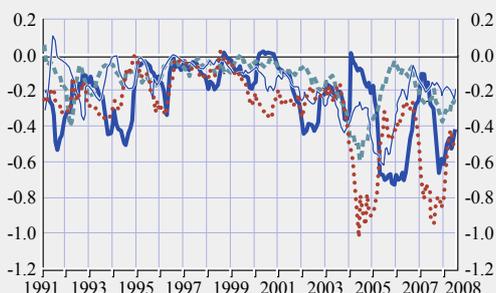
**Chart C24 Intercept convergence for selected banking retail interest rates**

(percentages)

- loans to non-financial corporations up to an amount of €1 million; floating rate and up to one year initial rate fixation
- ..... loans to non-financial corporations over an amount of €1 million; floating rate and up to one year initial rate fixation
- loans to households for house purchases; floating rate and up to one year initial rate fixation
- loans to households for house purchases; over five and up to ten years initial rate fixation


**Chart C25 Beta convergence for selected banking retail interest rates**

- loans to non-financial corporations up to and including an amount of €1 million; floating rate and up to one year initial rate fixation
- ..... loans to non-financial corporations over an amount of €1 million; floating rate and up to one year initial rate fixation
- loans to households for house purchases; floating rate and up to one year initial rate fixation
- loans to households for house purchases; over five and up to ten years initial rate fixation



Source: ECB.

### Description

The two indicators are based on MIR on new business reported to the ECB, at monthly frequency as from January 2003. Before that date, estimated historical series have been used.

The beta convergence measure signals the speed with which different rates converge to a specific benchmark. This measure is obtained by running a panel regression of the change in the spread of the relevant retail interest rate in each country relative to the corresponding benchmark rate, i.e. the lowest country interest rate level for each loan instrument. The following panel regression is estimated:

$$\Delta Spr_{i,t} = \alpha_i + \beta Spr_{i,t-1} + \sum_{l=1}^L \gamma_l \Delta Spr_{i,t-l} + \varepsilon_{i,t} \quad (14)$$

using the change in the spread of the relevant retail interest rate in one country relative to the corresponding rate of the benchmark country as a dependent variable ( $Spr$ ).  $L$  denotes the number of lags that is set equal to 1. The coefficients are estimated with a panel regression with fixed effects ( $\alpha_i$ ). A negative  $\beta$  coefficient signals that convergence is taking place. Furthermore, the negative  $\beta$  indicates that high spreads have a tendency to decrease more rapidly than low spreads. The size of  $\beta$  measures the average speed of the convergence in the overall market. If the beta approaches -1, the convergence is complete. At the same time, large values of the country specific effects ( $\alpha_i$ ) are indicative of persistent market segmentation related to differences in institutional and other factors at the country level.

The conditional betas are derived by estimating the above regression using the first 18 months of monthly averages. Subsequently, the data window is moved one month ahead and the equation is re-estimated until the last observation is reached. A time series for  $\beta_{i,t}$  is then obtained.

The model-based indicator has a monthly frequency.

### Additional information

The outcome of the econometric specification depends on the selection of the most appropriate benchmark interest rate, in this case the lowest country's interest level. For the selected interest rates, the benchmark was the French lending rate except in the case of housing loans with variable

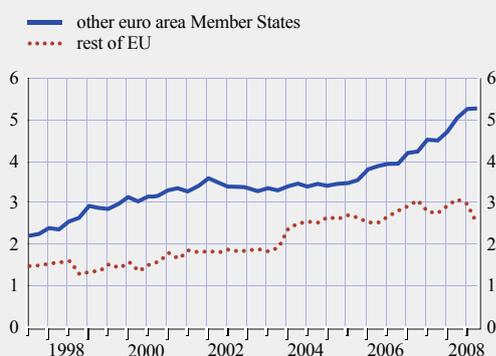
rate and initial fixation up to one year, where the chosen benchmarks were the Dutch rates.

Member States.<sup>5</sup> The indicators have a quarterly frequency.

## QUANTITY-BASED INDICATORS

**Chart C26 MFI loans to non-MFIs: outstanding amounts by residency of the counterparty**

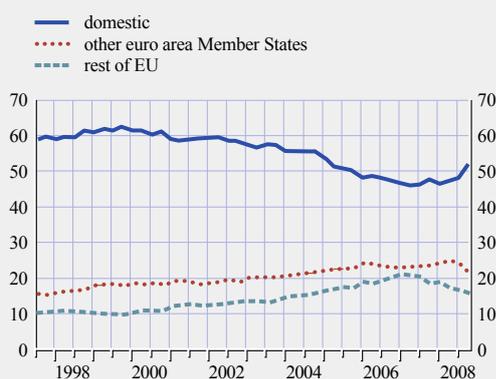
(as a share of total loans granted by MFIs; excluding the Eurosystem; percentage)



Source: ECB.

**Chart C27 MFI loans to MFIs: outstanding amounts by residency of the counterparty**

(as a share of total loans granted by MFIs, excluding the Eurosystem; percentage)



Source: ECB.

## Description

These indicators show the geographical counterparty diversification of loans granted by euro area MFIs (excluding central banks) to the general government, to non-MFI counterparties resident in other euro area countries and to other MFIs resident in non-euro area EU

## Additional information

These indicators are built on the basis of the national aggregated MFI balance sheet statistics reported to the ECB, at a monthly and quarterly frequency.<sup>6</sup>

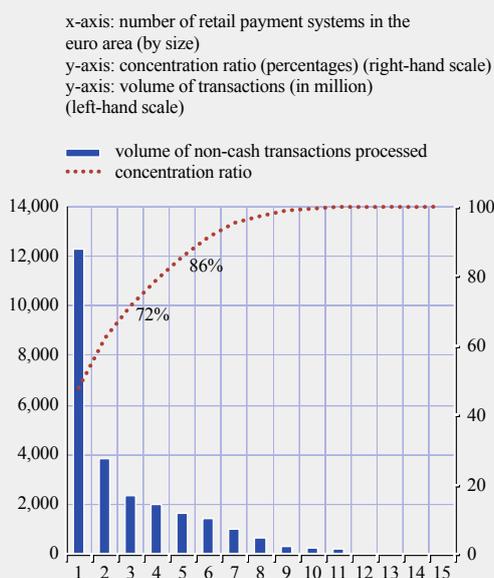
These balance sheet items are transmitted on a non-consolidated basis. This means that the positions with foreign counterparties include those with foreign branches and subsidiaries.

<sup>5</sup> As applicable during the reference period.

<sup>6</sup> These data cover the MFI sector excluding the Eurosystem and also include data on money market funds (MMFs). It is not yet possible to derive indicators that strictly refer to banking markets. Consequently, as MMFs typically invest in inter-MFI deposits and short-term securities, the indicators displaying data for these assets are somewhat affected by the MMFs' balance sheet items.

INFRASTRUCTURE INDICATORS FOR RETAIL  
PAYMENT SYSTEMS

Chart C28 Concentration ratio of retail payment systems in the euro area (2007)



Source: ECB.

Description

This indicator is a concentration ratio of retail payment systems in the euro area in 2007 and shows the number of transactions processed by retail payment systems and the cumulative share of the processed volumes. In 2007 there were 15 retail payment systems located in the euro area. The three largest ones processed in total 72% of the total market volume. The figure increases to 86% for the five largest systems. The five smallest infrastructures processed altogether only 0.35% of the total market transactions volume.

Additional information

This indicator is based on the information reported in the ECB Payments Statistics.

Chart C29 Credit Transfer transactions processed in SEPA format

(percentages of total transactions)



Source: ECB.

Description

This indicator presents, on a monthly basis, the share of euro area SEPA Credit Transfer (SCT) transactions as a percentage of the total volume of all credit transfer transactions (i.e. credit transfers in “old” format as well as SCT) processed by the infrastructures, namely clearing and settlement mechanisms (CSMs) located in the euro area. The indicator does not include “on-us” transactions (i.e. credit transfers between accounts at the same bank) or transactions cleared between banks bilaterally or via correspondent banking. Nevertheless, focusing on the transactions processed by CSMs provides a good approximation of the SCT usage within SEPA.

The higher the value of the indicator, the higher the usage of the SEPA product. A value of 100% would indicate that only SEPA products are used and have fully replaced the non-SEPA instruments (i.e. SEPA has been fully implemented with regard to this particular instrument) in the “bank-to-bank” domain, as measured by the CSM data.



ISSN 1830-7140



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