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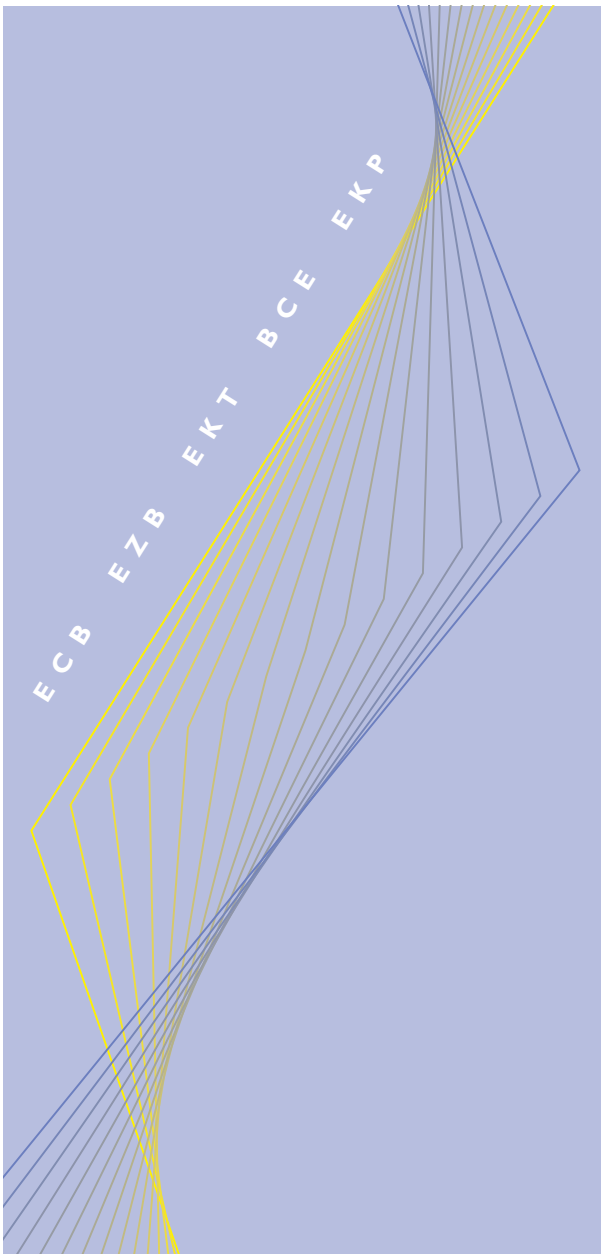

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THE IMPACT OF THE EURO ON MONEY AND BOND MARKETS

BY
JAVIER SANTILLÁN,
MARC BAYLE AND
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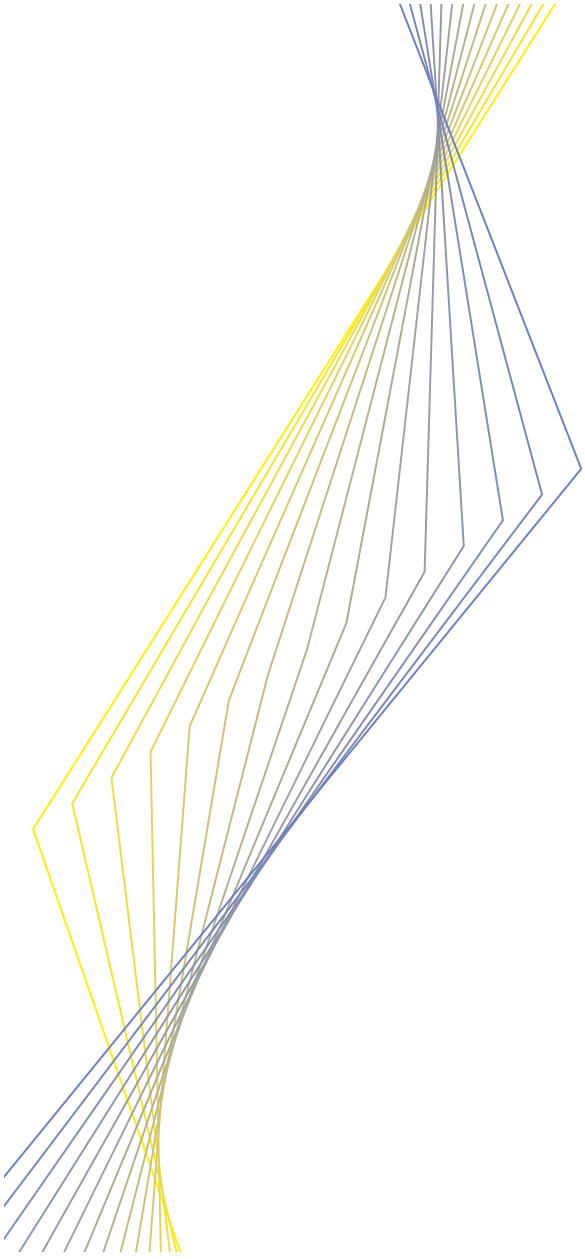

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Foreword

This is the first issue in the Occasional Paper Series of the European Central Bank (ECB). This new communication tool is aimed at presenting policy-relevant topics to a wide audience, including other policy-makers, academics, the media and the general public.

Occasional Papers will be longer than articles in the ECB Monthly Bulletin and will therefore allow for a more elaborate analysis. They will be able to serve as a future source of reference and make public material used by the ECB and the Eurosystem. Occasional Papers will always contain work carried out by ECB staff and will be published in the name of the authors. They are, as it were, part of the background to the decision-making process. The ECB as an institution need not, therefore, subscribe to (all) the views expressed by the authors. In other words, there will always be a disclaimer.

By contrast with ECB Working Papers, Occasional Papers are not intended to present original contributions to economic theory. Of course, authors may, and often will, use old and new economic theories and empirical methodologies to present their results or to underpin their conclusions. The analysis aims to be both sound and comprehensive.

ECB Occasional Papers will be published on our website and will also be available in hard copy. This new series fills a gap in our publications framework. The publication of Occasional Papers is yet another demonstration of the ECB's policy of being as open and transparent as is both possible and responsible. I am confident in the hope that these Occasional Papers will find their way to many interested readers.

Dr. W. F. Duisenberg

Introduction

The Eurosystem has a keen interest in the development of financial markets and, in particular, in full advantage being taken of all the potential benefits resulting from the introduction of the euro.

In the second half of 1999, with the aim of making a first assessment of the level of integration and efficiency of the euro area money and bond markets after the introduction of the euro, the European Central Bank (ECB) and the national central banks (NCBs) of the European Union carried out within the Market Operations Committee (MOC) an analysis of the functioning of these markets, based on a set of studies on money and bond markets. Moreover, an analysis both of the infrastructural developments and of barriers to market integration in the euro area has been conducted by the Securities Settlement Systems Policy Division of the ECB and discussed in the Payment and Settlement Systems Committee. The money market study was co-ordinated by Elisabeth Pauly of the Banque de France and Javier Aritzegui of the Banco de España, and the bond market study by Jos Heuvelman of De Nederlandsche Bank. The groups preparing these studies included representatives from six NCBs (the Banca d'Italia, the Banco de España, the Banque de France, the Deutsche Bundesbank, the Nationale Bank van België/ Banque Nationale de Belgique and De Nederlandsche Bank) and from the ECB, and were finalised in December 1999. This Paper was prepared by Javier Santillán (Sections I and II) and Marc Bayle and Christian Thygesen (Section III) of the ECB.[1] This Paper draws to a large extent on these studies and has been complemented by data collected by the ECB and other sources, in order to provide a more complete picture. Its aim is to present an overview of the euro area money and bond markets as they stood around a year after the introduction of the euro, and to point out a number of fields in which further integration can be achieved. The contribution of this Paper to the discussion of financial market developments in the euro area is limited in several respects: first, its approach is descriptive rather than analytical; second, it only looks in a thorough way at the bulk of the money market, while the treatment of the bond and the repo markets is less developed, and other parts of the financial markets, for instance the equity market, are not covered at all; third, the period of observation is much too short to derive definitive conclusions; and, fourth, while the impact of the introduction of the euro has obviously been a major catalyst for change, no systematic attempt is made to distinguish, within the developments identified, between those resulting from the introduction of the euro and those which would have taken place in any case.

1 *The comments received from Denis Blenck, Peter Bull, Vítor Gaspar, Gert Jan Hogeweg, Lex Hoogduin, Klaus Löber, Arnaud Marès, Francesco Papadia, Daniela Russo, Antonio Sáinz de Vicuña, Jean-Louis Schirmann and the anonymous referees of the ECB Occasional Paper Series as well as the comments and technical support provided by Maria Encio and Marco Laganá, are gratefully acknowledged. Any remaining errors are the sole responsibility of the authors. The views expressed by the authors do not necessarily reflect those of the European Central Bank or the European System of Central Banks.*

Executive summary and main conclusions

The Eurosystem has a keen interest in the development of financial markets and, in particular, in full advantage being taken of all the potential benefits resulting from the introduction of the euro. A key requirement for the efficient achievement of the primary objective of the European Central Bank (ECB), namely the maintenance of price stability, is for monetary policy impulses to be transmitted in a smooth and homogeneous way throughout the euro area by means of efficient and integrated money and bond markets. This Paper mainly aims to contribute to the debate as to whether or not the level of integration of the euro money and bond markets is appropriate. It may also provide a preliminary contribution to other broader discussions, such as the gains in efficiency of the euro area financial system in relation to Economic and Monetary Union (EMU).

The first two chapters of this Paper describe developments in money and bond markets since the introduction of the euro. A third chapter analyses the market infrastructure and the barriers restricting the integration of those markets, as well as some possible actions to improve the situation. Two main caveats to the discussion stem from the fact that, on the one hand, the period of observation is too short for a definitive assessment of the structural developments highlighted in the Paper, and, on the other, no systematic attempt is made to make a distinction, within the developments identified, between those resulting from the introduction of the euro and those which would have taken place in any case. Still, the evidence collected suggests that the euro is having profound effects on the European financial markets, with pervasive consequences not only on their functioning, but also on their contribution to the overall efficiency of the economic system.

The euro money market

As far as the euro money market is concerned, the situation prevailing at the start of Stage Three of EMU in the various segments of the market varied with regard to their potential integration, owing to both the different nature of the instruments exchanged and institutional peculiarities. Accordingly, the gains in terms of integration, efficiency and liquidity achieved in each of the markets analysed here during the first year of Stage Three of EMU also varied. In the cash and derivative money markets, the introduction of the euro and the new monetary policy framework triggered major developments, leading to a much more advanced degree of unification and standardisation. This is exactly what one would have expected from the introduction of a common currency.

In broad terms the money market performed its main function efficiently, namely redistributing the liquidity allocated by the Eurosystem to its counterparties in monetary policy operations throughout the euro area. Hence, as far as the wholesale market for interbank liquidity is concerned, there were no significant distortions which could have prevented the monetary policy transmission mechanism from working smoothly, and at least some of the potential efficiency gains derived from the increased scale of the money market have already been achieved. Signs of a good degree of integration were apparent from several sources, including market participants' responses to the market surveys conducted by the European System of Central Banks (ESCB); the smooth and balanced pattern of the use by the Eurosystem's counterparties of its standing facilities, which showed no geographical distortions; and the efficient arbitrage of short-term interest rates. The significant increase in cross-border transactions in the euro money market since the start of Stage Three of EMU points in the same direction.

Liquidity improved in the unsecured and repo segments of the money market compared with the situation prevailing in the former domestic markets. As a rule, contract sizes rose sharply. The unsecured and swap segments melted quickly into a single market mainly on account of the success of euro area indices (the EONIA and the EURIBOR)

and the efficient functioning of TARGET. Although less integrated, the repo market also underwent significant developments, while the market for short-term securities lagged behind in terms of both integration and the degree of development. This may have been caused by differences in the development of the infrastructure supporting the different market segments. In 1999 traded volumes in the unsecured and repo markets expanded globally compared with 1998. By contrast, the volume of foreign currency swaps declined owing to the disappearance of cross-currency trading among the euro legacy currencies. However, the joint expansion of unsecured and secured transactions exceeded the decrease in the trade in foreign currency swaps. The growth of the unsecured segment of the market was particularly concentrated in overnight transactions. For longer maturities, repo transactions seemed to be preferred to unsecured transactions. Euro-denominated money market derivatives such as swaps and futures experienced a process of quick standardisation and integration and their depth increased substantially, while over-the-counter transactions diminished.

In the market for short-term securities, privately issued securities overtook the short-term government paper market. The issuance and the amount outstanding of Treasury bills declined, but this decline was more than offset by the increase in the amount outstanding of euro-denominated private securities. The markets for short-term securities within the euro area remain rather fragmented. In these markets, the behaviour of investors, who are barely active in the secondary market, tends to restrain liquidity. However, some signs of integration in the private paper segment of the market have been observed.

The joint effect of the single monetary policy and the consolidation and merger process under way in the European banking sector has fostered the concentration and reorganisation of cash management and, more broadly, of money market activities. In the money markets some major players, which had previously focused on their domestic market or on the most active European markets, naturally extended the scope of their activities to the whole euro area.

The euro bond market

As far as the euro bond market is concerned, technical aspects of the start of Stage Three of EMU, such as the re-denomination and re-conventioning of bonds denominated in the euro legacy currencies into euro-denominated bonds, worked smoothly and were hardly seen as an issue by market participants.

While the pace of EMU-driven developments in the bond market can be expected to be slower than in the case of the money market, evidence available so far indicates that very significant changes took place or were under way just a year after the start of Stage Three. Major changes in the European bond market were expected as a result of the combination of economies of scale and increased homogeneity. Such changes included supply-side innovation, in the form of innovative competition with regard to issuing techniques and some aspects of secondary market organisation, and increased diversification of bonds' portfolios through the euro area driven by investor demand.

Indeed, the combination of these factors gave rise to significant results in several fields: the market became bigger and more integrated and the average size of individual issues increased; the sovereign bond segment became more homogeneous and signs of increased integration were perceived in other segments; private issuer activity overtook that of sovereign issuers, which had traditionally dominated the bond market; the process of increased diversification of investors' portfolios initiated before the start of Stage Three of EMU intensified; some signs of increased opportunities for access to the capital markets by new sectors of the economy formerly absent from them (in

particular small and medium-sized enterprises and high-growth corporations) were observed; and secondary market liquidity improved. The trading volumes of euro-denominated bond futures contracts have increased dramatically since the beginning of 1999. The euro-denominated issuance of international bonds in 1999 was higher than US dollar denominated issuance. However, despite the substantial progress made in the first year of Stage Three when compared with the US corporate bond market, that of the euro area still lags behind with regard to liquidity and market completeness, and some market segments remain underdeveloped, particularly those for lower credit ratings and non-rated debt. The overall size of the market is still relatively small in comparison with the United States.

Overall, the euro bond market is starting to become an important source of finance for the private sector and, in particular, for corporations, thus complementing the growing role played by the short-term securities market in this same respect. Virtuous interaction between many of the above-mentioned factors could ultimately be expected to bring about a reduction in the costs of financing through the euro capital market.

As in the case of money market activities, most financial intermediaries active in the bond market carried out the internal reorganisation of their bond trading desks to adapt them to a euro area-based approach.

The euro money and bond market infrastructure

This Paper describes the main features of the infrastructure of the euro money and bond markets and identifies and analyses the main barriers to the integration of the markets. Most of the barriers identified do not seem to be specific to these markets, but concern the integration of the euro securities market infrastructure more generally. It is also acknowledged that the infrastructure alone cannot explain the varying degrees of integration in the different markets. Time will be needed to change business practices and to agree on and implement new partnerships, as well as to take full advantage of the new possibilities available.

Special attention is paid to the securities trading, clearing and settlement infrastructure, which is still predominantly domestic with very few truly euro area structures. So far, the euro area has become a "domestic" market without its "domestic infrastructure". A more harmonised infrastructure would also ensure a level playing-field for market participants providing equal access to all euro area collateral.

In particular, this Paper identifies some actions aimed at enhancing the integration of the securities market infrastructure and, therefore, at increasing the integration of euro money and financial markets.

First of all, the development of cross-border settlement structures either in the form of efficient links between securities settlement systems (SSSs) or through cross-border mergers is still under development. The first step would be the establishment of links between the systems which should be able to ensure the synchronised intraday settlement with finality of both the securities side and the payment side of securities transactions (intraday delivery versus payment – or DVP – links).

A fully compatible and more standardised legal framework and documentation for the interbank and central bank repo markets would help to integrate further the market for collateralised operations. The homogenisation of practices in securities markets (including fiscal regimes and regulation) should also be encouraged.

The effect of the lack of harmonisation in the SSSs' procedures – in particular for transactions involving repos and debt instruments – should be further documented and analysed, and the areas in which the

further harmonisation of clearing and settlement procedures is necessary should be identified. In the same vein, the effect of the lack of harmonisation between central bank procedures for collateralisation should be analysed further and initiatives to harmonise practices may be necessary.

Finally, market integration should benefit from the emergence of a more efficient clearing function in the euro area. The optimal solution seems to be for a global clearing house providing services to all the SSSs and focusing its activity on the clearing of operations other than intraday operations.

It will be up to the market participants and service providers to come up with the most efficient solutions for the integration of the infrastructure and, thus, of the markets. Increasing awareness of the issues at stake and describing and analysing the possible solutions represent ways of promoting this common aim.

1 The euro money market

Before Monetary Union, much curiosity and different points of view surrounded the effect on financial markets of the introduction of the euro. As regards the money market, attention focused, in particular, on questions such as how smoothly the money market would integrate after the start of Stage Three of Economic and Monetary Union (EMU), whether money markets would perform their role efficiently in the monetary policy transmission process, and to what extent EMU would affect the efficiency of the euro money market compared with that of the predecessor money markets. The question of money market integration is seen as a precondition for the smooth and homogeneous transmission of the monetary policy impulses throughout the euro area which, in turn, fulfils a necessary condition for the efficient achievement of the primary objective of the European Central Bank (ECB), namely the maintenance of price stability. Indeed, an integrated money market is necessary for the distribution of liquidity among credit institutions throughout the euro area and, thus, for the conduct of the single monetary policy. In turn, the integration of the money market interacts virtuously with the functioning of large-value payment systems in general, and TARGET in particular, thereby contributing to the fulfilment of the requirement of the Treaty establishing the European Community to ensure the smooth functioning of payment systems.

A definitive answer to these questions will only come after some time, with the gradual accumulation of empirical evidence on the effects of the introduction of the euro. This section aims at providing some evidence by describing the developments which have taken place in the money market since the euro was introduced.

The most significant segments of the money market are examined here, namely the unsecured deposit market (where credit institutions exchange short-term liquidity without the guarantee of collateral[2]); the repo market (in which market participants exchange short-term liquidity against collateral), the swap market (in which fixed interest rate payments are exchanged for floating interest rate payments), the futures markets for short-term instruments, and the markets for short-term securities, including Treasury bills, commercial paper (CP), certificates of deposit (CDs) and other assets.

As will be seen, at the start of Stage Three of EMU, the condition of the various money market segments differed greatly with regard to their potential integration, owing to the different nature of the instruments exchanged, as well as peculiarities regarding market participants and other institutional factors.

The gains in terms of integration, efficiency and liquidity achieved in each of the markets analysed following the introduction of the euro depend on a number of factors such as: the degree of proximity of each market to monetary policy implementation; the structure of the market (i.e. mainly interbank versus a customer-oriented structure, centralised versus an over-the-counter – OTC – or non-centralised structure); its relative complexity (i.e. the number and nature of instruments traded and market participants); infrastructural developments; and a number of regulatory, institutional and historical features.

In the cash and derivative money markets, the introduction of the euro and the new monetary policy framework have either triggered or accelerated some major developments, leading to a high degree of unification and standardisation. Some of the driving forces underlying such processes were already in place in 1998, in view of the prospective transition to Stage Three of EMU, but the introduction of the euro clearly fostered them. Signs of integration in the money market are evident from several perspectives: a first indirect indication is found in the pattern of the use by market participants of the Eurosystem's lending and deposit facilities since the start of Stage

2 *Annex 1 contains a glossary explaining the technical terms used in this Paper.*

Three. Simultaneous recourse to both facilities has occurred only exceptionally, barring the very early days of Stage Three, which can be seen as an indicator that there are no major integration-related problems in the euro money market (see Section 1.1.2.2); on the prices side, the dispersion of short-term interest rates (EONIA) prevailing among euro area countries has been minimal since early 1999. Interviews with market participants in the context of the market surveys[3] of the European System of Central Banks (ESCB) showed that, by the end of 1999, the prevailing feeling was that the money markets were fairly well integrated, especially in the unsecured and swap segments. Although less integrated, the repo market also underwent significant developments, while the market for short-term securities lagged behind, remaining more fragmented and less developed.

Overall, the money market efficiently performs its function of distributing liquidity among the various regions of the euro area or, more relevantly, among the thousands of Monetary Financial Institutions active in the euro area. Hence, as far as the wholesale market for interbank liquidity is concerned, there were no significant distortions which could have prevented the monetary policy transmission mechanism from working smoothly. However, at least some of the potential efficiency gains derived from the increased scale of the money market in terms of enhanced liquidity and depth have already been achieved. Thus, the ECB can concentrate its attention on estimating the amount of liquidity needed, at the aggregate level, in the euro area as a whole.

However, as shown in this study, the integration and standardisation of the money market are not yet complete, and further evolution can be expected. The solution to some of the problems will require the active involvement of market participants and authorities. This is particularly the case for the repo market, which, by virtue of its very nature, suffers from all the impediments to unification still in play at the different phases of negotiation and settlement. Indeed, advances in the infrastructure and legal framework require the contribution of both the public sector and the private sector. In particular, the implementation of an efficient link between SSSs, the unification of legal documentation and the homogenisation of practices in the bond market are needed to enhance integration further.

1.1 The interbank unsecured and repo markets

This section focuses primarily on the major changes brought about by the introduction of the euro and by the implementation of a single monetary policy on the interbank unsecured and repo markets. Specifically, the consequences of the Eurosystem operations for these segments of the money market are dealt with in Section 1.1.1. Section 1.1.2 describes developments in the unsecured and repo markets such as the evolution of trading volumes, the degree of integration and cross-border transactions. Section 1.1.3 describes the functioning of the market.

1.1.1 Consequences of the Eurosystem's operations for the market[4]

Since the start of Stage Three of EMU, the Eurosystem has been providing liquidity to its counterparties on the basis of the global refinancing needs of the euro area, independently of the liquidity situation prevailing in each country. This implies that, normally, the amounts allotted to banks in

3 *Several market surveys of both a quantitative and a qualitative nature were conducted by the ESCB in the context of the studies referred to in the Foreword, see Annex 2 for details.*

4 *Some discussions on the effects of the single monetary policy on the money market in various euro area countries can be found in Ayuso et al. (2000); Banque de France (1999); and Deutsche Bundesbank (2000); a general, although preliminary review may be found in Santillán (1999).*

individual countries do not exactly match their refinancing needs. The local liquidity imbalances resulting from this situation have contributed to a significant increase in cross-border transactions in the euro money market since the start of Stage Three. Within this general framework, two specific features may improve understanding of the context in which money market integration has been developing since the start of Stage Three, namely the number of bidders participating in the Eurosystem's tenders and the bidding behaviour of the Eurosystem's counterparties.

1.1.1.1 Number of bidders participating in MROs

Overall, the number of bidders participating in the main refinancing operations (MROs) decreased in 1999 compared with the sum of those participating in the regular operations conducted in the second half of 1998 by the national central banks (NCBs) currently forming the Eurosystem. Several factors explain such a development:

- Organisational changes implemented by some banks located in the euro area, whereby their cash management and their operations with the Eurosystem are concentrated at a single location (this is discussed further in Section 1.1.3.2).

- New infrastructure requirements, such as the condition of having access to a real-time gross settlement (RTGS) system or the Eurosystem's tendering systems, have in some cases discouraged small or medium-sized banks from participating in the Eurosystem's operations.

- The ongoing restructuring process in the banking sector, i.e. mergers and acquisitions, is tending to reduce the number of potential bidders.

- Uncertainty about the amount that each counterparty will actually receive in the MRO in the fixed rate tenders conducted until 21 June 2000 may also have deterred some counterparties from participating in the tenders.

The lower number of bidders alone has increased the need to redistribute liquidity among euro area market participants, even if the number of those participating in the monetary policy operations remains very large in comparison with the situation prevailing in the United States, for instance.

1.1.1.2 Bidding behaviour

Compared with the second half of 1998, an important increase in the amount bid by counterparties took place in all euro area countries in 1999, resulting in lower allotment ratios in MROs compared with those prevailing in the tender operations conducted by individual euro area NCBs prior to Stage Three. In some countries the increase observed in the amount of bids posted by counterparties was more than 200%.

To a small extent the increased bids were the result of greater refinancing needs on the part of banks. These, in turn, have essentially increased for two reasons, namely the significant increase in the level of reserve requirements in some countries (such as France and the Netherlands) and the fact that some refinancing facilities were discontinued with the changeover to the euro. In Germany, in particular, the discount facility existing before Stage Three provided approximately one-third of the liquidity needed by the banking sector.

The most important factor, however, in explaining the increase in the bid amount was a change in bidding behaviour of the Eurosystem's counterparties.[5] This was affected, in turn, by a number of considerations:

- In fixed rate tenders (used throughout 1999 for MROs), participants have to guess the allotment ratio (i.e. the ratio between the actual allotment and the bids

5 *No systematic discussion is attempted here of the issue of bidding behaviour and the overbidding phenomenon. Bindseil and Mercier (1999) or Nautz and Oechsler (1999) provide discussions of this issue.*

submitted) in order to forecast the amount of liquidity they will actually receive. Such ratios fluctuate depending on the bidding put up by the other participants and the ECB's allotment decision.

- Active players in the money market try to take advantage of any spread arising between the MRO rate and the expected overnight (EONIA) rate. The higher the spread expected, the higher the amount of the bids will be.

- The amount of collateral available has expanded in Stage Three, also on account of the possibility of its cross-border use.

For these reasons, the connection between the financing needs of counterparties and the amount allotted to them by the central bank has become looser, therefore increasing the role of the market in redistributing liquidity among euro area credit institutions.

1.1.2 Main developments in the unsecured and repo markets

Among the various segments of the euro money market, the interbank, unsecured deposit market has achieved the highest degree of integration and, since the start of Stage Three of EMU, has performed an important role in ensuring the smooth redistribution of liquidity among euro area credit institutions irrespective of their geographical location. The significant peculiarities of the various domestic interbank deposit markets at the end of 1998 nearly disappeared in the few weeks following the introduction of the euro.

In addition to the catalytic effect of the single monetary policy and the harmonisation of market practices associated with it, there are two main reasons for this rapid integration:

i) The immediate and full success of euro area indices, i.e. the EONIA and the EURIBOR, which were broadly accepted by all market participants.

ii) The good functioning of the settlement of cross-border payments, mainly performed through TARGET, which has allowed banks to trade safely throughout the euro area.

In this context, the unsecured market became highly liquid and deep, with very big deal sizes, tight bid-ask spreads and equal interest rates at the different locations, with the exception of minimal differences, normally well within the bid-ask spreads.

1.1.2.1 Trading volumes

As explained at the beginning of Section 1, some figures, including those upon which this section is based, were collected through a market survey and, therefore, must be seen as being indicative only. However, a clear trend of growing trading volumes in both the unsecured and repo markets was identified, whereas the use of foreign currency swaps decreased (see Annex 2 for details of the ESCB market surveys). Although discussion here focuses on developments in the secured and unsecured segments of the money market, it is also worth considering foreign currency swaps, as they are an important instrument to which bank treasurers resort to fund banks' activities.

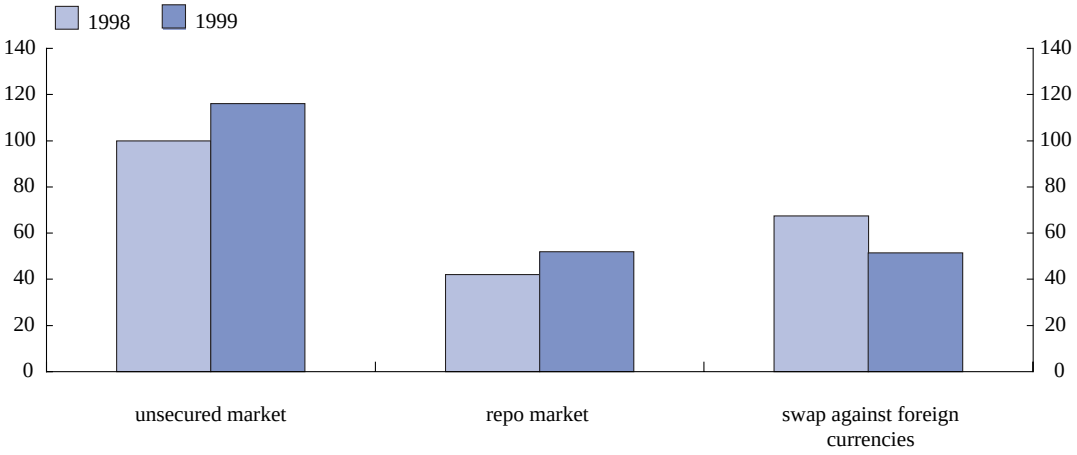
In 1999 (second quarter data), traded volumes in the unsecured and repo markets expanded by more than 20% globally compared with 1998 (fourth quarter data). Specifically, the unsecured market increased by 16% and the repo market by 24% (see Chart 1). By contrast, foreign currency swaps declined by 24% in the same period, owing to the disappearance of cross-currency trading among the euro legacy currencies. Nevertheless, it should be noted that currency swaps funding still represents 23% of the total of the euro money market and is comparable, in terms of size, with the repo market.

The shares of each of the three instruments in the total (see Chart 2) followed different patterns: foreign currency swaps decreased

Chart 1

Activity in the euro area deposit, repo and foreign currency swap markets

(1999 (Q4) compared with 1998 (Q2)[1])



Source: ESCB market surveys.

1) Relative size of average daily transactions. Basis 100: volume of transactions in the unsecured market in Q4 1998.

from 32% to 23%, while the share of unsecured deposits grew from 48% to 53% and that of repos grew from 20% to 24%.

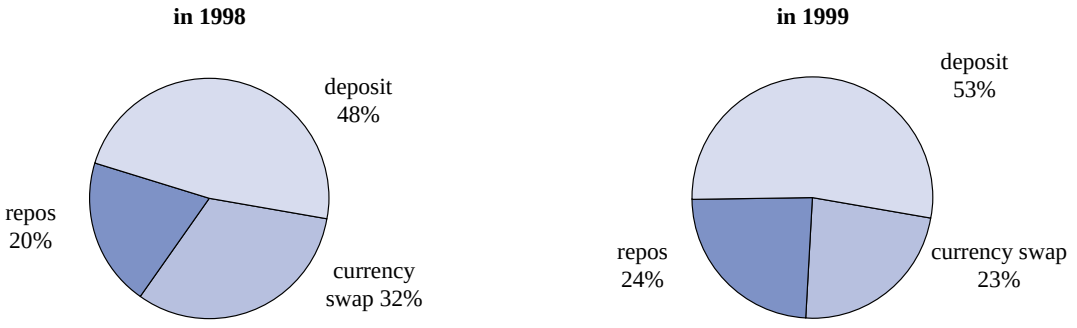
All in all, the expansion of the unsecured and secured transactions exceeded the decrease in the foreign currency swaps (see Table 1 in Annex 2 for details). While the expansion of unsecured transactions was clearly related to the single monetary policy, the expansion of the repo market is also linked to the need to limit credit exposures and reduce capital needs. The involvement of new market participants in this segment of the market, owing to the introduction of the euro, can be seen as a supportive factor.

The growth of the unsecured segment of the market was concentrated at the shorter maturities, indeed in overnight transactions, which represented by far the largest share of unsecured operations (see Chart 3 and Table 1 in Annex 2). The overnight maturity has increased significantly since the beginning

Chart 2

Deposit, repo and foreign currency swap markets as a share of total activity in the euro area

(1999 (Q4) compared with 1998 (Q2))

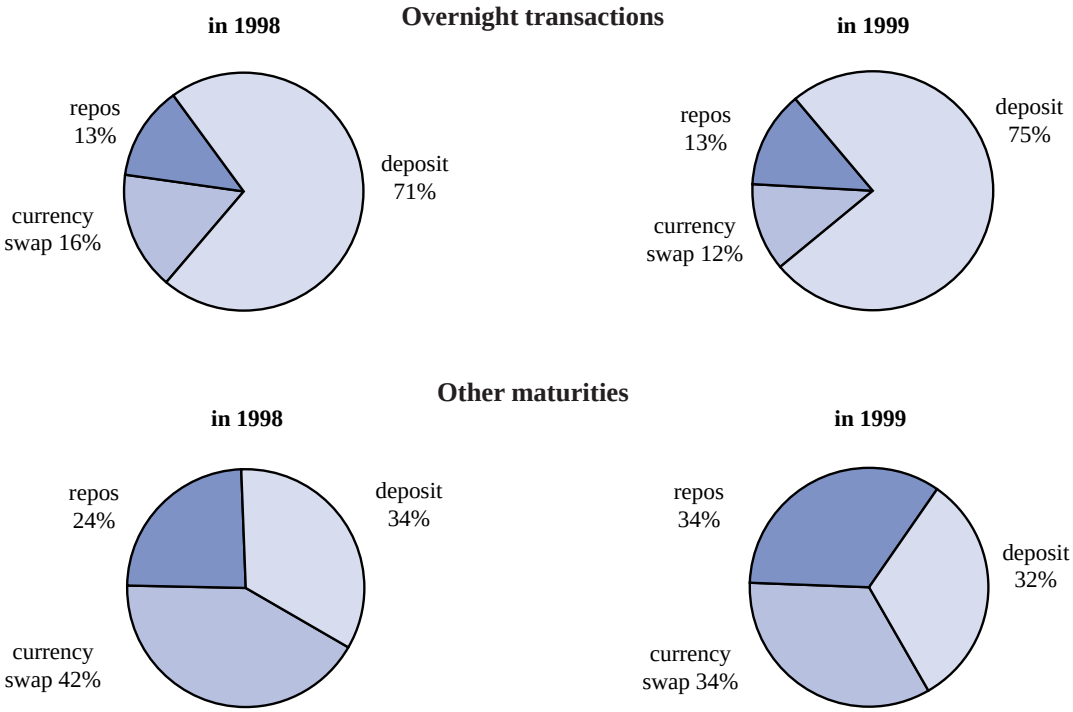


Source: ESCB market surveys.

Chart 3

Deposit, repo and foreign currency swap markets as a share of total activity in the euro area

(breakdown by maturity, 1999 (Q2) compared with 1998 (Q4))



Source: ESCB market surveys.

of the year, with a 40% jump in volume compared with the previous year. By contrast, turnover at longer maturities, from one week up to one year, declined markedly and relatively low volumes are being traded at the longer end.

For longer maturities, repo transactions seemed to be preferred to unsecured transactions (see Chart 3), as they provided greater security. Repo operations for maturities over one day have increased significantly since the end of 1998: they represented 34% of all money market operations in the second quarter of 1999 compared with 24% in the fourth quarter of 1998. This change was particularly visible at maturities of one month and three months (with growth of 23% and 42%), even if daily turnover remained, overall, relatively modest compared with that at shorter maturities. At the longer end, liquidity was generally more reduced.

1.1.2.2 Degree of integration

One first, indirect sign of the integration of the money market emerges from the use by market participants of the Eurosystem's credit and deposit facilities since the start of Stage Three of EMU, where no significant imbalances (i.e. the use of the credit facility in one or more countries and of the deposit facility, simultaneously, in other countries, which would indicate problems in the distribution of liquidity within the euro area) have been observed among euro area countries.[6]

6 *Simultaneous resort to both facilities has taken place within the same country to a very small extent, indicating minor inefficiencies in the functioning of the "local" markets on given days, rather than an integration-related problem (see ECB (1999b)).*

However, the integration prevailing in the unsecured segment of the euro money market from the early stages of Stage Three was rather higher than that prevailing in the repo market. While the available information for the euro money markets is scarce on the prices side, the EONIA (euro overnight index average) provides a clear indicator for overnight developments. The dispersion of the EONIA prevailing among euro area countries has been very small since early 1999. Only a few weeks after the start of Monetary Union, the differences in the average interest rates recorded by the 56 banks of the various countries of the euro area participating in the EONIA panel decreased, with some exceptions, to 2 to 4 basis points, i.e. below the usual bid-ask spread. Furthermore, after a similarly short period, less than half of the daily variance of interest rates registered by the banks participating in the EONIA panel could be explained by differences between rates in different countries (see the contribution of inter-country variance in Chart 4), while the rest was explained by differences between individual credit institutions within each country.

In the context of the ESCB market surveys, market participants agreed that the repo market was not as fully integrated within the euro area as was the unsecured market. Evidence of this was found in the hierarchy prevailing for the general collateral rates ("general collateral" is collateral which, owing to its homogeneous features, is broadly accepted); while the French and German securities were rather "expensive", the opposite was the case for the Belgian, Spanish and Italian ones. The most frequently invoked reasons for this situation were the following:

- Differences in the yield of the underlying bonds, especially on account of their different degrees of liquidity. In particular, the impact of "specials" (i.e. collateral other than general collateral) trading, which is largely done in German Bunds and, to a lesser extent, in French OATs, was often mentioned by counterparties to explain their higher price in the repo market in comparison with other collateral.

- The lack of harmonisation of repo agreements throughout the euro area, with the coexistence of domestic contracts, the TBMA/ISMA contract and the European Master Agreement.

- Some difficulties in the cross-border management of collateral which can lead to a preference for deals on domestic assets. For example, it appears that the

Chart 4

EONIA rate variance: contribution of inter-country variance to total variance

(percentage)

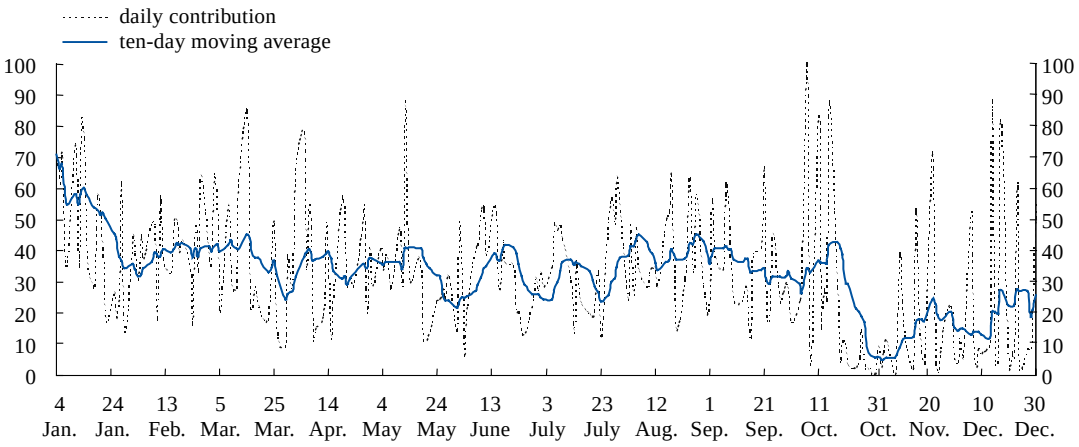
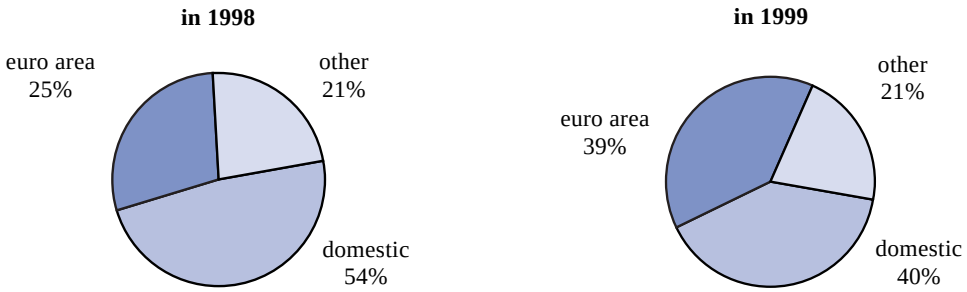


Chart 5

Share of activity in the money market by type of market counterparty

(1999 (Q2) compared with 1998 (Q4))



Source: ESCB market surveys.

securities leg of repo trades is not as well integrated as cash settlement, which can give rise to some friction in transactions (see Section II.2 for a discussion of trading, clearing and settlement issues).

Other factors mentioned include national peculiarities or investment guidelines limiting holdings of foreign securities, the different tax treatment of bonds,[7] and the uneven distribution of collateral throughout the euro area.

As a consequence of the factors described above, practices in various repo markets have not evolved significantly compared with Stage Two. Furthermore, some peculiarities, such as the trading of variable rate contracts in France, continued to be confined to local markets. A widespread sentiment was that the introduction of the euro did not prompt market participants to undertake uniform changes to the internal organisations with regard to their repo activity. It can be noted that some market participants developed for the first time repo departments, while banks well established in the repo market sometimes reorganised their desks. However, no single model of organisation emerged, as repo desks were either integrated in cash management centres, specialised according to countries, or integrated in bond market activities.

1.1.2.3 Cross-border transactions

The introduction of the euro led to a significant increase in cross-border transactions among euro area countries, in terms of both volume and market share, as domestic transactions accounted for only 40% of the total activity of the largest market participants in 1999. This trend was especially noticeable in the unsecured and currency swap segments of the money market (see Chart 5 and Table 1). It should be mentioned that only in the repo market did domestic transactions increase more rapidly than cross-border transactions.[8]

The main factors explaining such developments include:

- The simplification of cross-border transactions brought about within the euro area by the disappearance of the costs associated with foreign currency settlement, and the smooth functioning of TARGET.

- The need to redistribute central bank money among financial centres.

7 *Particularly in Spain, where a drying-up of liquidity takes place in the 30-day period preceding the government bonds' coupon payment.*

8 *While such a fact seems to be well documented from the data gathered through the ad hoc ESCB market surveys, there is no complete information on the borrowing side of money market activities.*

Table 1

Activity in the euro money market: deposit, repo and foreign currency swap markets as a share of the total

(breakdown by type of market counterparty, 1999 (Q2) compared with 1998 (Q4) (as a percentage))

Type of counterparty	Money market transactions through					
	unsecured swaps		repos		currency swaps	
	1998	1999	1998	1999	1998	1999
Domestic	68%	48%	42%	43%	23%	15%
Euro area	21%	38%	33%	33%	39%	50%
Other	11%	14%	25%	24%	38%	35%

Source: ESCB market surveys.

- The development of arbitrage activity by market participants, as the integration process enhanced the emergence of a single money market yield curve. As a consequence, quotation spreads among the various euro area countries narrowed very quickly in the first few months of 1999 to an average of 2 to 4 basis points, which represents the minimum price below which arbitrage is not undertaken. It should be noted, nevertheless, that larger price discrepancies occasionally appeared, at the end of either reserve maintenance periods or individual days when cross-border settlement procedures encountered some problems.

- The emergence of market participants with a euro area scope of activity, who broadened their activity to adapt to the new situation.

1.1.3 Functioning of the market

1.1.3.1 Liquidity, volatility and bid-ask spreads

According to market participants, liquidity improved in the unsecured and repo segments of the money market compared with the situation prevailing in the former domestic markets. This was particularly the case at the short end of the money market yield curve, mainly as a result of increased cross-border transactions in the new environment.

No systematic comparison of the bid-ask spreads (i.e. the differentials prevailing in the market between the bid and the offered prices) currently prevailing in the euro money markets and those prevailing before Stage Three has been performed.[9] However, available indicators on the evolution of bid-ask spreads confirm the impression of improved liquidity insofar as there is usually a positive correlation between both variables. Some information regarding unsecured operations may be drawn from intraday data on the Italian MID ("Mercato Interbancario di Depositi"), a screen-based market for interbank deposits: in this market spreads narrowed, on average, from 3 basis points in 1998 to 1.5 basis points in 1999.[10] In the repo market bid-ask spreads seemed to be either unchanged (as in the case of France and Germany) or narrowing to only a few basis points (in Belgium, Finland, Ireland, Spain and the United Kingdom).

There is no uniform opinion as regards interest rate volatility. Market participants' assessments were conditioned by the

9 *See Biais, Hartmann and Manna (2000) for an empirical analysis of the microstructure of the euro money market. Some of the main theories can be found in Stoll (1978), Copeland and Galai (1983), Glosten and Milgrom (1985) and Amihud and Mendelson (1986). O'Hara (1995) provides a good synthesis of market microstructure theory.*

10 *See Annex 3 for more details.*

different situations prevailing in each country prior to Stage Three: French banks underlined the higher level of overnight rate volatility in Stage Three, whereas Spanish and Italian banks saw reduced volatility; data from the MID would confirm reduced volatility in the first half of 1999 for the Italian market.[11]

As a rule, contract sizes rose sharply. Only two exceptions to this rule were reported, namely Finland, where repo transactions remained essentially "tailor-made", i.e. adapted to the needs of the parties to each transaction as opposed to the usual standardised approach, and Portugal. Traders in Germany and France, for example, reported that contracts in national currencies were replaced, one for one, with euro contracts, thus multiplying (by 2 and 6 respectively) the usual value of transactions. Overnight transactions in the unsecured market of €500 million to €1 billion are common and deals over €1 billion are not unusual. On the repo market contracts for €50 million to €100 million have become normal and even deals of €1 billion are not exceptional. Still, while the market has the capacity to handle these larger transactions, in order to reduce settlement risks large deals are often split up into several transactions.

The evolution of the differential between the interest rate of the unsecured transactions and that of the repo transactions, i.e. the "depo/repo spread", showed a diverging pattern in the various euro area countries compared with the situation in 1998: it declined in Spain, did not change in Germany and increased in France, the Netherlands and Italy. In the Netherlands and Italy spreads often used to be negative in Stage Two. No clear-cut explanations for these diverging trends were obtained from market participants, apart from the fact that *repo* market developments are primarily driven by cash in some countries, while in others they are driven by the underlying collateral.

However, the cost of managing the collateral may play a role in explaining the evolution of the depo/repo spreads. The factors explaining the relative advantages and costs involved in the use of collateral for transactions in the interbank market include the reduction of risk achieved by the cash lender, the opportunity cost incurred by the collateral lender (i.e. cash borrower), and the costs of managing the collateral borne by both parties in the transaction, i.e. settlement, marking to market, coupon treatment, legal arrangements, etc. These various factors may have a different importance in different countries. Spanish banks explained the reduced depo/repo spreads in Spain by the relatively low allotments received by them in the Eurosystem's refinancing operations, as a consequence of which the share of available collateral held by the Banco de España diminished and, correspondingly, that held by the market increased. In turn, this situation boosted the liquidity of the repo market, thereby contributing to reducing the depo/repo spread. In other countries, in which cash lenders were able to include in the price the cost of managing the collateral, this cost may have contributed to narrow and even negative depo/repo spreads. Most market participants mentioned difficulties in repo settlement as a factor affecting market prices, particularly for overnight transactions (Italy and the Netherlands) and/or in cross-border transactions (Belgium, France and Finland).[12] Moreover, differences in the quality of the collateral – which is less relevant for the shortest maturities – and differences in the settlement of the underlying securities also play a role in the repo rates hierarchy (see Section I.3).

Finally, it is worth noting that, according to the figures provided by market participants, the share of foreign collateral used for repo transactions rose significantly in 1999 compared with 1998, from 5% to 23% of the total. Analogously, an increase in the use of non-domestic collateral in the Eurosystem's refinancing operations was observed in the course of 1999 in some euro area countries

11 In terms of the daily percentage coefficient of variation, it fell from1.84 in 1998 to 1.04 in 1999.

12 In Germany some market participants mentioned a smooth settlement process as one of the reasons behind the development of the Bunds' cross-border trading.

(for instance, between 40% and 50% of the collateral used for the Eurosystem's credit operations by French counterparties was non-domestic).

1.1.3.2 Market participants and the process of cash management centralisation

The unification of the euro financial markets triggered two kinds of developments with rather opposite effects on the number of participants in the secured and repo interbank markets. On the one hand, a wider range of counterparties emerged, such as German regional banks and non-euro area participants (notably from Asia and northern Europe). These banks, which had previously focused on their domestic market or on the most active European markets (notably the DEM market), tended to extend the scope of their activities to the whole euro area. On the other hand, the consolidation and merger process accelerated, fostering a concentration of cash management and money market funding activities in one or two centres. All in all, major banks seem to have reinforced their competitive positions, benefiting from a larger and more liquid market and from an ongoing process of internal rationalisation. For their part, small and medium-sized banks, which were generally less well equipped to settle cross-border transactions and less able to obtain credit lines in other euro area markets, barely changed their business relationships, remaining mostly confined to their domestic markets. As a consequence of these factors, and as a result of differences in credit ratings, this category of banks has normally paid a small spread in interbank transactions. In France, for instance, such spread was estimated to be between 2 and 3 basis points on average. Thus the general view is that the segmentation into a "two-tier" market, which already existed before the introduction of the euro, was somewhat reinforced, with large banks active in the euro money market for cross-border, large-size deals and ensuring the funding of smaller, domestically oriented banks.[13] These latter banks, however, were not confronted with a worsening of funding conditions.

Overall, a concentration has taken place, which has enhanced the need for more efficient cross-border transactions. This fact is a driving force leading to a more standardised and competitive market. This move was strongest in the most integrated segments of the market, such as the interbank money market and the overnight interest rate swap (OIS) market, where margins narrowed significantly, prompting some participants to discontinue their activity. To some extent, the trend towards standardisation and concentration is similar to the one observed in the foreign exchange market although, for the time being, the degree of standardisation has not yet reached that prevailing in the foreign exchange market. The possible development of electronic trading, however, could further boost standardisation in the money market.

There is a general consensus that the introduction of the euro triggered a process of centralisation of funding activities in the single currency by market participants. Two different patterns of centralisation may be distinguished: while some banks centralised their interbank funding activities in euro at a single centre (a common pattern among non-EU banks), other banks maintain subsidiaries or branches in various euro area countries. In those cases, payments to be made in other euro area countries are routed to the relevant branch. In the latter cases, only the settlement of the resulting credit or debit positions among the various branches may give rise to TARGET transactions. Hence this type of bank is less dependent on the functioning of TARGET, and its national components, than those banks with centralised cash management.

13 Data from the Italian MID confirm such a tendency: the participation of members in transactions showed a concentration in the Herfindahl index growing from 0.58 in the second half of 1998 to 0.65 in the first half of 1999. Concentration in the repo market might be higher owing to the barriers faced by small participants in terms of the capacity required to manage the collateral.

Furthermore, the distribution of the activity of individual branches in the domestic and non-domestic markets and their bidding behaviour in the Eurosystem's refinancing operations may not be related to their own liquidity needs, but to the consolidated position of the group. In this context, banks face different alternatives as regards their funding practices and inter-branch fund allocation:

i) They must choose either intrabank fund allocation mechanisms or the money market to redistribute liquidity within their branch system.

ii) They must decide to which segment (i.e. unsecured, repo or others) of the money market to resort. This decision often entails choosing which branch will trade in the market. Performing cross-border transactions through branches, instead of doing it with other counterparties, may be preferable, e.g. on the grounds of credit risk considerations.

The choice between these alternatives is likely to be driven by risk and cost considerations.[14] On the one hand, banks may tend to reduce their market activity by improving their intrabank fund allocation mechanisms when market conditions are less attractive, as is often the case on the last days of the Eurosystem's reserve maintenance periods, owing to higher interest rate volatility and wider spreads. On the other hand, some market participants pointed out that, in some cases, banks might refrain from carrying out cross-border transactions during the last hours of the day (and perhaps also on the last days of the reserve maintenance periods), on account of fears of possible delays in the settlement process. These kinds of problems, which also arise in cross-border fund transfers to or from branches acting on behalf of the headquarters, might in some cases reduce branch activity.

In conclusion, while a comprehensive process of internal reorganisation was undertaken by euro area banks regarding their treasury management (and also by non-euro area banks with regard to their funding activities in the euro) following the introduction of the euro, the completion of such a process is still likely to take some time, not least on account of the ongoing and future developments in the field of securities settlement systems. In the same vein, developments in the field of electronic trading (through centralised platforms) were still at an early stage (see Section III).

1.2 Derivative segments

Since the start of Stage Three, euro-denominated money market derivatives have experienced a process of quick integration and standardisation, and their depth has increased substantially. In such context, the use of FRA instruments (forward rate agreements) and some other OTC instruments ("over-the-counter" transactions, i.e. those carried out in non-organised markets) diminished in favour of more standardised products, i.e. swaps and futures. Owing to the success of exchange-traded futures, OTC instruments, except interest rate swaps (IRSs), are now confined to specific operations, such as structured products, and their global amount outstanding has become marginal. By contrast, futures and swap markets benefited from the introduction of the euro: the data show an expansion of more than 60% in the interest rate swaps market.

14 Again, data from the Italian MID may give some indication in this respect. In the first half of 1999 the share of the Italian branches of other EMU countries' banks in total borrowing activity was significantly lower on the last day of the reserve maintenance period (22% of the market) than on other days (31%). No such difference was evident in Stage Two: in the second half of 1998, both on the last day of the reserve maintenance period and on other days, the share was steadily around 40%. It should be noted that the reduced share of foreign banks' branches in Italy on the last day of the reserve maintenance period may also be related to their lower involvement in tax payments.

1.2.1 Futures markets

Activity in the euro futures markets increased significantly in the first half of 1999 compared with the situation prevailing in the markets for the euro legacy currencies in 1998. Open positions (i.e. the gross amount of positions held by market participants) on three-month futures euro contracts[15] increased by 16% between the end of 1998 and the end of the first half of 1999. Such a development took place at the expense of OTC transactions, which decreased in that period, with the exception of IRSs.

The EURIBOR three-month futures market quickly became very liquid and deep, which was also reflected in tight bid-ask spreads. This contract inherited the success of the former "Eurodem" LIFFE contract and benefited from the greater concentration and the higher level of activity prevailing in the money market following the introduction of the euro. The new contract is traded in the LIFFE market in London, in the German Eurex, and in the French Matif. LIFFE EURIBOR trading is by far the most dominant, representing more than 80% of the total daily trading volume. The EURIBOR imposed itself as a single reference in the cash market, at the expense of the EURO LIBOR. Therefore, the EURIBOR contract replaced all former three-month contracts, i.e. the Eurodem, the Eurolira, the PIBOR and the MIBOR.

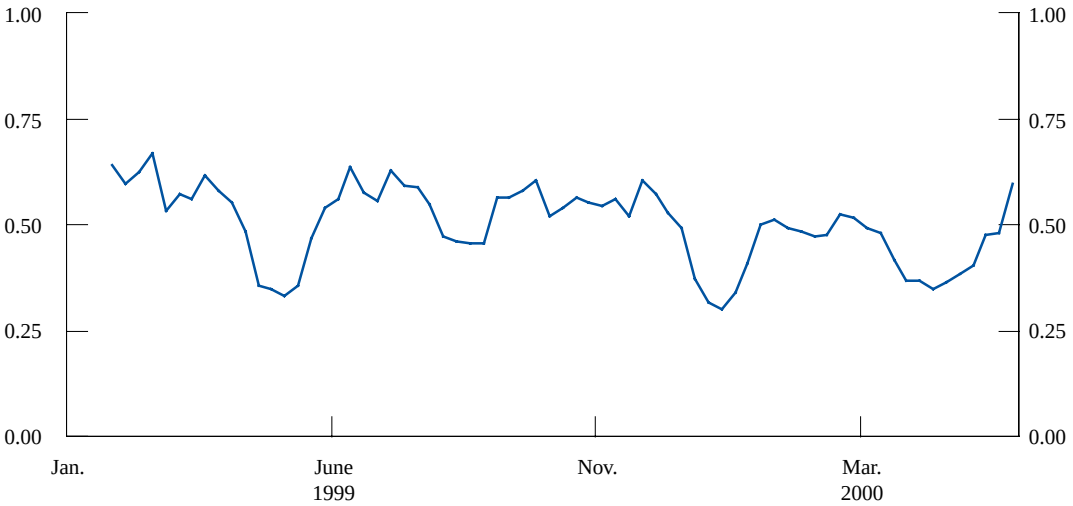
In order to provide an illustration of the liquidity in the euro short-term futures markets, Chart 6 shows the ratio between the volumes traded in three-month euro contracts in LIFFE, Matif and Eurex, and an equivalent for the US dollar market, namely the volumes traded in three-month US dollar contracts in the two relevant markets: CME (Chicago Mercantile Exchange) and SGX (Singapore Exchange). As can be seen, the liquidity in the euro market is around 50% that of the US dollar market.

The success of the euro money markets' futures contracts must be linked to the standardisation of the euro wholesale markets and to the harmonisation of the euro cash market, with the EURIBOR as the main reference.

15 Including EURIBOR, EURO LIBOR, PIBOR, EURODEM, EUROLIRA and MIBOR contracts. (See Annex 1 on terminology for an explanation.)

Chart 6

Ratio between traded three-month euro futures contracts and three-month USD futures contracts [1)]



Source: Bloomberg.

1) One-month moving average of weekly data. All the usual quarterly future maturities traded on the dates in the x axis have been considered (starting from March 1999). The USD futures contract figures include data from the CME and SIMEX markets.

1.2.2 Interest rate swap market

The interest rate swap market also experienced significant changes following the introduction of the euro. According to data collected for these surveys, average daily IRS transactions in the euro area grew by 72% in 1999 (Q2) compared with 1998 (Q4). Moreover, all euro area national central banks noted that the swap market had become deeper and more liquid as a consequence of its full unification, and a single yield curve emerged for the whole euro area. Bid-ask spreads narrowed and are now set between 1 and 2 basis points. The average transaction size increased to €50 million, and huge amounts (such as €5 billion) are not exceptional. The market appears to be extremely flexible and standardised. As a consequence of the growing size of the market, some smaller market participants might be considering the possibility of discontinuing their market-making activity in this area.

The main reasons for the success of the euro swap market seem to be the following:

- Swaps are now commonly used, instead of government paper, for hedging positions in fixed income instruments such as corporate paper. This is particularly the case since the start of Stage Three, as a single swap curve has emerged vis-à-vis a non-unified government paper curve. In such a context, the swap curve has become the benchmark for money market instruments.

- Arbitrage is widely performed on swaps, thanks to the liquidity, flexibility and depth of this market.

- High liquidity and depth has attracted more participants, so the swap market is set in a "virtuous liquidity circle" "liquidity calls liquidity".

- A factor not related to the introduction of the euro is that market participants are showing an increasing interest in off-balance-sheet instruments: the use of EONIA swaps presents the opportunity to reduce all short-term interest rate risks to an overnight basis. Swaps spare capital as they do not consume large amounts of credit limits. As a consequence, swaps have increased at the expense of deposit markets for funding.

Table 2

Activity in the interest rate swap market: average daily transactions

	Notional amount in EUR millions		
	1998 Q4	1999 Q2	Growth as a percentage
1 week	2,153	4,636	115
2 weeks	1,952	4,397	125
1 month	4,276	7,957	86
3 months	4,588	7,906	72
6 months	3,104	4,263	37
9 months	763	1,858	144
1 year	1,144	2,461	115
> 1 year	5,602	7,002	25
Total	23,582	40,480	72
Domestic counterparties	12,438	13,636	10
Euro area counterparties	8,063	21,156	162
Other	3,081	5,688	85
Total	23,582	40,480	72

Source: ESCB market surveys.

The introduction of the euro also had an impact on the characteristics of the swap market, notably:

- Like other segments of the euro money market, the swap market became a cross-border market as the bulk of transactions became euro area-oriented from the beginning of 1999 onwards (although volumes of domestic transactions were globally stable).

- The bulk of activity in the euro swap market seems to be concentrated in large and medium-sized banks. Mainly on account of the high average size of the transactions, smaller banks have some difficulty in entering this market.

- A change in the swap indices used. LIBOR indices were almost abandoned, as the "old contracts" were progressively turned into EURIBOR-based contracts. New contracts are now referenced mostly with the six-month EURIBOR and the EONIA. However, the EONIA represents the largest part of the euro swap market, owing to its acceptance as the euro reference on the interbank market.[16]

- The average maturity of swap contracts has decreased slightly since the start of Stage Three of EMU following a trend which was also observed in the cash market: in 1999 61% of swaps (compared with 54% in 1998) had a maturity of less than six months. The short-term interest rate swap segment is therefore the most liquid, although activity is still substantial at longer maturities. In particular, swaps over one year still represent a significant proportion of the market (17%).

1.3 The market for Treasury bills and other short-term securities

This section discusses developments in the segments of the money market not dealt with in the previous section, namely the market for short-term securities. This market includes government securities (Treasury bills) and private securities, i.e. mainly commercial paper (CP, i.e. short-term securities issued by corporations) and bank certificates of deposit (CDs, i.e. short-term securities issued by banks). The analysis draws on two sources: the quantitative and qualitative data gathered through ESCB market surveys conducted in the context of the preparation of the studies referred to in the foreword, and the ECB's database.

The pace of developments in short-term securities markets in 1999 was generally slower than that observed in the other segments of the money market, even if some significant changes were also observed. Two main features should be highlighted. First, compared with the fast integration observed in the euro unsecured interbank and interest rate swap markets, the short-term securities markets remained relatively fragmented and mostly domestically oriented. This situation also contrasts, to some extent, with developments in the euro bond markets (see Section II). Second, regarding issuing activity, a changing trend was observed in the euro area, whereby privately issued securities overtook the short-term government paper market. This is discussed further in Section I.3.1.

As regards the slow degree of integration observed in short-term securities markets, several explanations can be provided. For investors, the rationale for diversifying bond portfolios is much stronger than for their holdings of money market instruments. Financial intermediaries do not usually hold short-term paper for investment purposes, but as a secured surrogate for cash. Money market funds are usually much more domestically and retail-oriented than bond funds. As a consequence, the demand for cross-border investment in short-term securities tends to be smaller, and this

16 It should be noted that EONIA swaps are settled at maturity plus one day since the EONIA is not known until 7 p.m. (while the LIBOR was known at 11 a.m.).

weakens the forces pushing for further integration.

In addition, infrastructural problems, in particular the lack of a harmonised trading environment and the segmentation of clearing and settlement systems, differences in fiscal treatment and the lack of uniform legal documentation, also explain the relatively slow pace of integration of euro area short-term securities markets.

1.3.1 Primary markets

In order to provide as complete a picture as possible of the evolution of developments in 1999, two complementary sources of data are used in this and the following two sections, namely a market survey conducted by the ESCB, and the ECB's securities database.[17]

Activity in the primary markets showed a relatively steady increasing trend in 1999, although not a very significant one (increasing by 11.8% as a whole in terms of net issuance). However, a diverging pattern was observed between public and private sector issuers: while the issuance of Treasury bills was subdued, the issuance of private securities was relatively steady (see Chart 7). This trend was reflected in a continuously increasing share of the participation of private paper in the global short-term securities market (see Section 1.3.3). During the first half of 1999 a significant increase in the issuance of both CP and, especially, CDs was observed; in relative terms, the share of gross new issuance by instrument has shifted in favour of bank CDs (see Chart 7 and Tables 3 to 5).

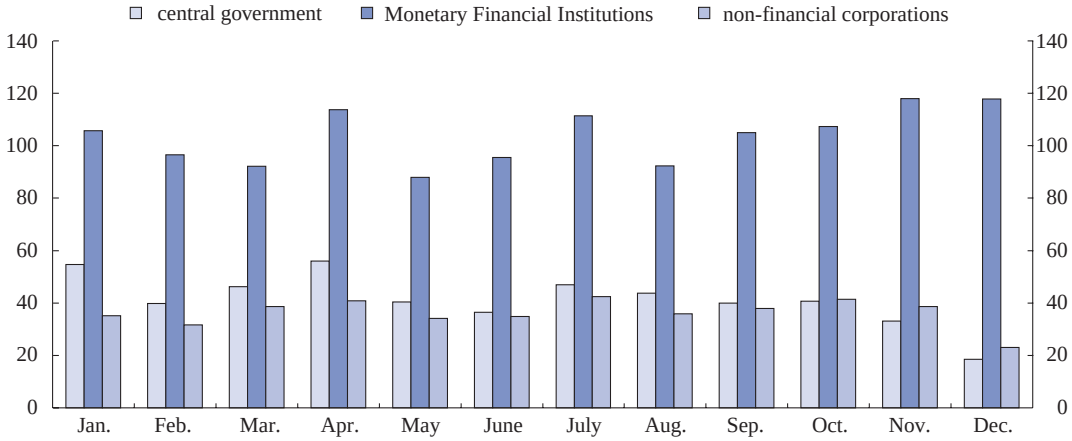
Several factors explain developments in the issuance of Treasury bills, CP and bank CDs. The slowdown in the issuance of public paper was due to the combination of a reduction in government deficits in many euro area countries and Treasuries' efforts to increase the average maturity of their liabilities, in order to take advantage of lower interest rates. As a result, a reduction in the issuance of short-term government instruments took place (-17% overall; during the first half of 1999 sharp declines took place in Belgium, France, Portugal and Spain), in parallel with an increase in the issuance of long-term paper.

17 The two sources are complementary since the ad hoc ESCB market survey provides a non-exhaustive, but rather reliable comparison of developments in the first half of 1999 with those in 1998 for individual countries and data on activity in the secondary market, while the ECB's database provides a complete picture for 1999 on a euro area basis. Hence, wherever data for individual countries are quoted in this section, the source is the ESCB market survey. The same applies to secondary market data. In the charts based on the ECB's database, securities issued by MFIs (Monetary Financial Institutions) are basically CDs and those issued by non-financial corporations are essentially CP. For a description of the ECB's database see ECB (2000b).

Chart 7

Gross issuance of euro-denominated short-term securities by issuer sector [1] in 1999

(EUR billions)

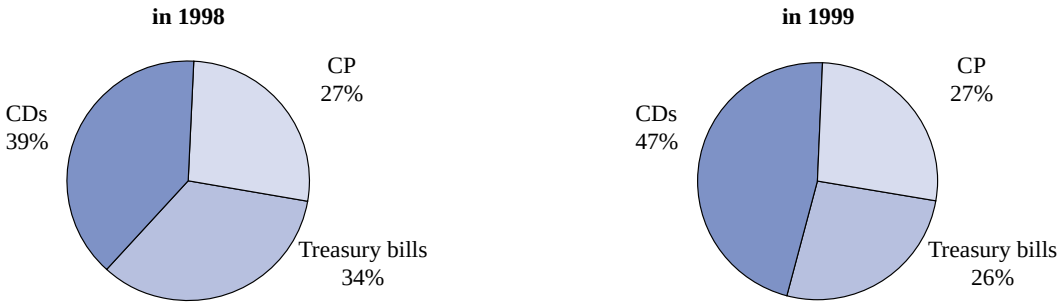


Source: ECB.

1) Values refer to the gross issuance of euro-denominated securities issued by euro area residents.

Chart 8

Gross issuance of euro-denominated short-term securities by issuer sector



Source: ESCB market surveys.

Beyond this overall reduction, the supply of Treasury bills is unevenly distributed among euro area countries. At the start of Stage Three, only four markets – the Belgian, French, Italian and Spanish ones – were significant and relatively mature, had substantial amounts outstanding, conducted regular auctions and had primary dealership systems. With regard to the German market, although there are regular quarterly auctions for "Bubills", the outstanding volumes and issuance remain comparably small. This is one of the factors slowing the development of the Treasury bill market, given the benchmark role that German securities play in several other segments of the euro yield curve. This also helps to explain why non-residents tend to stay out of the euro Treasury bills market.

Given the lower issuance of Treasury bills, institutional investors[18] tended to invest more heavily in CP and bank CDs. In addition, in a context of decreasing interest rates, institutional investors sought additional returns by shifting to longer-term instruments with higher yields.

As regards the rise in the supply of private paper, a tentative explanation can be found in the rebound in economic activity in the euro area, as reflected in a recovery in investment expenditure. In addition to the traditional funding patterns prevailing among European corporations, i.e. the issuance of long-term paper and recourse to bank loans, the financial context created by the single currency fostered an increased resort to the issuance of CP. In a context of increased merger and acquisition operations, CP issuance may have been boosted further, since such operations were, to some extent, also financed by resorting to the issuance of short-term securities. Furthermore, the attractiveness of the euro market as a whole and its future prospects encouraged some major non-resident issuers to enter it and to establish regular issuing activity. Finally, it should be noted that these developments have taken place in the context of a structural movement towards securitisation and an increased preference for collateralised lending.

It is important to note that, throughout the euro area, the supply of bank CDs and CP is not standardised, as issues are often tailored to meet the specific needs of domestic investors (e.g. as in the case of bills with a specific variable rate). In some countries it is mostly banks which buy CP. As a consequence, CP issuance is part of the business relationship between a corporation and its bank. Therefore, funding is still globally intermediated by banks. The very short maturity of most banks' CDs and CP is another consequence of this situation: for the investment of temporary liquidity surpluses, CDs and CP appear to be an alternative to bank deposits.

18 *In France the share of CD subscriptions at the beginning of 1999 was as follows: 30% were subscribed by banks, 30% by corporates, 20% by UCITS ("undertakings for collective investment in transferable securities") and 15% by insurance companies. As regards commercial paper subscriptions, the distribution was as follows: 70% by banks, 15% by UCITS and 10% by corporates.*

In Belgium, France, Ireland and Spain[19] there were significant increases in bank CD issuance after the introduction of the euro. Changes in the fiscal treatment (as in the case of Spain)[20] or in legal regulation (as in the case of France)[21] have made this kind of paper more attractive to investors.

While the data available on non-resident participation in the primary market are only partial, they show that developments in this regard varied greatly among euro area countries. In Ireland the issuance of bank CDs by non-residents in the first half of 1999 was around 98% of the total, which is explained by the fact that the two largest issuers are large international banks. In Italy non-resident purchases in the primary market for Italian Treasury bills (BOTs) increased from €4.1 billion at the end of 1997 to €27.3 billion at the end of 1998. In Finland, while in 1998 Treasury bills were sold mainly to domestic investors, the situation was reversed in 1999 as most paper was placed with non-residents. Although there are no figures available for Germany, there is regularly a strong non-resident demand for German "Bubills".

A comparison of the two periods under review showed no relevant changes as regards the usual issuing maturities for short-term securities. The most common maturities are three, six and 12 months.[22] For Treasury bills, the 18-month maturity was also used.

Even before the start of Stage Three, short-term securities were issued almost exclusively in book-entry form. The issuance of physical paper is confined to some paper issued in Finland (CP and municipal debt paper). During the first few months of 1999 this trend was enhanced by the fact that, following the introduction of the single currency, only securities transferable in book-entry form became eligible as collateral for the Eurosystem's monetary policy operations. The registration of short-term assets normally occurs at securities depositories, both domestic and international. In most countries there are at least two central securities depositories for clearing the different types of securities. The large number of accounts to be maintained with different depositories tends to discourage non-residents from participating in some of the less liquid markets (see Section III).

1.3.2 Amounts outstanding

As a consequence of the issuing activity described above, the total amount outstanding of Treasury bills decreased substantially (by 17% between the end of 1998 and the end of 1999) and stood at EUR 254 billion at the end of 1999.[23] The share of these instruments decreased to around 44% of the whole market for short-term securities, from 55% in the second half of 1998 (see Chart 8). Such a decline was more than offset by the increase in the amount outstanding of euro-denominated CDs, CP and other securities issued by private sector euro area residents. The amount outstanding of CDs and other short-term paper issued by financial institutions grew by 51%, while that of securities issued by non-financial corporations (mainly CP) grew by 43%. Still, at the end of 1999 Treasury bills remained the most important single segment of the euro area short-term securities market.

According to data for the first half of 1999, almost half (44%) of the amount outstanding consisted of securities issued in Italy. French and Spanish securities together represented approximately 32% of the total amount outstanding, and Belgian securities another 12%. Comparatively small amounts of

19 In Spain bank CDs are referred to as "bank bills".

20 In Spain there is a favourable fiscal treatment for assets of this kind issued after 1 January 1999.

21 In France a change in the regulation took effect at the beginning of 1999. This new legal framework allowed banks to issue variable CDs directly, and reduced the minimum maturity of CDs and commercial paper from ten days to one day. Many credit institutions (around one-third) and a few companies resort to this new possibility: by mid-1999 issues of less than ten days represented about 30% of the total amount of CD issues, but only 1.5% of the outstanding amount.

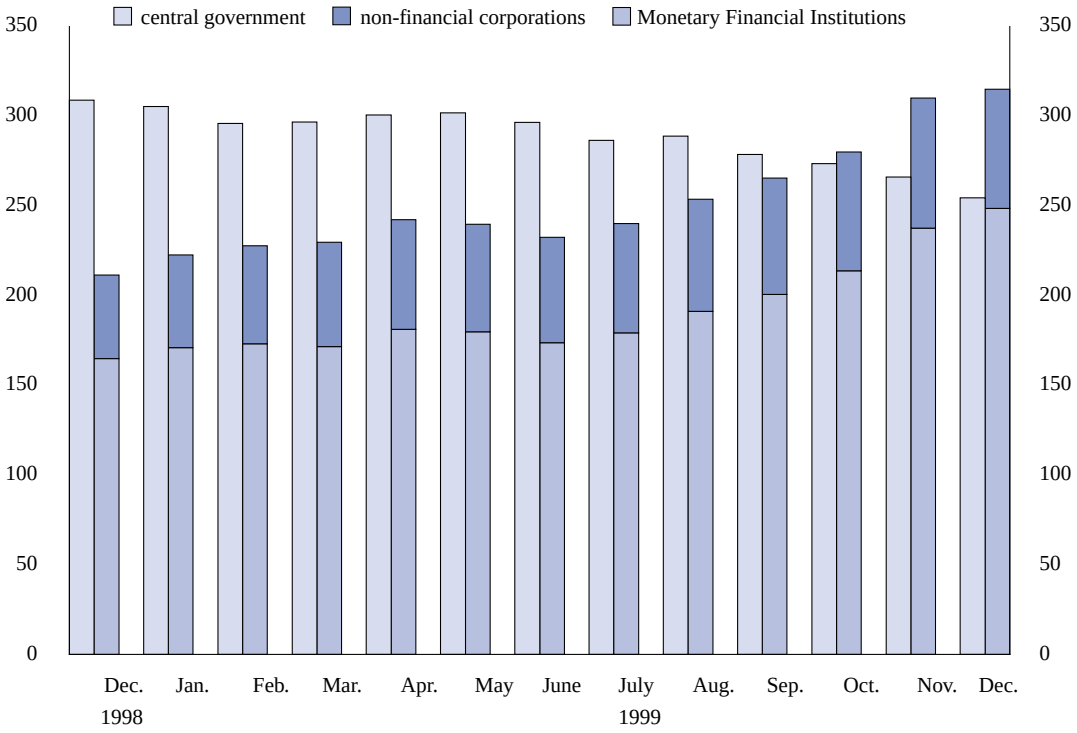
22 Shorter maturities are also usual, notably in France (see footnote 15).

23 By comparison, the total amount outstanding of US Treasury bills reached €649 billion.

Chart 9

Outstanding amounts of euro-denominated short-term securities by issuer sector

(EUR billions)



Note: Values refer to euro-denominated securities other than shares issued by euro area residents.

Treasury bills were outstanding in the other euro area countries. A reduction in the amount outstanding was recorded in the first half of 1999 in most countries (especially in Spain and Portugal), whereas an increase was experienced in four countries: Austria, Belgium, Finland and the Netherlands.

Overall, the figures show an increase in the amount outstanding of private paper by 41.5% in 1999 (see Chart 9). Paper issued by non-financial corporations (mainly CP) grew by 43.2% (from €46.5 billion to €66.6 billion), while paper issued by Monetary Financial Institutions (MFIs, mainly CDs) grew by 51.2% (from €164.9 billion to €248.5 billion).

Available data for individual countries must be interpreted with particular caution, given the lack of figures in some countries and the fact that, in some others, only estimates are available. At the end of the first half of 1999, the greatest amount of bank CDs and CP was concentrated in France (53%), where both categories of assets recorded a large increase. Spain and the Netherlands recorded a substantial increase in the amounts outstanding of bank CDs, as did Finland for CP. Nevertheless, these amounts appear to be small, particularly when compared with US markets: in the first half of 1999, the amount outstanding of bank CDs for the whole of the euro area reached €226 billion, compared with €977 billion for US CDs, whereas CP outstanding stood at €86 billion, compared with €249 billion for the US market.

1.3.3 Secondary markets

The behaviour of investors with regard to short-term paper tends to restrain the liquidity of the secondary market. In many countries (notably France and Spain) the

Table 3

Activity in the primary and secondary markets for Treasury bills

(EUR billions)

	Outstanding (data at the end of the period)			Gross new issuances (during the period)			Total turnover (during the period)		
	2nd half of 1998	1st half of 1999	% of variation	2nd half of 1998	1st half of 1999	% of variation	2nd half of 1998	1st half of 1999	% of variation
BE	36.7	38.3	4.3	53.0	42.3	-20.3	126.3	154.9	22.6
DE	10.2	9.9	-3.3	10.2	9.9	-3.3	n.a.	n.a.	n.a.
ES	59.8	51.3	-14.2	27.0	20.3	-24.9	19.2	16.1	-16.4
FR	47.2	46.1	-2.2	72.3	52.3	-27.6	299.9	266.1	-11.3
IE	1.5	1.4	-6.1	4.9	5.5	12.9	0.1	0.1	10.0
IT	137.8	135.0	-2.0	104.7	106.0	1.2	27.2	22.0	-19.1
NL	6.8	11.0	61.4	19.5	34.0	74.3	n.a.	n.a.	n.a.
AT	4.9	5.8	17.4	0.0	1.9	100.0	n.a.	n.a.	n.a.
PT	1.9	0.6	-71.3	1.0	0.2	-82.6	0	0.05	2400.0
FI	2.6	3.2	24.2	2.8	2.8	-1.9	12.4	6.3	-49.2
SE	0.0	0.3	100	0.0	0.3	100	n.a.	n.a.	n.a.
UK [1)]	3.5	3.5	0	6.0	6.0	0	6.8	3.4	-49.9
Total	312.9	306.1	-2.2	301.5	281.2	-6.7	492.0	468.9	-4.7

Source: ESCB market surveys.

1) On 13 April 1999 the Bank of England took over from HM Treasury as the issuer of euro bills with maturity dates from October 1999. The issuance of Bank of England euro bills exactly offsets the reduction in HM Treasury euro bill issuance.

major investors in short-term paper are investment funds (especially money market funds in France[24]), which usually tend to keep most of the paper in their portfolios and are barely active in the secondary market.

A comparison of secondary market data for the first half of 1999 and the second half of 1998 (see Tables 3 to 5)[25] shows that the total turnover for Treasury bills declined by around 5%. Moreover, activity was unevenly distributed among countries and was concentrated mainly in France and Belgium (where it increased by 23%). In most other countries turnover declined. By contrast, the turnover of CP increased sharply in the same period (by 128% as a whole), mainly in Belgium. The total turnover of bank CDs declined (by 8%). However, this figure is somewhat misleading owing to the fact that the availability of data regarding turnover in CDs is rather poor. A significant fall in Finland's turnover was the cause of the overall decrease (see Table 4), while the turnover in the rest of the countries for which data are available (Belgium, Spain and France) showed significant increases. In relative terms, although Treasury bills continued to be the most traded instrument, the share of trading in CP increased to 14%, from 6% in the second half of 1999 (see Chart 10).

The structural features of the primary market for bank CDs described above explain the weakness of the secondary market and the slow integration of the various markets. Overall, turnover was moderate, owing to the limited supply and the fragmented demand from investors, which is very much focused on the peculiarities of the different securities. Some dualism seems to exist between the retail and wholesale markets. Major investors in CDs are not active in the secondary market, as structured bank CD issuance (e.g. of those CDs linked to a specific index) is not aimed at market trading, but rather at

24 The importance of money market funds in France is linked to the prohibition of the payment of interest on current accounts.

25 Annex 2 provides details on the coverage and methodology of the ESCB surveys on which Tables 3, 4 and 5 draw. Luxembourg is not included in Table 3 because the Treasury did not issue short-term paper in 1998 and 1999.

Table 4

Activity in the primary and secondary markets for bank certificates of deposit [1)]

(EUR billions)

	Outstanding (data at the end of the period)			Gross new issuances (during the period)			Total turnover (during the period)		
	2nd half of 1998	1st half of 1999	% of variation	2nd half of 1998	1st half of 1999	% of variation	2nd half of 1998	1st half of 1999	% of variation
BE	2.8	3.8	32.7	9.3	15.1	62.4	9.9	15.2	52.3
DE	7.3	4.3	-40.5	36.4	n.a.	n.a.	n.a.	n.a.	n.a.
ES	0.3	2.1	539.2	0.5	7.2	1,430.1	0.7	2.5	234.9
FR	96.8	116.5	20.4	329.0	490.7	49.1	11.7	24.6	109.6
IE	2.5	3.4	34.8	1.3	5.1	292.6	n.a.	n.a.	n.a.
IT	38.1	32.0	-16.0	n.a.	n.a.	n.a.	0 [2)]	0.0	0.0
LU	15.9	16.5	3.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
NL	2.8	9.2	234.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FI	18.2	13.6	-25.2	n.a.	n.a.	n.a.	76.7	48.5	-36.7
SE	n.a.	2.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UK	3.7	9.0	143.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	188.5	210.5 [3)]	11.7	340.1 [3)]	518.1	52.3	99.1	90.7	-8.5

Source: ESCB market surveys.
1) See footnote 25.
2) Italian CDs are not traded.
3) These figures exclude available data from Sweden and Germany respectively in order to obtain representative percentages.

accommodating the needs of specific investors. Finally, the short average maturity of the CDs structurally reduces trading opportunities in the secondary market.

CP issues are largely bought by banks in order to finance corporations. Weak activity on the secondary market can therefore be largely explained by the above-mentioned links

Table 5

Activity in the primary and secondary markets for commercial paper [1)]

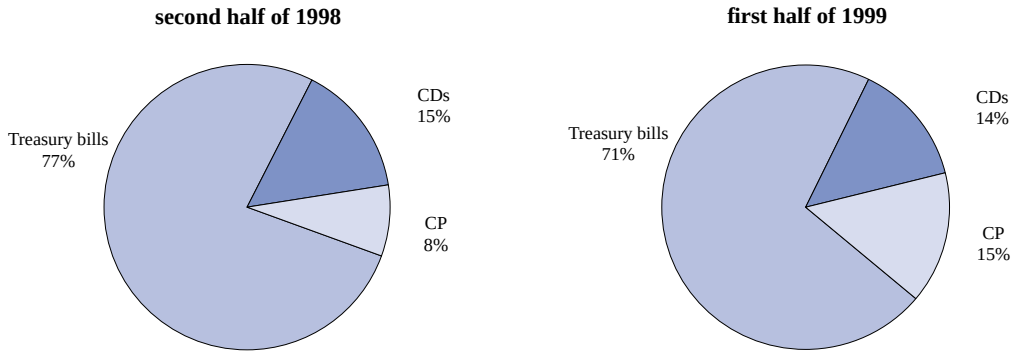
(EUR billions)

	Outstanding (data at the end of the period)			Gross new issuances (during the period)			Total turnover (during the period)		
	2nd half of 1998	1st half of 1999	%of variation	2nd half of 1998	1st half of 1999	%of variation	2nd half of 1998	1st half of 1999	% of variation
BE	7.1	8.3	16.4	22.7	28.7	26.4	23.5	65.5	178.8
DE	10.6	11.0	3.6	37.8	36.7	-3	n.a.	n.a.	n.a.
ES	2.7	3.6	33.5	2.8	3.1	10.3	3.7	4.0	7.1
FR	37.0	47.5	28.6	138.0	191.8	39.0	18.2	28.9	58.9
IE	3.2	5.0	56.0	19.1	7.7	-59.8	n.a.	n.a.	n.a.
NL	0.7	0.6	-14.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PT	2.2	2.9	30.0	6.8	7.1	4.0	3.0	5.0	66.6
FI	1.6	3.0	81.9	15.6	17.3	11.1	n.a.	5.2	n.a.
SE	n.a.	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UK	1.2	3.9	229.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	66.2	85.7 [2)]	29.3	242.8	292.3	20.4	48.4	103.6 [2)]	113.6

Source: ESCB market surveys.
1) See footnote 25.
2) These figures exclude available data from Sweden and Finland respectively in order to obtain representative percentages.

Chart 10

Shares of total turnover of short-term securities



Source: ESCB market surveys.

between corporations and banks (see Section 1.3.2). This pattern could be defined as pseudo-disintermediation, in the sense that neither is it traditional bank lending activity nor does it fit within the usual patterns of securities issuance, in which banks normally play a less important role.

Furthermore, owing to the low turnover prevailing, the pricing of bank CDs and CP is complicated, as securities are often not quoted daily. The absence of regular prices hinders the valuation of portfolios, which, in turn, discourages investors (particularly foreign investors) and reduces liquidity.

The share of non-resident investors differs widely among countries. In Portugal and Spain outstanding securities (Treasury bills and bank CDs) are held mainly, if not exclusively, by residents. In Italy the share of Treasury bills (BOTs) held by non-residents was around 32%. In that country the opportunity to have "remote access" to the screen-based MTS secondary market has been exploited since 1998 by non-resident market participants, which increased their share from 0.4% in the second half of 1998 to 12% in the first half of 1999. In the Netherlands the share of non-residents in the secondary market was estimated at around 20%.

Few changes were observed in trading systems during the period under review. Although an interest in replacing brokers or decentralised intermediation with electronic systems was emerging, the development of such systems was still at an early stage, partly owing to the limited trading in these assets, which tend to be held until maturity. Brokerage activity continued to be present and significant in countries such as Finland, France and Spain.

1.3.4 Microstructure of the market and liquidity

In the markets for Treasury bills, the first few months of Stage Three saw the start of a process of investment diversification conducted by banks and, to a lesser extent, by fund managers, aimed at benefiting from the rate discrepancies prevailing in the various national markets. As in the process described above, regarding banks' activities in the secured and unsecured interbank markets, major banks undertook the internal reorganisation of their trading activities with the aim of trading both short and long-term debt on a pan-European basis. In addition, in most cases major banks are primary dealers in countries where such a system exists, to enable them to participate in short-term Treasury bill auctions. For instance, some foreign institutions started to bid in Treasury

bill auctions in Italy, trying to exploit the higher yields of Italian Treasury bills.[26] While, in the case of bonds, market arbitrage activity is widely developed (see Section 1.2), in the secondary markets for Treasury bills such activity is hindered by reduced liquidity and depth.

Market liquidity was poor globally, and bid-offer spreads were wide, even in countries with a relatively high turnover.[27] This situation was partly linked to the relative scarcity of supply resulting from the decreased issuance of government paper. Additionally, the lack of liquidity was also due to the fact that Treasuries' supply was fragmented, and a large number of issues were non-fungible (i.e. issues, the features of which do not allow them to be treated homogeneously from a legal and technical point of view). For instance, in Italy, the largest market for Treasury bills within the euro area, at the beginning of July 1999 there were 21 different lines of BOTs (discount bills) outstanding, 9 lines at a maturity of up to one year for CTZ (zero coupon securities), and 9 lines with a maturity of less than one year for CCT (medium-term notes with annual interest). In France there were 23 lines of BTF (discount bills). By comparison, only 32 different lines existed in the US market for Treasury bills.

Despite the substantial increase in issuance activity and in the amounts outstanding of short-term CP and banks' CDs, in almost all countries market depth in these sectors remained considerably lower than that of Treasury bills. This was partly a result of the still very limited rating activity in relation to corporate entities in the euro area, in particular in comparison with other capital markets (notably the United States). An increase in the availability of ratings will help the financial soundness of such instruments to be assessed and should therefore boost institutional investors' interest in these types of assets.

With regard to the evolution of the spreads between Treasury bills and AA-rated CP since the start of Stage Three, different trends were observed throughout the euro area. In France and Germany a widening of the spreads (i.e. an increase in the positive differential between the return on private paper and that on Treasury bills) was observed between 1998 and 1999. In Belgium the spread, which was initially negative, was reversed. In some other countries spreads tended to narrow. In Finland the spread between Treasury bills and CP oscillated between 0 and 20 basis points and decreased slightly in the 12 months under review. In Ireland the spread between Treasury bills and AA-rated CP narrowed by around 10 basis points for a maturity of one month and by 40 to 50 basis points for a maturity of one year. In Spain spreads decreased by 10 basis points for a maturity of six months. In Austria the spreads remained stable.

1.3.5 Changes in the use of short-term paper as collateral in monetary policy operations

The proportion of short-term paper, especially Treasury bills, put forward as collateral for monetary policy operations differed widely among countries in the first half of 1999 compared with the second half of 1998. In Belgium, Ireland and the Netherlands the proportion remained stable, while in most other countries it increased. In Italy the share of BOTs used as collateral in reverse transactions with the Banca d'Italia rose from around 15% in the second half of 1998 to around 30% at the start of Stage Three (first half of 1999). In some other countries, such as Portugal and Finland, the use of short-term securities decreased. In Portugal the use of Treasury bills

26 For a maturity of one year, Italian Treasury bills were issued around 10 basis points above French and around 5 basis points above Spanish Treasury bills. With regard to the three-month maturity, the prevailing yield differential between French and Italian issues reached around 30 basis points at a certain point in time, the Italian paper bearing the highest yield within the euro area.

27 In France, for instance, bid-offer spreads were wider than in 1998 owing to their relative scarcity, as was illustrated by the increasing spreads between Treasury bills and swaps (e.g. the three-month spread between BTF and a swap at a maturity of three months was above 30 basis points).

for collateralisation in monetary policy operations declined from 3% to negligible amounts. In Finland the use of bank CDs decreased from a maximum of 30% of total collateral in Stage Two to around 20% in Stage Three.

It is interesting to note that, in the United Kingdom, government short-term paper, as well as other government securities issued within the euro area and denominated in euro, became eligible for sterling open market operations of the Bank of England as from 31 August 1999.

II The euro bond market

When discussing the impact of the introduction of the euro on the European capital markets in general and, in particular, on the bond market, a first caveat to bear in mind stems from the difficulties involved in disentangling the effects of the introduction of the euro from those of other structural factors for structural change currently affecting the financial markets, such as demographic, technological and regulatory developments. In addition, in the European context the effects of the gradual implementation of the Single Market for financial services are an important factor in explaining ongoing changes. In many respects, the Single Market-related changes interact with the introduction of the euro in a mutually reinforcing process.[28] A second caveat stems from the fact that the time elapsed since the start of Stage Three of EMU is too short for any observation of structural change to be done properly, in particular on account of the difficulties involved in distinguishing short-lived factors affecting market developments and one-off effects of the introduction of the euro from the structural changes which can be expected to remain as a consequence of the new context brought about by the creation of the single currency. While the latter caveat also holds true for the money market developments discussed above, the relatively smaller proximity of the bond market to the immediate impact of the single monetary policy implies that changes in the bond market can be expected to be somewhat slower than those in the money market, and also that more caution is warranted when linking them to the introduction of the euro.

A description of the main effects that the introduction of the euro might have been expected to have a priori in the bond market can be used as a tentative benchmark against which the developments observed since the introduction of the euro can be appraised.

A first grouping of the effects which might have been expected would include two main concepts: first, the appearance of economies of scale stemming from the disappearance of currency and other related barriers; this should be reflected, in particular, in an increased investor base and an increased universe of potential issuers and, second, an increased homogenisation of practices both on the supply side (in the form of innovative competition with regard to issuing techniques and some aspects of secondary market organisation) and on the demand side (affecting the degree of diversification within the euro area). Some more specific effects linked, to a varying extent, to the two effects broadly described above include a greatly increased diversification of investors' portfolios within the euro area, an increase in the number of market participants (issuers) and in the average size of individual issues, increased relative incentives for the issuance of bonds (in fact, of securities in general) compared with bank borrowing, which should lead to a process of securitisation, enhanced opportunities for access to the capital markets by new sectors of the economy formerly absent from it (in particular small and medium-sized enterprises and high-growth corporations), improved secondary market liquidity and more efficient price formation. Virtuous interaction among many of the above-mentioned factors could ultimately be expected to bring about a reduction in the costs of financing, although no attempt is made here to analyse such a development.

Bearing in mind the caveats mentioned above and also the scope of the issues addressed in this Paper, the evidence reflected in this section provides indications that, only a year after the introduction of the euro, there were a number of signs of major changes in the European bond market.[29] In such a short period the European

28 *Some reviews of the implications of EMU for capital markets are Dermine and Hillion (1999), Gros and Lanoo (2000), Bishop (1999), Danthine, Giavazzi and von Thadden (2000), Gros (1998), McCauley and White (1997), Mayer (1999) and Prati and Schinasi (1997). Recent, general discussions on financial systems can be found in Allen and Gale (2000), Demirguc-Kunt and Levine (1999) and Levine (2000). This broader issue is not addressed in this Paper. ECB (2000a) contains a review of developments during the first year of EMU.*

29 *In this context references to the European bond market must be understood as references to the euro-denominated bond market, even if some of the issues discussed may also have affected other European bond markets.*

bond market became significantly larger and more integrated; in particular, the sovereign segment of the market became more homogeneous and signs of increased integration were perceived in other segments; private issuers' activity overtook that of sovereign issuers, which had traditionally dominated the bond market, and signs of innovative competition were observed with regard to issuing techniques. Likewise, in a context of increased competition among issuers, substantial efforts were made to try to improve liquidity conditions and, thereby, the attractiveness of individual issues for a much broader investor base. As a result of such developments, signs of improved liquidity were also perceived. With regard to international bond issuance, during its first year of existence the euro slightly overtook the US dollar as the denomination currency.[30]

Overall, the euro area bond market is starting to become an important source of finance for the private sector and, in particular, for corporations, thus complementing the increasing role of the short-term securities market in this same respect. A larger number of firms have access to the market owing to the increased willingness of investors to buy paper with lower ratings, while innovations in issuing and trading are improving liquidity.

As regards the technical aspects of the transition to EMU, such as the re-denomination and re-conventioning of bonds denominated in the euro legacy currencies into euro-denominated bonds, it worked smoothly and was hardly seen as an issue by market participants.[31]

This section analyses the major changes which occurred in the euro bond markets in 1999. It is based on the analysis of several data sources, as well as on an ESCB market survey, which was mainly of a qualitative nature, on the changes brought about by the introduction of the euro.[32] While it is difficult to make a distinction between those changes which were mainly demand-driven and those which were primarily supply-driven, for methodological reasons the description provided below starts with a discussion of developments affecting investors' demand and follows with a discussion from a supply-side perspective. Thereafter developments in secondary markets, in derivatives markets and those affecting market participants are briefly addressed.

II.1 The demand side: developments in investment behaviour

Traditionally, fixed income European investors have shown a strong home bias, i.e. a tendency to keep international diversification below optimal levels, a pattern also found at a more general, global level. Such behaviour constitutes the so-called home-bias puzzle and has never been explained, from a theoretical point of view, in a fully satisfactory way, in the sense that the magnitude of such a bias seems to reflect a departure from economic rationality on the part of investors.[33] The discussion here focuses on the European experience since the start of EMU with regard to both geographical diversification and diversification into new financial instruments, which is also partly related to EMU. The lack of data on portfolio diversification, however, does not allow any quantitative estimate to be provided on the degree of diversification reached so far. Yet, with the caveats derived from the lack of quantitative information,[34] the evidence reflected in this chapter could be interpreted as an indication of the relevance of the existing barriers (including exchange

30 See Detcken and Hartmann (2000) for a discussion on the international role of the euro and, in particular, its role as the denominator of securities.

31 The only exception to such rule are the few remaining issues denominated in euro legacy currencies, for which liquidity decreased.

32 See Annex 2 for more details.

33 See French and Poterba (1991) and Tesar and Werner (1992); for a discussion of the effects of EMU on portfolio management, see Brookes (1999).

34 The source on which the discussion is based here is the qualitative information obtained through the ESCB market survey described in Annex 2. The coverage of the survey was broad enough to ensure that the answers did indeed reflect the bulk of ongoing developments. While not precise in quantitative terms (in some cases some estimates were provided by institutional investors), the survey clearly indicated that the diversifcation process prompted by the introduction of the euro was very significant.

rate risk and others) to diversification: the removal of the exchange rate risk within the euro area together with other associated institutional changes were reflected in an intensive diversification process during the first year of EMU.[35] The "frictional costs" and information imperfections are at the core of the explanations traditionally invoked for the investors' home bias. More specifically, relevant factors might include the existence of legal and institutional impediments to international diversification, such as currency matching rules (i.e. rules limiting the currency risk exposure incurred by investors), familiarity with the domestic market, a heavy reliance on domestic counterparties and insufficient expertise for large-scale, cross-border investments, or existing accounting conventions (see Section II.1.1.5).

Since the mid-1990s a tendency to diversify and internationalise has been observed among European institutional investors. To some extent such a tendency was also observed in non-European countries, in the wake of generalised financial liberalisation since the 1980s. Prior to Stage Three of EMU fixed income funds' managers tried to exploit intra-European interest rate differentials and exchange rate fluctuations.[36] However, the portfolio diversification resulting from EMU-related flows was still limited and was largely confined to government bonds.

It was only after the final decision on the adoption of the single currency, in mid-1998, that intra-European currency risk ceased to affect transactions among currencies prospectively merging into the euro. From that moment, a clear trend towards the geographical diversification of institutional portfolios into assets issued in prospective euro area countries was observed. As a consequence, yields experienced a quick and substantial convergence. While the diversification process under way in the euro area is primarily geographical, it is also affecting the distribution of investment among the various asset classes. A clear shift from government bonds into all sorts of "credits" (i.e. securities other than government bonds, such as corporate bonds), asset-backed and mortgage-backed securities such as Pfandbriefe (i.e. German mortgage bonds), structured products and even "junk" (high-yield) bonds is being observed.

The ongoing portfolio diversification in the euro area is discussed in this section, focusing on the geographical diversification of government bond portfolios, the shift into new asset classes and the change in benchmark indices. Remaining impediments to diversification are also briefly described.

II.1.1 Investment diversification

II.1.1.1 Geographical diversification within the euro area

Following the removal of the exchange rate barrier within the euro area, in the course of 1999 the strategic focus of investors shifted and this brought about a substantial reallocation of portfolios. However, the impression was that the diversification process prompted by the introduction of the euro was far from complete after the first year of Monetary Union. With regard to the diversification of investment in government bonds, a factor which may have slowed the process somewhat is the limited incentive for diversification implied by the reduction in the spreads among the various euro area government bonds. As a consequence, and considering transaction costs, some investors seem to have followed a pattern of "passive diversification", confining it to the reinvestment of coupons, redemptions and new cash flows.

35 *The adequacy of the term "diversification" in this context could be challenged on the grounds that the exchange rate risk faced by euro area investors has ceased to exist for euro-denominated financial transactions, and cross-border investment should just be referred to as such. However, the usual terminology is preferred here since "diversification" may refer to factors other than the currency denomination.*

36 *In particular, the "convergence plays" among EU countries' government bonds, i.e. market transactions induced by expectations related to the prospects for accession of individual EU countries to EMU, became common in the years prior to EMU.*

As a rule, institutional investors in smaller countries diversified more quickly than did investors in larger countries, mainly because the incentives for diversification are potentially bigger for investors with a relatively reduced choice of domestic assets. On the other hand, the fact that, since the start of EMU, liquidity has become the main differentiating feature among government bonds, together with credit risk, has put larger countries in a privileged position as recipients of investment reallocated in the wake of EMU (see Box 1). In some cases, the limited liquidity prevailing in the smaller government debt markets was not offset by the yield differentials. As a consequence, many investors tended to concentrate their holdings in larger and more liquid euro area government bond markets.[37]

37 *From the technical standpoint, i.e. that of the benchmark indices used by portfolio managers, such an approach is facilitated given the degree of freedom around the benchmarks (measured in terms of tracking error) and the high correlations between euro area government bonds (see Section II.1.1.5 and Box 2).*

Box 1

Liquidity premia and specialness of government bonds

When looking at the European government bond market, spread variations along the yield curves can be explained by one major factor besides the difference in creditworthiness: liquidity. The most common definition of "liquidity" refers to the extent to which market participants are able to conduct sufficiently large transactions without producing major price movements, and tends to be reflected in tight bid-offer spreads and the absence of price gapping. In the bond market, the liquidity of issues depends on matters such as issue size, age (recent issues tend to be more actively traded) and secondary market making commitments. In any case, liquidity is to a large extent a "self-fulfilling process". This is because certain bonds are liquid as a result of the market expectation of their being liquid, which attracts buyers and sellers, minimises transaction costs and generates high turnover.

Liquidity enables traders and investors to manage portfolios actively or to hedge positions at the lowest possible cost. The market preference for liquidity can be priced and translates into a liquidity premium for liquid bonds, i.e. investors accept a lower yield when investing in a liquid instrument. Volatility and market expectations tend to drive liquidity preferences.

Another factor that can cause bonds to be expensive is their deliverability into futures contracts. CTDs (cheapest to deliver in a futures contract) in particular can have significantly lower yields in relation to the yield curve. Normally, this tends to be reflected in the repo market: market participants are willing to lend money at lower than money market rates if they receive the CTD bond as collateral. In this case the bond is said to be "special in repo". Repo specialness is not necessarily confined to CTDs. Other bonds that trade at a premium, such as non-CTD deliverables and recent liquid bonds which traders can sell short in order to hedge positions, can be special in repo. The repo market, therefore, can be seen as a link between liquid and less liquid bonds.

The importance of liquidity as a driver of yield differentials in government bond markets is partly the consequence of the integration of these markets, but more temporary factors, such as the 1998 liquidity crisis and Year 2000 considerations, can also occasionally play a role. Furthermore, as investors diversify into other (usually less liquid) credit classes, while overall wanting to maintain a reasonably liquid portfolio, the liquidity preference translates disproportionately into the government bond markets.

Looking forward, it is expected that liquidity will gain greater importance as the main driver of yield differentials in the euro area. Indeed, it is thought that the euro area bond market will increasingly resemble the US Treasury market, with a clear difference between on-the-run and off-the-run bonds. In explaining yield differences on the euro area yield curve, liquidity, benchmark and CTD premia are already more important than credit risk.

As regards diversification into corporate bonds, this seemed to be somewhat slowed by the costs associated with credit risk analysis and by the need on the part of investors to reconsider their strategies. In particular, the size of small and medium-sized investors' portfolios may not be sufficient to compensate for the costs of internal credit risk management (i.e. hiring and training credit specialists and implementing technology). As a consequence, many have chosen to participate in institutional credit funds (often offered by the larger investors).

The persistence of liquidity and credit differences among sovereign bonds in the euro area results in a non-unique government bond yield curve. In this respect, the European bond market still differs from fully integrated markets. German and French bonds are broadly seen by market participants as the main components of the yield curve for euro-denominated bonds. German bonds are seen as the benchmark for the two-year and ten-year sectors of the curve, while French bonds are considered to be the benchmark for the intermediate sector and for maturities of over ten years.[38]

II.1.1.2 Diversification into other asset classes

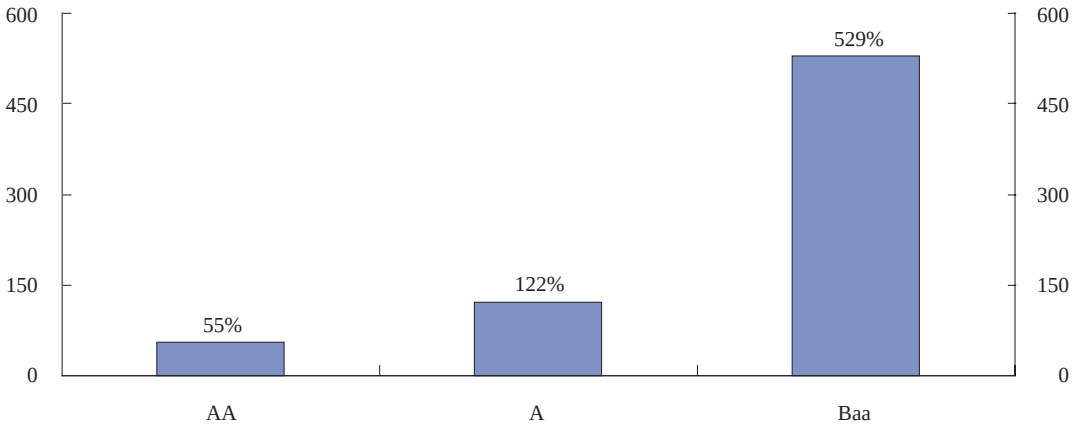
While the introduction of the euro broadened the concept of "domestic" market faced by individual euro area investors, it also forced portfolio managers to change their asset allocation strategies. In order to outperform their benchmarks, for investment within the euro area, portfolio managers must now essentially focus on the management of credit risk and yield curve risk (i.e. the risk linked to the positioning through the various segments of the yield curve). Such developments, together with the low interest rates and the tight spreads for triple A and agency bonds (i.e. bonds issued by public institutions other than central government) prevailing at the start of EMU, prompted investors to diversify into a wider range of corporate bonds, encompassing relatively low-rated bonds. While the demand for AA and A-rated bonds grew substantially in 1999 (reflected in issuance growth of around 100% compared with 1998), the

38 The heterogeneous fiscal treatment of the various bonds also creates difficulties. Some price distortions are reported as being related to large (tax-induced) domestic holdings of the bonds involved.

Chart 11

Increase in euro area issuance: breakdown by issuer rating

(percentage increase in issuance in 1999 compared with the 1996-98 average)



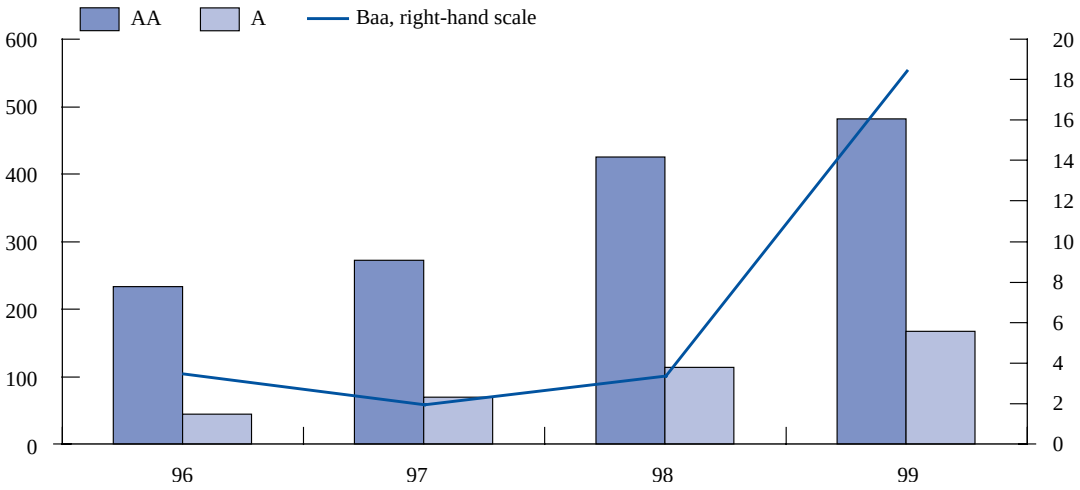
Source: Capital Data Bondware, 2000. Includes all international and domestic issues, apart from auctioned domestic government debt.

Note: Data up to 1998 refer to euro legacy currencies and ECU-denominated issues; in 1999, euro-denominated issues. All issue amounts are provided in USD millions in order to give consistent comparisons.

Chart 12

EMU-11 bond issuance 1996-99 in euro, by rating

(USD millions)



Source: Capital Data Bondware, 2000.

Note: Data up to 1998 refer to euro legacy currencies and ECU-denominated issues; in 1999, euro-denominated issues. All issue amounts are provided in USD millions in order to give consistent comparisons.

issuance of Baa-rated bonds grew by much more (around 500% during the year, see Charts 11 and 12 and the next section on issuing activity), albeit from very low levels. Decisions to resort to diversification along the maturity spectrum were also observed.

The development of new investment strategies along the lines described above also had consequences for the internal organisation of investors. Many of them have reinforced, or have initiated, credit research. Some of them have decided to outsource the management of credit risk, confining their in-house operations to interest rate risk management.

II.1.1.3 Changes in the use of indices

The process of strategic repositioning of investment portfolios in the wake of the introduction of the euro has clearly been reflected in the change in the indices that investors use as a benchmark (see Box 2). By the beginning of 1999 most investors in the euro area had replaced the widely used national bond market indices with European indices. However, both the speed of implementation of the new benchmarks and the way in which they were constructed differ greatly.

The concept of a "euro benchmark" is usually understood by investors in a broad sense. In such a context, "Europe" is often not seen as being a synonym for the euro area, and wider definitions including EU non-euro area countries (Greece, Denmark, Sweden and the United Kingdom) and sometimes other countries (i.e. EU accession countries) are common. Moreover, not all investors follow the standard indices; most of them adjust the indices to accommodate individual preferences. Some investors feel uncomfortable with indices which are too wide, as they prove to be difficult to replicate and track. In such cases the benchmarks can have a strong home bias or be based on the national indices of the larger EU countries.

II.1.1.4 Remaining impediments to diversification and integration

Despite the substantial progress observed during the first year of EMU, the integration of the European capital markets is far from complete. While the integration process and the increased diversification trend are, in any

Box 2

Index use

In order to assess returns on investments, investors, portfolio managers and risk managers must take into account the risks incurred. For a bond market investment, such risks include interest rate risk, credit risk, liquidity risk and – for an international portfolio – currency risk. Both investment decisions and performance evaluations are usually seen in the light of the risk taken on. Therefore, some neutral yardstick, or benchmark, able to reflect strategic investment decisions is required. This is the role of indices.

An index is a hypothetical portfolio of securities that closely matches the risks an investor accepts or is willing to take. The degree of freedom for the actual management of the portfolio is usually defined in terms of "tracking error" (a measure of the maximum allowed deviation of the value of the portfolio) vis-à-vis the benchmark portfolio. To be useful as a benchmark, an index must be well diversified over all the relevant risk factors. Moreover, the index should consist of sufficiently liquid bonds in order to enable a performance evaluation frequently marked-to-market (i.e. adjusted to market prices).

Traditionally, the American investment banks have dominated the production of bond indices. Since the start of EMU, constructing a good index for a European bond portfolio including "credits" has been a major challenge given the temporary gap existing between an increased demand for diversification and a still limited supply of corporate bonds. The completeness of the index (i.e. the width of its coverage of various asset classes) has to be balanced against its liquidity (which, given the still limited development of the euro area secondary bond markets, can be very limited in some asset classes, thus causing the index to be less useful as a pricing reference if these are included).

event, structural processes which are likely to take time, the existence of institutional or legal barriers to them within the euro area is also a factor behind its relative slowness. In this regard, the following factors are the most relevant:

- With regard to the legal impediments, the lack of clarity and uniformity in bankruptcy laws is often mentioned, which, in particular, might hinder diversification into the high-yield bond market.

- Certain tax regulations have to be taken into account in considering further internationalisation. Withholding tax is mentioned most frequently in this respect.

- Accounting conventions: integration can be slowed down by the accounting treatment of institutional investors' profits; in a low-yield environment diversification would require investors to sell above par bonds, thereby boosting accounting profits for some insurance companies (and bringing taxes forward). While the incidence of such a factor depends on market circumstances, it is seen as an additional reason for investors to take a gradual approach towards investment in foreign bonds.

- Fragmentation of European settlement systems is seen as a factor limiting integration and portfolio diversification, even though it affects trading more than institutional investment (see Section III).

Overall, the trend of increased internationalisation and diversification of portfolios in the euro area is expected to continue. First, it is likely that remaining impediments will gradually be overcome. Second, in the current low-yield environment and in the absence of exchange rate risk within the euro area, investors are willing to invest in instruments with a higher risk and return and this greater demand should increasingly be met by the corporate sector in the coming years, also on account of the expected decrease in

government debt issuance (see Section II.2). Finally, the need for European savers to prepare for their increasing future pension needs will also contribute to boosting securities demand in the euro area. Nevertheless, even taking all these factors into account, it might take years for the corporate capital market in Europe to be comparable with its US equivalent.

II.2 The supply side: developments affecting issuer behaviour

The integration of national capital markets has significantly increased the competition among issuers. Owing to the shift, as illustrated above, in investors' focus from their respective national bond markets to a wider range of bonds, both sovereign and private issuers – in particular smaller ones – have to focus on a broader investor base when defining their strategies. At the same time, they are increasingly competing with one another. While in some respects the forces for change and increased competition are common to both the government and the corporate bond segments, their starting-point was rather different: whereas the national government bond markets were already rather developed prior to EMU, European corporate bond markets were largely underdeveloped. The main trends observed in the structure of supply in the euro area bond markets are described below.

All in all, the impact of EMU on the euro area bond market on both the demand side (as discussed above) and the supply side (as discussed below) was reflected in a substantial increase in the total issuance of euro-denominated bonds, which grew by 38%, and in particular of corporate bonds (see Charts 13 and 16).[39]

II.2.1 Government bonds

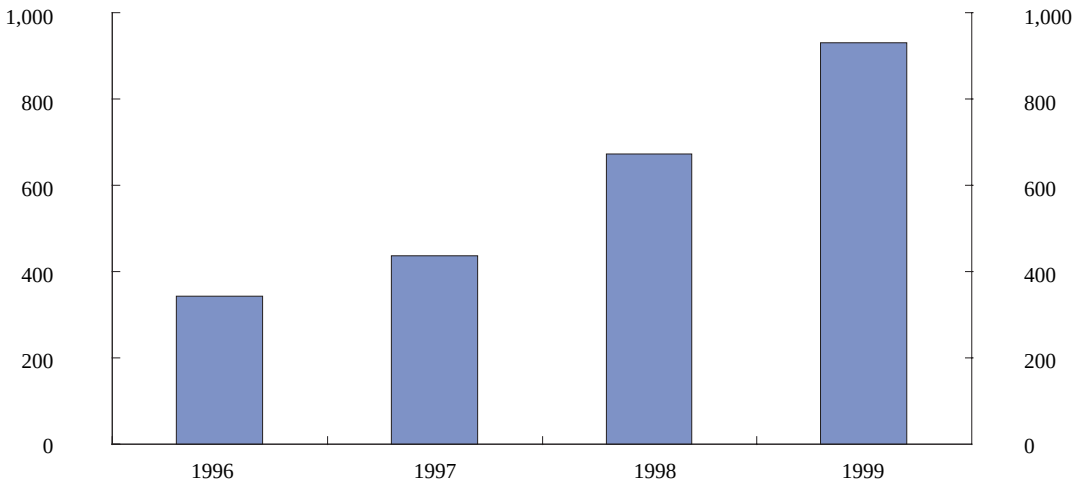
In general, sovereign bond issuers in the euro area have benefited from the ongoing integration of national capital markets.

39 Data in charts 13, 16 and 17 are taken from Capital Data Bondware, and when analysing them it should be kept in mind that they do not include the bulk of government bonds, which form the major part of the euro area bond market (around 60%). The rate of issuance growth in 1998 was bigger than that in 1999, as reflected in Chart 13. However, the major increase took place in 1999 as regards corporate issuance (269% growth compared with 30% in 1998).

Chart 13

Bond issuance in 1996-99 in euro and euro legacy currencies

(USD billions)



Source: Capital Data Bondware, 1999. It includes all international and domestic issues apart from auctioned domestic government debt.

Note: Data up to 1998 refer to euro legacy currencies and ECU-denominated issues; in 1999, euro-denominated issues. All issue amounts are provided in USD millions in order to give consistent comparisons with previous years.

Following the introduction of the euro, currency-related risk premia have vanished and, as a result, funding costs have been reduced, albeit to a varying extent, for the various euro area sovereign issuers. Yield differentials among the euro area government bonds have converged markedly since the May 1998 pre-announcement of the irrevocable fixing of the parities of the prospective euro area currencies. Since then, they have usually remained below 30 basis points, whereas in the past spreads in excess of 100 basis points had been common. Furthermore, the prospect of a relative scarcity of government bonds – as a result of the Stability and Growth Pact and the related decrease in overall supply and the likely increase in corporate issuance – contributed to driving government bond yields down in relation to other asset classes, thereby further reducing funding costs for governments.

The fact that, since the start of Monetary Union, the various euro area national Treasuries have to a large extent been competing to access a common investor base has been reflected in the introduction of a number of changes in their issuing frameworks, in order for them to be able to cope with the new situation and, ultimately, attract funds in the best possible conditions. As mentioned in the previous section, investors increasingly focus on liquidity, and competition for the benchmark status has become increasingly important. This context has mostly benefited the larger sovereign issuers. As a consequence, the pressure for increased competitiveness has increased for smaller issuers. In this context of increased competition, a significant harmonisation of issuing practices has emerged, leading to convergence in the direction of best practices. The main changes observed in sovereign issuing practices since the start of Monetary Union can be summarised as follows:[40]

- Issue sizes have become bigger. A nominal amount of €5 billion per issue seems to be a minimum and benchmark issues tend to be tapped until their total issue size is around €20 billion.

- Sovereign issuers focus increasingly on a policy aimed at creating discrete benchmark issues, especially in cases where the total amount of government debt is too small to ensure sufficient liquidity through the whole yield curve. The focus is usually on specific market segments, i.e. a pre-commitment to issue only large liquid issues at, for example, three, ten and 30-year maturities. The most prominent example of a benchmark policy within the euro area is Ireland, which has totally restructured its outstanding debt into a few liquid benchmark issues. Other countries, such as Spain and the Netherlands, have also introduced programmes to exchange old illiquid bonds for new benchmark bonds.

- Generally, sovereign issuers have improved market transparency. Efforts in this area include a trend towards the introduction of pre-announced auction calendars with a varying degree of detail and commitment.

- A number of governments have also changed their issuance procedures in order to attract more investors. There is a clear trend towards an increased use of primary dealers (see Box 3), although some of the smaller issuers have also resorted to syndication procedures in order to reach a larger set of investors.

- Governments are also trying to to find ways in which to enhance the secondary market liquidity of their bonds other than through primary dealerships. Most important in this respect is the promotion of new liquidity-enhancing technology. Some governments have been very keen to see the establishment of trading systems such as EuroMTS (see Section III) and the introduction of their bonds in these systems. While such initiatives can be expected to increase liquidity, available

40 For a discussion of the effects of EMU on sovereign issuers see Favero, Missale and Piga (2000). Bishop (1999-2000) provides a complete discussion of bond market developments in the euro area, including both government and corporate bonds.

Box 3

Primary dealership

Primary dealership systems for government bonds currently exist, in several varieties, in all the euro area countries, with the exception of Luxembourg. In most of these countries primary dealers have been in place for many years, their creation usually being associated with the modernisation of the local financial market structures and debt issuance procedures. Only in the Netherlands was a system of primary dealers introduced in order to address specifically the changes triggered by the euro.

The reason for establishing a primary dealership system or for updating an existing one can be twofold.

Sovereign governments want to secure a smooth and diversified placement of their debt. As a consequence, special emphasis has been placed on the internationalisation of this placement. This movement has taken two different forms: on the one hand, some issuers have opened their primary dealership system to non-resident intermediaries, putting them on an equal footing with domestic participants. On the other hand, countries such as France and Belgium have created, in addition to the status of primary dealer, a specific group of market participants devoted to promoting the sale of public debt on foreign markets.

Primary dealerships usually entail market-making commitments for banks in the group. Sovereign issuers make use of these provisions to enhance secondary market liquidity.

Even if they are based on a similar philosophy, the various primary dealership schemes appear to be quite different in their practicalities. For instance, in Germany the commitments of the members of the "Bund Issues Auction Group", which replaced the former Federal Bond Consortium at the beginning of 1998, refer only to an adequate participation in the auction, while in most other countries this commitment is complemented by some benefits (a monopoly on stripping activity, for instance, in France, the Netherlands, Belgium and Spain) and requirements on the secondary market (quotations for clients, and market-making for other intermediaries in France, Belgium, the Netherlands, Spain, Portugal, Finland, Italy and Ireland).

The extent to which a primary dealership system contributes to bond market integration depends largely on the composition of the group of dealers. In this respect, the trend is towards wider international representation. Too much emphasis on domestic houses might be perceived by the market as being a protectionist measure rather than with an attempt to reach a wider investor base.

indicators of secondary market activity in the first half of 1999 do not generally show a significant change compared with the second half of 1998; in some countries turnover increased slightly, while in others it seems to have diminished somewhat; no clear modifications seem to be in place regarding bid-ask spreads. The standard deal size seems, however, to have grown in a number of cases.

- Finally, governments can try to focus on particular investor needs in order to carve out a market niche by concentrating on innovation. The French and Spanish Treasuries seem to have been those initially most active in this field, by providing the market with constant maturity and inflation protected alternatives in addition to their ordinary bonds.[41]

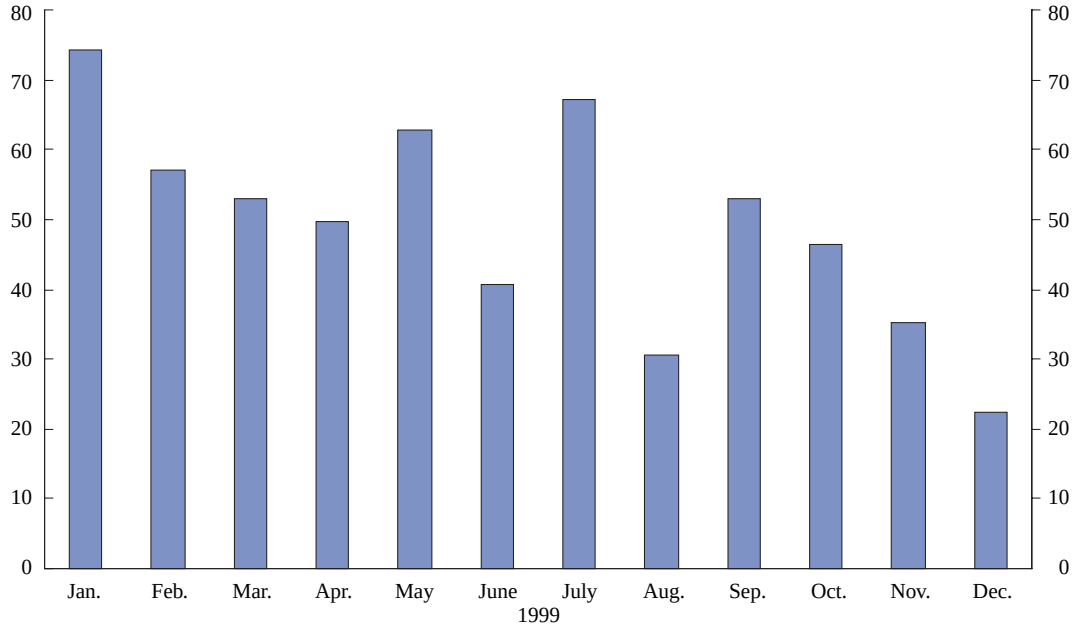
The amount outstanding of government bonds increased slightly in the course of 1999, in spite of decreasing gross issuance during the year. The decreased issuance in 1999 (see Chart 14) was the result of a number of factors, notably, on the one hand, the reduced borrowing needs caused by the globally improved fiscal situation

41 Constant maturity bonds have a coupon that is periodically reset to the prevailing ten-year bond yield, for example.

Chart 14

Government bonds in the euro area: gross issuance in 1999

(EUR billions)



Source: ECB.

and, on the other, an increased preference for longer maturities, in a context of low long-term interest rates, which was also reflected in the reduced issuance of Treasury bills, as discussed above. In addition, some concentration of issuance in the first few months of the year ("frontloading") was observed, which can be explained by the competition between sovereign issuers for benchmark status during the first few months of Monetary Union. All in all, the size of the euro area government bond market increased slightly in the course of 1999 (see Chart 15).

Issuance by non-euro area sovereign issuers in the euro bond market was limited in 1999, as swapping the proceeds into domestic currency was not attractive at the prevailing swap levels.

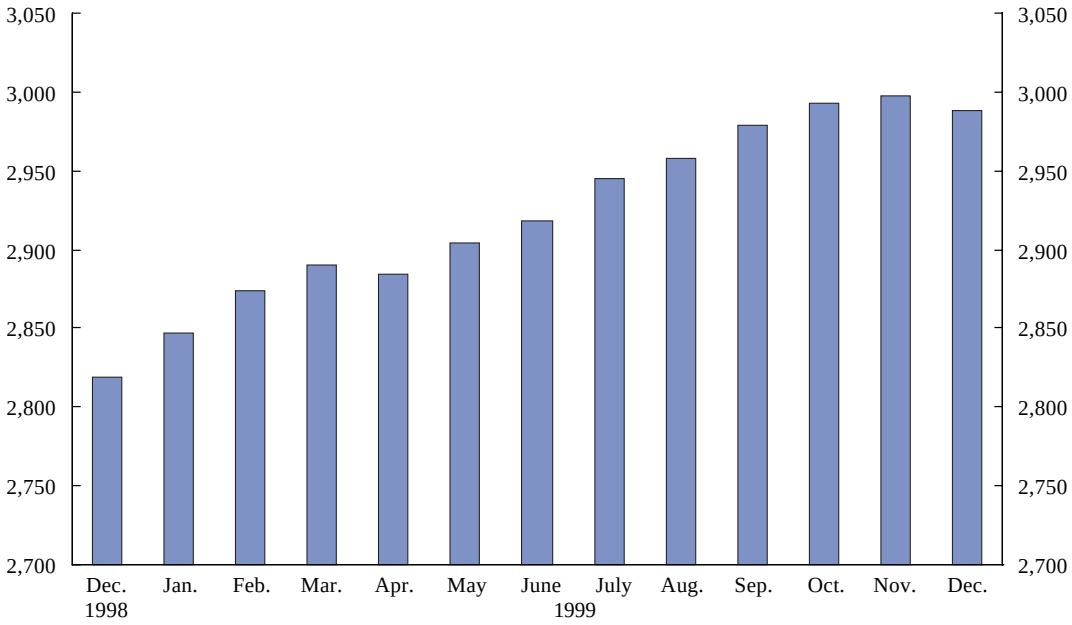
II.2.2 Supranational and government agency issues

Supranational issuers had traditionally enjoyed a privileged position in Europe prior to EMU owing to the combination of their size and their high rating, which allowed them to offer a constant (i.e. equal credit quality) benchmark across different currency bond markets. The improvements in the situation faced by other highly rated euro area issuers (sovereign or corporate ones), as brought about by the changes in investor behaviour described above, have been reflected in a worsening, in relative terms, of the situation faced by supranational issuers, which now face increased competition. Like sovereign borrowers, since the start of EMU supranational issuers have therefore been trying to make their bonds more attractive by increasing the issue sizes, providing benchmarks and enhancing secondary market liquidity. Despite such efforts, supranational issuers seem to have lost some ground in the European bond markets during the first year of Monetary Union. Issuance targets were increasingly hard to meet at the terms supranationals had been accustomed to and their bonds tended to trade at higher yields in the secondary markets. As a consequence, total euro-denominated issuance during the year stood 35% lower than the average of the previous three years (see Chart 16).

Chart 15

Outstanding amount of government bonds in the euro area

(EUR billions)



Source: ECB.

The impact of the introduction of the euro on securities issuers such as government agencies and local governments during the first year was not unambiguous. On the one hand, like other euro area issuers, such institutions enjoyed a wider investor base; on the other, they faced increased competition between one another and with sovereign issuers. Such competition may not be easy for such institutions in terms of the size of issues. However, they also tried to improve liquidity conditions by means of larger issues. All in all, global issuance during the year was similar to that in the previous three years (see Chart 16).

II.2.3 Corporate bonds

Although the amount outstanding of privately issued bonds in the euro area is still relatively modest compared with that in the United States, the issuance of corporate bonds increased markedly in 1999 (see Chart 16). A number of mutually reinforcing factors, both demand and supply-driven, were behind this development. The former have already been discussed above; on the supply side the following could be mentioned:

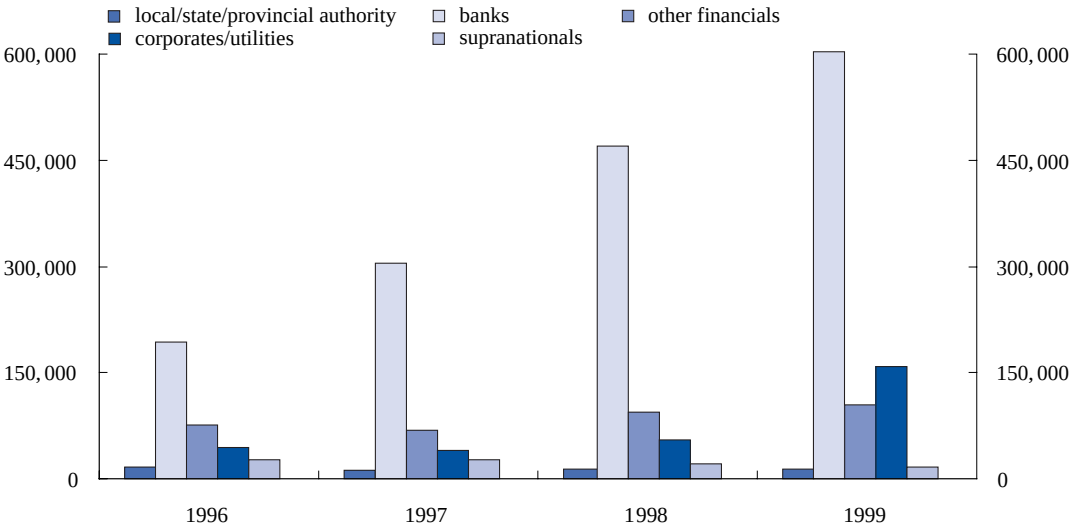
- As a consequence of the further development of European capital markets, corporations – those with a good credit rating, in particular – have increasingly been exploring the opportunities for direct financing, looking for better funding conditions. This was facilitated, in some cases, by the fact that the credit ratings of a number of corporate issuers are better than those of their banks.

- Increased financing needs also seem to have been a factor in the growth of corporate issuance. To a large extent, in 1999 these were related to an intensive process of consolidation under way in the European corporate sector, partly as a consequence of EMU. Increased merger and acquisition activity usually coincides with increased financing needs.

Chart 16

Euro-denominated issuance by issuers other than central governments in euro and euro legacy currencies; global, domestic or foreign markets; volume of gross issuance

(USD billions)



Source: Capital Data Bondware, 1999. Includes all international and domestic issues apart from auctioned domestic government debt.
Note: Data up to 1998 refer to euro legacy currencies and ECU-denominated issues; in 1999, euro-denominated issues. All issue amounts are provided in USD millions in order to give consistent comparisons with previous years .

- The context of EMU-related increased competition in the European business sector seems to have prompted corporate managers to focus more on their financial structure and optimal financial leverage, which might have reinforced the disintermediation trend highlighted above.

- Corporate issuance tends to be facilitated by banks. The increased focus on shareholder value by corporate managers, new BIS regulations on bank capital, and stronger competition in the European financial sector prompted banks to use their balance sheets more efficiently, in order to increase their return on equity. As a consequence, banks are increasingly facilitating direct access by corporations to the capital markets (i.e. by lead-managing bond issues). This disintermediation trend was also reflected in the substantially increased issuance programmes of financial institutions (see Chart 16).[42]

- The new dimension of the market was also reflected in the fact that the average size of corporate issues approximately doubled in the euro area in 1999 compared with the previous three years (see Chart 17).

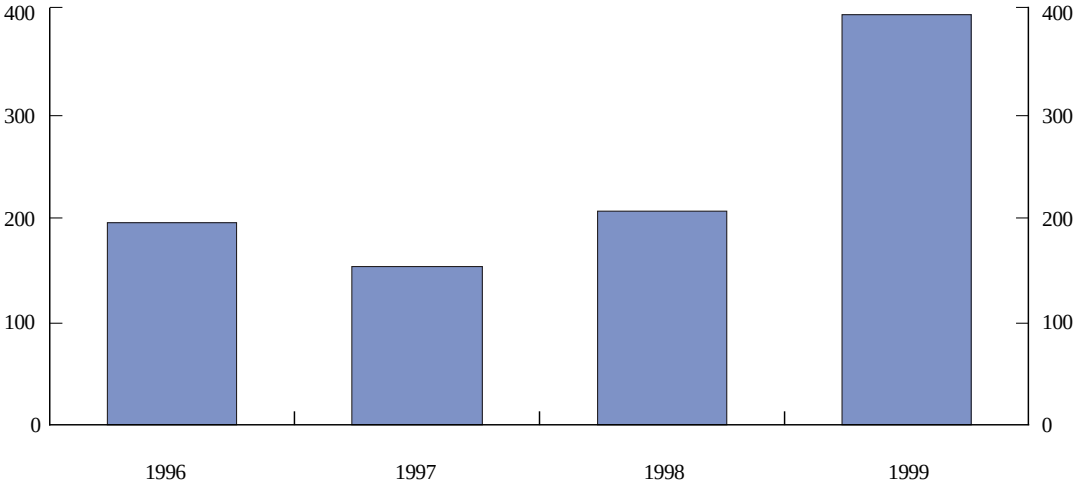
During 1999 the amount outstanding of euro-denominated bonds issued by non-euro area residents grew by 39%, while that issued by euro area residents grew by 8% according to ECB data.[43]

Despite the significant growth observed in the euro area bond market during 1999, it should be noted that some market segments remain underdeveloped, particularly those for lower credit rated and unrated debt. Relatively few euro area corporations have a credit rating, and this is a factor currently restricting their access to the bond market. Market participants foresee that corporates

42 *An in-depth analysis of such a trend, however, which is not intended here, should compare these developments with trends in bank lending activity, which also showed rapid growth in 1999 and early 2000.*
43 *See Molinas and Woodworth (2000) for a discussion of this and other developments in the euro bond market.*

Chart 17

Average size of corporate bond issues denominated in euro and euro legacy currencies



Source: Capital Data Bondware, 1999. Includes all international and domest ic issues apart from auctioned bonds.
Note: Data up to 1998 refer to euro legacy currencies and ECU-denominated issues; in 1999, euro-denominated issues. All issue amounts are provided in USD millions in order to give consistent comparisons with previous years.

will increasingly be inclined to apply for ratings. Another sign of the limited development of the European credit market is the fact that price information is still poor. Trading is thought to be hampered by opaque prices in some markets and institutional investors sometimes have difficulty in finding reliable prices for marked-to-market valuations of their credit portfolios.

Notwithstanding the substantial progress already achieved in the first year of EMU, by comparison with the US corporate bond market that of the euro area is still behind regarding liquidity and market completeness. The size of the European corporate bond market, as measured by the market value of outstanding issues, is also small in comparison the US market (an estimated €700 billion in Europe compared with €3,500 billion in the United States). This being said, the volume of new corporate issuance in the euro area in 1999 brought it closer to its US counterpart. A comparison relating to international corporate bonds (i.e. excluding domestic bonds for which issuance statistics are difficult to compare on a consistent basis) shows that euro-denominated issuance in 1999 was approximately 28% higher than US dollar denominated issuance.

II.2.4 Asset-backed and structured products

The increased focus of banks on their balance sheet use and on the achievement of a high return on equity not only gave rise to increased corporate bond issuance, but also gave a major impetus to the asset-backed markets in the euro area. Such a form of securitisation was fostered by an increased appetite for new products among investors looking for higher returns.

Mortgage portfolios are the main category of bank assets demanded by investors. The degree of market development for such assets widely varies among euro area countries. The most developed market is the German "Pfandbriefe" market. In particular, acceptance of the highly liquid Jumbo-Pfandbriefe market is well established among investors. Since the start of EMU, total Jumbo issuance has roughly doubled; a substantial share of the amount outstanding was held

outside Germany. This success can be attributed to the combination of large issue sizes and an efficient system of market making. Following the German example, other countries (i.e. France and Spain) set up similar mortgage-backed markets. Nevertheless, the asset pools backing mortgage portfolios are not homogeneous, owing to differences in the legal frameworks governing the various national mortgage and housing markets. For a pan-European market to develop, these legal obstacles should be overcome.

II.3 Developments in secondary markets

While liquidity is usually a key factor in the functioning of all markets, it is more visible for the euro area bond markets, given the disappearance, or significant reduction, of other sources of differentiation among highly rated euro area securities from an investor perspective (see also Box 1). Liquidity tends to be increasingly concentrated in benchmark issues, resulting in higher spreads between on-the-run and off-the-run issues. In some market segments, especially credits and the off-the-run small-sized bonds of some countries, liquidity diminished compared with Stage Two of EMU. All in all, the euro bond market has a long way to go before its secondary market activity will be comparable with that prevailing in the United States. Factors explaining this situation are similar to those referred to above with regard to primary market activity, such as the non-homogeneity of sovereign issuance in Europe (no single issuance calendar; differing procedures) or the fact that the markets for less creditworthy non-government bonds are relatively underdeveloped.

While the information sources available regarding activity in the secondary markets for bonds are rather limited, available indicators suggest that the secondary market for government securities generally functioned smoothly during 1999, and experienced an increase in the nominal size of orders. Most market participants suggest that formerly standard DEM 20 million to DEM 50 million deals were replaced with EUR 20 million to EUR 50 million standard deals. Bid-ask spreads were usually seen as little changed compared with those prevailing prior to EMU. However, those prevailing for benchmark issues (owing to their cheapest-to-deliver status or their listing on EuroMTS) seem to have narrowed markedly.

In the corporate market, the size of issues has clearly increased (by two to three times), which, together with a generally broader investor base for the securities, has contributed to bringing increased liquidity to the secondary market. The average size of customer transactions has also nearly doubled, while bid-ask spreads have narrowed, thanks to the presence of more market-makers. However, overall secondary market activity has remained uneven and limited.

II.4 Bond-related derivatives markets

II.4.1 Futures

The trading volumes of euro-denominated bond futures have increased dramatically since the beginning of 1999, indicating a high level of turnover in euro-denominated bond markets. While short-term interest rate futures were dominated by contracts on LIFFE, in the course of 1999 liquidity for bond futures was almost exclusively centred on the German Bund contracts of the German/Swiss derivatives exchange, Eurex. The Bund future is widely used as a hedging vehicle for all euro-denominated issuance owing to the liquidity it offers to investors and intermediaries, as a consequence of which Bund futures are often the cheapest available means of hedging.[44] The basis risk entailed in this type of hedge was well accepted by investors.

44 This situation was starting to change, however, at the beginning of 2000, as turnover in the MATIF ten-year "Notionnel" contract grew substantially; the often argued technical superiority of that contract might be the explanation.

It is interesting to note that, compared with the joint volumes traded on the US ten-year and the long bond contracts (i.e. the relevant comparison for the US futures market) the turnover in the Bund contract was bigger throughout 1999: the trading volume of the Bund contract was steadily above the sum of the two US contracts (see Chart 18).

As regards other new euro exchange-traded instruments, such as multi-issuer contracts, new lower notional coupon LIFFE contracts, or swap-based futures, these did not succeed, in the course of 1999, in generating a "critical mass" able to attract investors and traders and generate substantial liquidity. There may be different reasons for the lack of liquidity. Some financial intermediaries hold the view that multi-issuer contracts, which were launched by competing exchanges, will not work. The cheapest-to-deliver bond of such a contract is likely to be either the least liquid or the worst rated bond included in the basket, which would make it less attractive than the Bund future contract. While a reduction in the notional coupon aimed at updating its level is in principle seen as an appropriate step, it will not improve the attractiveness of a future unless the contract is liquid enough. LIFFE did change the notional coupon of its Bund future to market levels. However, it did not seem to modify the relative share of activity with respect to Eurex, which maintained its notional coupon at 6%. The success of other efforts by LIFFE to launch a swap-based contract seemed to be limited by the fact that the swap community showed little interest in providing liquidity in the future at the expense of giving up the lucrative bid-offer margins. In any case, a kind of "vicious circle" is always at stake when it comes to market liquidity: market participants are reluctant to participate in a market because of the absence of liquidity, and this in turn exacerbates the illiquidity, while the opposite happens as soon as one or other factor turns the vicious circle into a virtuous circle.

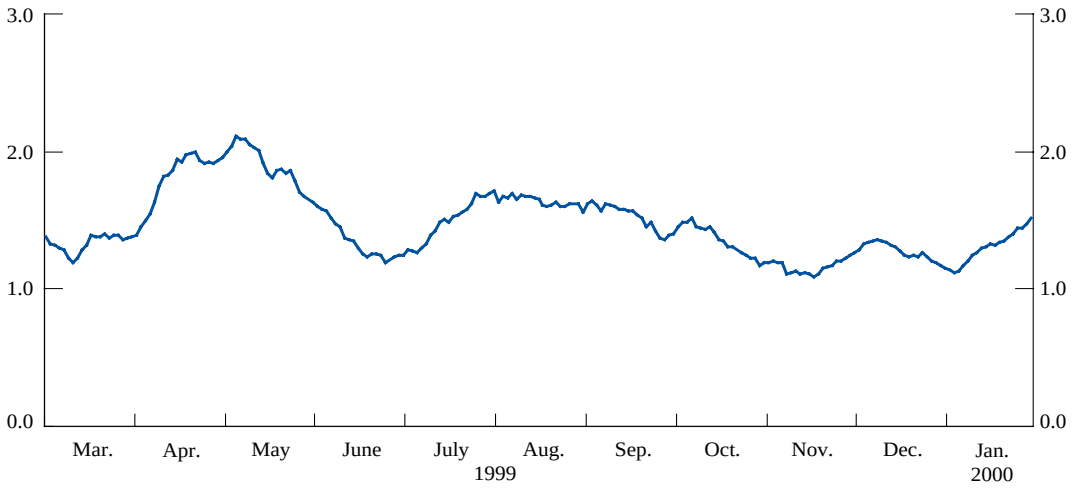
II.4.2 Swaps

The introduction of the euro led to an expansion in the importance of swap markets for euro area fixed income asset management and hedging activities. A major factor in this respect was the increase in corporate bond

Chart 18

Ratio between volumes (expressed in euro) of ten-year Bund futures and US ten-year long bond contracts

(one-month moving average)



Source: Bloomberg.

issuance. The hedging of this increased corporate issuance through the swap market and increased swap market liquidity. The trend towards hedging corporate bond positions with swaps, rather than adopting short positions in government paper or futures, went further in 1999 following the 1998 liquidity crisis, during which government bond futures proved to provide poor hedging qualities for corporate bonds.

Furthermore, since the introduction of the euro interest rate swaps have increasingly been used as a valuation benchmark. The homogeneity and liquidity provided by interest rate swaps explain the observed trend of their increasing use as a common denominator for a comparison of relative asset values between issues of different euro area government bonds, as well as those issued by supranational institutions and by government agencies. The use of the swap curve as a relative value tool is currently commonplace with LIBOR-based institutions and might gain importance in the absence of a homogenous euro area benchmark curve.

II.4.3 Bond repos

As liquidity becomes an increasingly important factor in the pricing of government bonds within the euro area and, as a result, benchmark premia increase, repo markets, as a powerful liquidity-enhancing tool, are becoming more and more important for the development of bond markets. Market participants are, therefore, increasingly inclined to conduct repo transactions and foresee a considerable growth of the repo market for euro area sovereign issues. However, it might take some time before a European repo market comes close to the US market in terms of size or liquidity. More importantly, the current fragmentation of clearing and settlement systems is considered a major impediment to further development of the European repo market (see Section III).

II.4.4 Credit derivatives

The appetite for credit risk among investors increased markedly in 1999. As a consequence, for certain credit classes the relevant corporate bonds were either too illiquid to satisfy investor demand or even non-existent. As a consequence, investor demand for credit derivatives, notably default swaps,[45] developed as a means of taking on credit risk. In the short term, the lack of homogeneous documentation may be an impediment to a rapid growth in credit derivatives.[46]

II.5 Market participants

As in the case of money market activities, since the start of Monetary Union most financial intermediaries have restructured their bond trading desks. In general, a switch from a specialisation pattern focused on countries towards a maturity-bucket or credit-based specialisation (i.e. government, agency, credit) has been implemented. A number of banks have also been centralising their trading activities in a single centre (in some cases, this may be conditional upon the need to have a physical presence to perform primary dealer functions). At the same time the number of sales teams has increased in order to provide a global service to customers through a decentralised structure, since a local presence across the euro area is seen, in some cases, as being useful for distribution purposes.

The major players in the euro area bond markets are a small group of European universal banks and a handful of American

45 A default swap is a derivative instrument whereby the underlying issuer's credit risk is transferred by the holder of the security to a third party who is willing to bear it in return for a higher yield. The initial holder's benefit stems from its risk upgrading.

46 The legal background applicable in the event of a major default may also raise problems. For example, the 1998 debt moratorium in Russia highlighted differences in default definitions in the various credit derivative instruments.

investment houses. In general, financial intermediaries foresee increased competition and consolidation as a consequence of the restructuring of the banking industry. It is thought that within a few years 10-15 key players will dominate the euro area bond markets. Banks with a sufficient size (in terms of placing power, balance sheet, primary dealerships and distribution network) are expected to occupy the most prominent places. Other small and medium-sized players are expected to focus on customer needs or specific market niches. An example is the Pfandbriefe market, where German banks have a head start over their competitors. As a consequence, German banks are frequently among the most active bond market players, even though they are not as active in other segments of the market.

III Infrastructure of the market

The aim of this chapter is to identify and analyse the main infrastructural barriers to the integration of the euro interbank repo and debt instrument markets and to propose some actions in order to enhance the integration of the existing infrastructure, thereby increasing the integration of euro money and financial markets.

It is broken down into two sections. Section III.1 describes the different components of the financial infrastructure of the money and bond markets. Section III.2 tries to pinpoint the areas in which particular barriers to integration exist, to describe why they are problematical and what initiatives have been or may be taken primarily by the markets to reduce these barriers. The description and analysis provided in this chapter take into account discussions held with a representative group of users of the financial infrastructure described.

III.1 General framework

This section describes the infrastructure of the money and bond markets. The infrastructure of these markets can be divided into three groups of components: trading platforms, clearing houses and settlement (and payment) systems. The infrastructure should be seen in the context of the surrounding legal environment – including the fiscal and accounting treatment of operations. The components and their interaction are illustrated in Chart 19 and described below.

A trade in the bond market or in the secured money market may originate from an organised trading platform or may take place over the counter (OTC). It may go through a clearing house or go directly to settlement, and it needs settlement for both the securities and the cash leg, preferably in systems closely linked to one another.

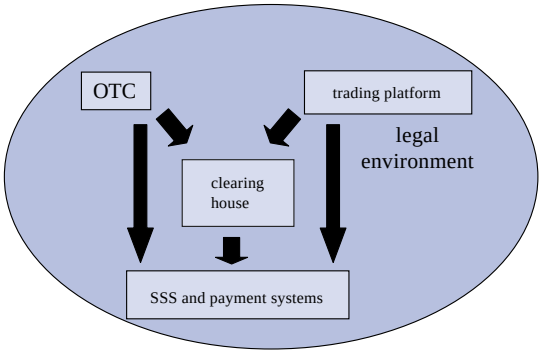
From the point of view of settlement, the case of the unsecured money market differs from both the secured money market and the bond market. As no collateral is exchanged for the cash loan, an uncollateralised loan only needs a payment system for cash settlement. The settlement of payments in euro mainly occurs via TARGET (the Trans-European Automated Real-time Gross settlement Express Transfer system). TARGET offers the possibility of transferring central bank money on a cross-border basis as smoothly as domestically. TARGET can be used for all transfers in euro between EU countries. It processes both interbank and customer payments and there is no upper or lower limit to the amounts of the payments which can be processed. TARGET is a decentralised system in which credit institutions keep their settlement accounts with their home central bank. Therefore, local payments continue to be processed in the national RTGS systems. Cross-border payments are processed through the national RTGS systems and are exchanged on a bilateral basis directly between national central banks. Since its launch in January 1999, the volume of cross-border payments processed via TARGET has increased to a level of close to 40,000 transactions per day – representing a total daily value of more than €400 billion. The number of payments processed in TARGET as a whole, i.e. cross-border and domestic payments taken together, amounts to a daily average of more than 187,000 (of which 147,000 are domestic), representing a total daily value of more than €1,000 billion (€605 billion).[47]

The fact that the unsecured money market can rely on TARGET, while both the repo and the bond markets also depend on the securities settlement infrastructure, is the

[47] *See also "TARGET and payments in euro", ECB, ECB Monthly Bulletin, November 1999, pp. 41-52, and "The TARGET system", ECB, ECB Monthly Bulletin, March 2000, pp. 63*-64*, as well as the ECB's website (www.ecb.int) for the latest statistics available on the use of TARGET and other euro payment systems.*

Chart 19

Infrastructure of the money and bond markets



main reason why the unsecured money market seems to be the most integrated market in the euro area. Therefore, the rest of this chapter will focus on the securities side as – from an infrastructural point of view – this is *the* main feature differentiating the secured from the unsecured money market.

For the settlement of securities, no highly efficient, fully integrated system comparable to TARGET exists, which covers the domestic level as well as the cross-border level. Until the start of Stage Three of EMU, the money and bond markets were predominantly national. There were a few international markets based on the international central securities depositories (ICSDs). The segmentation of the national markets ran along different fault lines, most of which coincided with the national borders: currency, standard contracts, tax and accounting regimes, the structure of portfolios mainly based on national assets, trading platforms, market practices, central bank practices, and clearing and settlement facilities for cash and securities.

With the introduction of the single currency, only three of the above-mentioned barriers really changed – those relating to currency, the settlement of cash and central bank practices. First, the currency is now the same throughout the euro area. Second, TARGET has been built and is facilitating the efficient cross-border settlement of cash. Finally, central bank practices have become somewhat more similar, although differences persist.

The other barriers have not really changed, and although Monetary Union certainly sets the stage for integration, further initiatives will have to be taken – mainly, but not exclusively, by the private sector – before further integration of the market is achieved.

III.1.1 Trading in the euro securities market

Trading in the euro money and bond markets has historically taken place OTC. Lately, some initiatives to create structured trading platforms for these markets have emerged in the euro area. Some of these are mentioned below.

A common trading platform has been created for the government bonds of seven major euro area issuers (Belgium, Germany, Spain, France, Italy, the Netherlands and Austria). The system is called Euro-MTS. It is based on the original Italian system MTS-PCT and is a screen-based electronic system. It has recently introduced features for trading repos directly, enabling its participants to trade special and general collateral repos at different maturity ranges.

The International Securities Market Association (ISMA) has created a trading system called COREDEAL for spot transactions and repo operations on debt instruments.

The most recent announcements have been the merger of the stock exchanges of Paris, Brussels and Amsterdam into a single entity called EURONEXT (for the trading of equities, bonds and derivatives) and the more equities-oriented merger of the London and Frankfurt stock exchanges to form iX. Moreover, talks are underway between the iX partners, NASDAQ and the Madrid and Milan exchanges. Finally, the EURONEXT partners have announced a plan to create a 24-hour global equity market in co-operation with the stock exchanges of Tokyo, New

York (NYSE), Australia, Hong Kong, Toronto, Mexico and São Paulo.

Other market initiatives exist, such as the development of a trading platform for repos by Reuters and of an electronic platform by some brokers.

The Eurosystem is observing the development of trading structures with great interest. However, only to a very limited extent does it use trading platforms for its own purposes. Therefore, the Eurosystem has not taken any initiatives such as the issuance of standards for trading platforms. To the extent that a few trading systems emerge with a rather large market share, this can enhance integration in two ways. First, it will imply that the traders have a common place to look for counterparts to their trades. This in itself is likely to accelerate market integration, compared with the inherent inertia in an OTC environment where there is a great tendency to continue to trade with the same counterparts. Second, the integration of trading, the first step of the infrastructure, may act as a driving force for integration further down the infrastructure chain, i.e. for clearing and settlement.

III.1.2 Matching, netting and clearing houses in the euro securities market

Matching covers the activities related to collecting the trade, matching it, confirming it and transmitting it for settlement. These functions could also be carried out by a trading system, but if the market is predominantly OTC, it may be particularly useful to have another institution performing this function.

Netting refers to the reduction in the amount of processing or of the level of exposure by offsetting a counterparty's debit and credit positions, leaving smaller obligations. Netting concerns obligations both for cash and for assets. Netting can be both bilateral and multilateral. In the case of bilateral netting, the result is to leave each pair of participants with the smallest possible obligation towards one another. In the case of multilateral netting, netting is the setting-off of mutual obligations leaving just a single obligation to or from the counterparty for each netted asset and for cash. The effect of all netting methods is to reduce the need for liquidity and assets to a minimum. In a world in which there is increasing pressure for efficient management of liquidity and assets, it is beneficial to introduce netting into the process as early as possible.

If all trades were made on the same underlying assets, then the advantages of netting would be the same for assets as for cash. However, the traded assets are typically heterogeneous and, therefore, the gain achieved by netting is smaller for assets than for cash. To increase the netting gain on the assets side, the range of traded products that can be netted is extended, thereby performing so-called cross-product netting. The idea of cross-product netting is to allow netting between, for example, a repo and a direct trade on the same underlying asset.

Until now, matching has frequently been performed by the trading platforms, whereas clearing has often been linked to the settlement systems. With the emergence of independent clearing houses in the euro area, these functions may be taken over by such institutions.

Clearing houses may also act as a central counterparty, when they replace the original counterparties in a trade and become the single counterpart for all participants, thereby assuming their counterparty risk. To manage the risks taken over from the participants, the central counterparty relies on initial margins and margin calls, and, to cover extreme situations, other measures, such as own funds, dedicated members' funds, insurances and loss-sharing schemes. The techniques used for margining are a key aspect of the safety of such institutions. If

global cross-margining is used – balancing a potential gain in one part of the participant's portfolio of outstanding trades with a loss in another part – the collateral needed to manage the risk can be reduced. In an environment with a radically increased number of potential counterparts, the reduction of risks related to trading with less well-known entities is helpful for the integration of the market.

In the domestic securities infrastructure, the establishment of clearing houses has not been a general feature. At the euro area level, however, independent clearing houses seem to be a growing trend.

Given that independent clearing houses acting as central counterparties did not exist in most countries prior to EMU, this currently represents the segment of the infrastructure where there has been the greatest integration so far. The two leading market initiatives, the netting facilities of the London Clearing House and Clearnet (France) have recently come to an agreement to set up a common clearing house with a central counterparty. The Belgian and Dutch clearing houses could also be associated with this project in line with the EURONEXT project. Another major market initiative is Eurex, the Swiss/German clearing house. Eurex has so far cleared only derivatives, but it may develop and include other products. Other initiatives have been taken domestically in some countries. The success and impact of all these institutions at the euro area level remain to be seen.

III.1.3 Settlement in the euro securities market

The settlement of securities refers to the final discharge of the obligation of counterparties on the one hand to deliver financial instruments and on the other to pay for them. Settlement normally occurs through securities settlement systems (SSSs) on the basis of delivery versus payment (DVP) procedures. DVP is the principle of delivering the cash and the securities simultaneously to the settlement so that principal risk is entirely eliminated. [48]

Before the beginning of Monetary Union, the settlement structures were clearly divided into national central securities depositories (CSDs) and the two international central securities depositories (ICSDs). The distinction between these two types of depositories is increasingly blurred and the current situation is one of transition. There seem to be two main models vying for the future of European settlement. The main difference is the degree of centralisation.

First, the European Central Securities Depositories Association (ECSDA) has, inter alia, defined a model for links[49] between SSSs aimed at maintaining full functionality at the decentralised level. Since then, national CSDs have been establishing new links or upgrading the existing ones. Given that links used to be one of the hallmarks of the ICSDs, the spread of links to the CSDs has contributed to a reduction in the distinction between the practices of CSDs and ICSDs. The biggest advantage of the links is that they can be used to move securities irrespective of their use, be it for central bank collateral or whatever commercial purpose. However, a great deal of work still needs to be carried out before decentralised integration through links is achieved. First, some SSSs remain virtually unlinked and, second, those links established so far are almost exclusively free-of-payment links and only some are fully automated. They are thus not the real-time DVP links required for fully decentralised integration. These obstacles have given rise to a change of strategy involving the creation of a "super-highway", where a few large SSSs

48 *For definitions of DVP see BIS, (1992). DVP can take place on a real-time basis, i.e. each trade is settled as it enters the system, or on a batch basis, where all trades entered into the system during a certain period of time are settled in one batch, at the end of which the net transfers of cash and securities take place. Another way of settling securities transactions is free of payment, where only the securities transfer takes place in the SSS (either there is no cash to be transferred or the cash is transferred separately through a different system or procedure).*

49 *For the latest version of the report, see ECSDA, June 2000, "ECSDA cross-border settlement".*

are connected to one another via efficient DVP links. Each of these "hubs" is then connected to a number of "satellites" or "spokes", i.e. the smaller SSSs. For this model to be successful, it must be possible to move a security efficiently from one satellite to another through the hub or the super-highway of hubs.

Second, two initiatives promoting a more centralised integration of the settlement infrastructure are under way. In May 1999 Cedelbank, the ICSD situated in Luxembourg and DBC, the German CSD, announced their merger, which became effective on 1 January 2000, creating Clearstream. The aim is to integrate the systems fully within three years. In December 1999 Euroclear, the Belgium-based ISCD, and Sicovam, the French CSD, announced their alliance. In March 2000 it was confirmed that the intention was to merge the two into Euroclear. Since then, it has been announced that the Central Bank of Ireland Securities Settlement Office, which settles Irish government debt, will end its operations and the activities will be transferred to Euroclear. Both the Clearstream and the Euroclear initiatives represent a tendency towards the centralisation of settlement and will have a major impact on the integration of the markets, compared with the current decentralised infrastructure.

III.1.4 Legal environment

The legal environment actually goes beyond what is the "pure" legislative framework of the markets and encompasses issues such as fiscal, accounting and contractual regimes. As these have predominantly been domestically determined, large differences persist even though Directives issued by the European Commission have gone a long way towards ironing out some of the most cumbersome differences.

In particular, the Investment Services Directive, the Capital Adequacy Directive and the Settlement Finality Directive deal with issues of relevance for the financial markets. Unfortunately, it seems that some important details have yet to be implemented in a fully harmonised way. For example, some EU countries impose capital requirements for the temporary transfer of ownership such as repos, while others do not. Furthermore, some key areas such as tax and, to some extent, accounting are not covered by the Directives.

The European Commission, the most important driving force in this area, has recently received assistance from the Eurosystem on the legal acts of relevance for the integration of the euro financial markets.

III.2 Barriers to integration

The barriers to integration in the area of trading and, to a certain extent, of clearing mostly relate to the multiple, heterogeneous systems. However, the multiplicity and heterogeneity of structures has a different impact on the trading and clearing sides. If two counterparts want to trade a given instrument with each other, having more than one system with which to do so is not really a problem. If the systems are too expensive, too slow or suffer from some other problem, there is always the possibility of trading OTC.

It therefore seems that the barriers to integration are mainly to be found in the areas of settlement, the legal environment and, less critically, the clearing area. The following particular problems have been identified and will be discussed in more detail:

1) the lack of availability of cross-border settlement on a DVP basis;

2) the lack of standardised legal documentation for repos;

3) the lack of common practices concerning settlement procedures;

4) the lack of harmonisation of collateralisation processes between central banks and interbank operations;

5) the heterogeneity in fiscal and accounting procedures; and

6) the need for a clearing house.

III.2.1 Availability of cross-border settlement on a DVP basis

An important issue for counterparties in the money and bond markets concerns the lack of procedures for the simultaneous cross-border settlement of cash and securities, i.e. the lack of cross-border securities settlement on a DVP basis. At the domestic level, DVP in central bank money has for some time been the standard for the settlement of securities transactions in the interbank market. At the cross-border level such a service is not yet provided. Until the technical platforms of the merged entities (Euroclear and Clearstream) become one, links between SSSs will remain the only way in which to settle an interbank transaction on a cross-border basis. At present, links are predominantly free of payment. To the extent that they offer DVP settlement, they only do so in private bank money. This reduces risk but does not eliminate it, because the risks on the settlement bank remain. This may be one important reason why the use of links – although growing – remains limited compared with domestic settlement and even with the cross-border collateralisation taking place through the correspondent central banking model (CCBM[50]) (see Section III.2.4).

DVP can operate both on a batch basis and on a real-time basis. The trend in the EU settlement industry is clearly towards real-time DVP settlement. This development has partially been driven by one of the standards of the ECB for the use of SSSs in central bank credit operations, demanding real-time settlement procedures for Eurosystem credit operations.[51] However, such procedures are not yet available in most countries, not least because investments in such systems require significant lead times and technical and financial resources. The bulk of DVP settlement at the domestic level thus continues to take place on a batch basis. For developing real-time DVP links, SSSs must first of all be able to offer real-time services domestically. Furthermore, even if SSSs are able to provide real-time settlement for domestic transactions, this does not automatically ensure the implementation of real-time DVP links. Communication between two real-time DVP systems may require additional technical procedures.

For cross-border DVP facilities to be implemented, the cross-border transfer of securities – through the link – and the related cross-border transfer of cash – through TARGET – must be connected. If the DVP facility needs to be in real-time, both of the SSSs involved would also need to offer real-time services.

The impact of the lack of real-time DVP settlement differs between the various markets.

In the case of a simple purchase of a security (settled, as a rule, on a T+3 basis[52]), the lack of intraday DVP settlement is not particularly problematical. There is time for the seller to move the security through the link to an

50 The correspondent central banking model is an interim model established by the ESCB to allow equal access for all counterparties to all eligible collateral. It is a mechanism whereby central banks act as custodians for one another to allow counterparts to forward collateral on a cross-border basis. For further details see ECB (1999a).

51 Standard 7 of ECB, 1998, "Standards for the use of EU SSSs in ESCB credit operations" states that "SSSs must provide facilities to settle certain ESCB operations (those involving intraday and overnight credit) with intraday finality (i.e. settlement cannot be reversed or unwound). SSSs must not expose NCBs to other sources of settlement risk when they are settling operations with counterparties in an SSS and/or via linked arrangements. SSSs used for settlement of central bank transactions should have facilities in place by 2002 to allow the option of intraday DVP settlement in central bank money. This may take the form of real-time gross settlement, or a series of batch processes with intraday finality."

52 Settlement takes place three days after the trade is made.

account in the SSS of the buyer and then to settle the trade through a domestic DVP process. By contrast, in the case of an intraday repo, where money and cash are exchanged several times in one day, a procedure unable to settle with finality on an intraday basis is not very useful. This could explain why the euro area market for bonds somehow seems to be more integrated than the secured money market. It makes little sense to make a cross-border deal in the secured money market, if the flows of cash and securities are not linked. If the exchange of cash is not tied directly to the exchange of collateral, one ends up with the characteristics of an unsecured money market deal. This is supported by the fact that the share of the secured money market compared with the unsecured is significantly lower in the case of cross-border transactions compared with the domestic market (see Table 1).

In sum, the current cross-border settlement infrastructure may cater for some of the needs of the bond market, whereas the secured money market – particularly at the short end, e.g. intraday repos – seems not to be well served.

III.2.2 Lack of a uniform legal framework

A problem for the development of a euro money and bond market stems from the differences between the various national legal frameworks. The single currency area does not coincide with a single jurisdiction. Investigating these differences, understanding which are important, finding ways in which to operate cross-border in spite of them and keeping track of changes is costly and cumbersome.

The various Directives of the European Commission concerning the development of the Single Market for financial services laid the foundations for legal integration. The Directive of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems has been particularly helpful. An important further initiative is the forthcoming Directive on collateral, included in the recently adopted framework for action on financial services. Other initiatives have been driven mainly by market participants trying to define uniform legal documentation. The exercise is difficult owing to the remaining differences in the legal systems of the member countries.

A particular problem seems to exist for repos. When the single monetary policy was being prepared, an attempt was made to harmonise the repo agreements between national central banks (NCBs) and their counterparts; this resulted in a non-binding template master agreement. However, the existing divergence between the national jurisdictions did not allow for the implementation of a single master agreement, and thus it was only implemented by some NCBs and then only after national modifications.

For the time being, one possible standard contract is the initiative of ISMA – the Global Master Repo Agreement (GMRA) based exclusively on English law or US New York law. This agreement was initially used only in international repo contracts, but as these grow in importance and some domestic markets seem to be increasingly willing to use the GMRA, it may become the de facto standard, even though, for all countries other than the United Kingdom, this will then happen under a foreign (i.e. English) jurisdiction. Various European federations of banks agreed on a European Master Agreement for repos (EMA) with the intention of having the EMA replace the "domestic" European standard agreements including, in time, the GMRA.

Uniform legal documentation will certainly help in the development of the euro repo market. Further legal initiatives may also be necessary, in particular through the current draft of a European Directive on the cross-border use of collateral, which aims at eliminating all legal uncertainties surrounding the establishment, enforcement and realisation of cross-border collateral.

III.2.3 Lack of common practices concerning settlement procedures

Now, as before the start of Monetary Union, the repo market (or, more generally, the market for collateralised operations) is operating in accordance with the rules and practices of each trading place.

In accordance with local practices, repos can be either general or specific. Specific collateral repos require that the securities to be delivered be clearly identified at the time of entering into the repo. By contrast, general collateral repos can be based on any of a number of assets. To be eligible, the assets must meet certain quality requirements, e.g. the rating of the issuer, liquidity, the size of the issue and the time to maturity, but the asset is not identified before actual delivery takes place. To achieve continued flexibility after delivery, the collateral should also be substitutable throughout the duration of the repo. Having full flexibility with regard to the underlying assets before and after settlement assures maximum integration and liquidity of the market.

Before the introduction of the euro, the various domestic "general repos" were based on domestic collateral only. With the introduction of the euro, the integration of financial markets should lead market participants increasingly to use euro area collateral irrespective of the country of issue. As a consequence, a general repo could be based on any collateral meeting the standard quality requirements (e.g. all tier one assets). This "Europeanisation" of general repos seems to be taking place slowly. The bulk of refinancing activity remains at the national level and is based on domestic securities. In addition to the legal obstacles mentioned in Section II.2.2, a number of other factors explain this. One is simple inertia, including the slow internationalisation of the portfolios of market participants. Another is the fact that the settlement of non-domestic securities is difficult and costly. Domestic settlement systems still mainly provide settlement facilities related to domestic assets. Market participants would need membership of several systems – directly or through agents – in order to have access to area-wide settlement. Even so, settlement is complicated by the fact that procedures, communication standards, services, operating times, etc. differ between the individual systems. This means that multiple membership is costly, both in terms of indirect costs of developing and maintaining the necessary know-how, and in terms of direct costs such as multiple membership fees and a multi-system back office. Links and mergers are slowly changing this, but there is a long way to go before market participants have easy and equal access to all eligible collateral.

The effect of the lack of harmonisation of procedures between SSSs, in particular with regard to the settlement of repo and debt instrument transactions, should be further documented and analysed in order to identify the most serious obstacles to area-wide equal access to collateral.

III.2.4 Lack of harmonisation in the collateralisation process between central bank and interbank operations

The central bank and interbank markets for collateralised lending serve similar, but not identical functions. They also rely on the same collateral and the same SSS infrastructure. It seems reasonable to assume that the better integrated they are, the more efficient the refinancing activity of the banking system as a whole will be.

Moreover, irrespective of their market share, central bank refinancing operations usually have a large normative impact on the market. First, central bank refinancing operations are mandatory for any market player wishing to be independent from competitors for central bank money. Second, as central banks traditionally focus on safety, security and equal treatment, their practices and standards

easily form an agreeable benchmark for the entire market. This may also be the case for the technical procedures, the legal framework and other aspects of market practices. In addition, it is important to note that, although it need not necessarily be so, the interbank market for collateralised lending almost exclusively uses repos in their various forms, whereas the current use of pledges is more or less restricted to central banks.

Central bank refinancing operations in the euro area are based on a decentralised infrastructure, using different legal instruments, techniques and systems and with a cross-border dimension based on the specific correspondent central banking model (CCBM) procedure and on eligible links between SSSs. At the start of the EMU, this lack of harmonisation was not considered to be a problem for the implementation of the single monetary policy, as no economic difference was seen between the arrangements used by central banks. Hence a single monetary policy could be implemented through not completely harmonised systems and procedures. Nevertheless, even if there was no economic difference between the various procedures, the practical consequence is a barrier to the further integration of the market. These barriers manifest themselves in two particular areas: (1) legal and technical differences, and (2) settlement procedures for the cross-border use of collateral.

Prior to the introduction of the euro, completely homogeneous legal frameworks, techniques and systems with regard to the acceptance of collateral did not necessarily exist within individual countries. The collateralisation techniques of the central bank may have differed to a greater or lesser extent from the technique(s) used in that particular domestic market. However, with the introduction of the euro, there is now a multitude of legal frameworks, techniques and systems both on the central bank side and on the interbank side in the "domestic" euro market. That is clearly a barrier to the full integration of this market. In this respect, reducing the number of arrangements – ideally ultimately to only one type of arrangement for all central bank operations – would also help the integration of the interbank euro repo market.

In addition, the need for collateral is increasing, as is the need for intraday settlement. A growing number of operations are collateralised and RTGS procedures for securities and payments are spreading.

All barriers to the efficient management of collateral should therefore be considered, with a view to improving the current situation. A fully compatible and more standardised legal framework, documentation and set-up for the interbank and central bank repo markets would help to resolve most of these problems. Therefore, the effect of the lack of harmonisation between central bank procedures for collateralisation should be further documented and analysed and initiatives to harmonise practices should be taken with a view to advancing the integration of the euro repo market.

At present, the cross-border use of collateral is settled via the correspondent central banking model (CCBM) and, more recently (as from July 1999), also by using some links between SSSs. The CCBM has been crucial in creating a common market for central bank collateral. However, when considering the repo market as a whole, there are some barriers inherent in the CCBM.

First, the CCBM can be used only for central bank credit and not for interbank repos or debt instrument operations.

Second, in the CCBM normally only the central bank in the country of issue acts as a correspondent for the lending or home central bank. This creates a need for "repatriation" of those assets which are not kept in their country of issue, but which have been moved to another SSS. These assets can be used via the CCBM only after having been "repatriated" to the country of issue. This is slowing down the cross-border use of collateral and therefore has a negative impact on the liquidity and availability of

the securities, effectively leading to a segmentation of the markets.

This problem can be reduced in some cases. For instance, the development of eligible links will limit the problem of the repatriation of collateral. The merger of SSSs will also eliminate the problem of repatriation between the two merged SSSs.

A further problem with the CCBM is its relative slowness and limited operating times. As an interim solution, it is based more or less on manual processing. Furthermore, it necessitates the involvement of additional entities such as custodians and "foreign" SSSs, and it therefore takes time to mobilise or return collateral through the model. This may be considered as problematical, especially if repatriation is necessary.

III.2.5 Heterogeneity in fiscal regimes and regulation

Market participants have reported that heterogeneity in fiscal regimes and regulation, for the treatment of debt instrument operations and repos, is hindering the smooth development of a euro market. The main reasons are the differences in treatment depending on the legal jurisdiction in which counterparties are located.

On the tax-related aspects, the fundamental problem concerns the differences in the taxation of investment income from various instruments, which has given rise to cross-border distortion and entire markets being moved into or out of particular countries. Furthermore, for repos, the tax treatment is not harmonised yet and this is hindering full integration or is pushing for the delocalisation of these activities, which are penalised in one particular country. This can limit the possibility of moving securities from one country to another and creates difficulties and complexities for the treatment of corporate events, and the payment of interest on debt instruments.

Concerning the regulatory aspects, the problem is the transposition of the Capital Adequacy Directive (CAD) for repos, which is not uniform among Member States. For instance, some local authorities consider that repos conducted with an appropriate risk management procedure with haircuts and a daily margining process, such as tripartite repos, do not need any capital requirement, although some other authorities would apply a capital requirement in accordance with the quality of the issuer of the securities used as collateral.

III.2.6 Need for a clearing house

Although the presence or absence of a clearing house cannot be considered as an actual barrier to the integration of the market infrastructure, the development of such services in the market could help integration. Indeed, the benefits of the activities of the clearing house, in particular for netting, are dependent on volume, and so it is likely that there will be a race to become *the* clearer for the euro securities markets. The emergence of a single clearer will also benefit the integration of the market. Even if many trading platforms remain unconnected to one another and no dominant one emerges, these disparate systems may all connect to one clearing system which, in turn, would connect to several settlement systems. A large independent clearer would therefore go a long way towards the integration of the market.

The clearing system could also be part of one SSS and serve it exclusively. However, limiting settlement activities to a single SSS (in a market with several SSSs) would limit the potential volumes to be offset. Moreover, whereas trading and settlement institutions do not incur or manage any risk, clearing with a central counterparty does involve risks. Mixing a risk management business with trade and settlement functions that are theoretically risk-free may not be the best arrangement.

As a result, the business case for clearing houses lies in the fact that they enable participants to save liquidity and, in the case of central counterparties, to take over certain risks from market participants. Less importantly, and to the extent that settlement volumes are significantly reduced through netting, part of the operational risk shifts from the SSSs to the clearers. In any case, the potential volumes that a dominant clearing house covering the whole of the euro area would attract would mean that quite a significant risk would be concentrated in, and therefore have to be managed by, that institution. Mismanagement of such business could have a large negative impact on the market: first, as a result of its systemic implications and, second, on account of the fact that it would set back the process of centralisation. The Eurosystem is interested in the increased efficiency offered by these institutions, but given the potential systemic risk inherent in their business, may consider the possibility of setting standards and establishing a co-operative framework for an oversight regime which would take into account the pan-European nature of the activities of such institutions.

In addition, it should be mentioned that the benefit from an individual trade going through a clearing house depends on the time to settlement of the trade in question. An intraday repo, where cash and securities are to be exchanged twice a day to obtain an immediate liquidity effect, and where market risk is limited because of the short time to settlement, will benefit less from a clearing house than other products with a longer settlement lag.

The recent agreement between Clearnet and the netting services of the London Clearing House to create a single clearing house with an area-wide dimension is a positive step towards integrating the market.

In conclusion, the emergence of a more efficient clearing function in the euro area should take place in line with the following principles: 1) not limiting such an entity to only one SSS; 2) avoiding a multiplicity of clearing houses, which would reduce the efficiency of such a system in the market infrastructure; 3) focusing their activity on the clearing of operations other than intraday operations; and 4) developing cross-product netting or global clearing in order to increase the effect of netting.

Annex 1

Glossary

Arbitrage: profiting from differences in price when the same security, currency or commodity is traded in two or more markets.

Bank certificates of deposit (CDs): short-term securities issued by banks.

Bid-ask spread: differential prevailing in the market between the bid price and the offered price.

Bons à Taux Fixe (BTF): French Treasury bill.

Bubill: German Treasury bill.

Buoni Ordinari del Tesoro (BOT): Italian Treasury bill.

Central counterparty: an intermediary which takes over the obligation of either side in respect of a trade. After clearing with a central counterparty, the two trading parties no longer have an obligation towards each other, but rather towards the central counterparty, which thereby assumes any replacement cost risk resulting from market moves between the time of trade and the time of settlement.

Certificati del Tesoro zero cupon (CTZ): Italian government debt instrument issued at discount with a maturity of up to two years.

Certificati di Credito del Tesoro (CCT): Italian government bond with a maturity of seven years.

Clearing: the process of transmitting, reconciling and, in some cases, confirming the payment order and the securities transfer prior to settlement. In the context of repos, this can have three separate aspects: confirmation/matching, netting and clearing with the central counterparty.

Commercial paper (CP): short-term securities issued by corporations.

Confirmation/matching: the process of ensuring that the two counterparties agree with regard to the terms of the repo – price, asset(s), value dates, settlement data, including relevant account numbers – before the payment and transfer orders are sent for settlement.

Depo/repo spread: differential prevailing in the market between the interest rate of unsecured and secured transactions.

Deposit facility: a standing facility of the Eurosystem which counterparties may use to make overnight deposits at the central bank which are remunerated at a pre-specified interest rate.

Eurex: German futures and options exchange market.

EURIBOR: the euro area interbank offered rate for the euro, sponsored by the European Banking Federation (EBF) and the *Association Cambiste Internationale* (ACI). It is an index price source covering dealings from 57 prime banks.

Euro overnight index average (EONIA): the overnight rate computed as the euro area interbank offered overnight rate for the euro. It is computed as a weighted average of all overnight unsecured lending transactions in the interbank market, initiated within the euro area by the contributing panel of 57 prime banks.

EURODEM: interbank offered rate for the Deutsche Mark, negotiated outside Germany.

EUROLIRA: interbank offered rate for the Italian lira, negotiated outside Italy.

European Master Agreement: legal contract sponsored by the European Banking Federation and the European Savings Banks Association, which aims to consolidate into a single set of harmonised documents various master agreements used within the euro area and certain neighbouring countries, particularly for repurchase transactions and securities lending.

European System of Central Banks (ESCB): the European Central Bank and the national central banks of the EU Member States.

Eurosystem: the European Central Bank and the national central banks of the EU Member States which have adopted the euro.

Foreign currency swap: an agreement between two parties to exchange future payments in one currency for payment in another currency. These agreements are used to transform the currency denomination of assets or liabilities.

Forward rate agreement (FRA): cash-settled forward contract on a Eurodollar deposit.

General collateral: collateral which, owing to its homogeneous features, is broadly accepted.

Interest rate swap (IRS): exchange between two parties of a fixed interest rate instrument for a floating interest rate instrument.

Junk bond: high-yield bond with a credit rating of BB or lower.

LIFFE: London futures and options exchange market.

Main refinancing operation (MRO): regular lending operation against underlying assets executed on the initiative of the central bank in the financial markets.

Marginal lending facility: standing facility of the Eurosystem which counterparties may use to receive overnight credit against a pre-specified interest rate.

Matif: French futures and options exchange market.

Mercato Interbancario di Depositi (MID): Italian screen-based market for interbank deposits.

MIBOR: interbank offered rate in Madrid for unsecured transactions.

Monetary Financial Institutions (MFIs): financial institutions which form the money-issuing sector of the euro area. It includes the Eurosystem, resident credit institutions as defined in Community law and all other resident financial institutions whose business is to

receive deposits and/or close substitutes for deposits from entities other than MFIs and, for their own account (at least in economic terms), to grant credit and/or invest in securities. The latter group consists predominantly of money market funds. At the end of 1999, there were 9,443 MFIs in the euro area (12 central banks, 7,906 credit institutions, 1,517 money market funds and 8 other financial institutions).

Money market fund (MMF): fund that invests in short-term securities.

Mortgage bond: bond issue secured by a mortgage on the issuer's property, the lien on which is conveyed to the bondholders by a deed of trust.

Netting: the process of offsetting cash or securities positions. Through netting, the gross positions are reduced. This is particularly true for the cash side, as all cash is fungible, whereas all assets are not.

OTC (over-the-counter): OTC is a bilateral way of trading, where the buyer and seller contact each other directly, e.g. by telephone, without going through an organised exchange.

Pfandbriefe: German mortgage bonds.

PIBOR: interbank offered rate in Paris for unsecured transactions.

Pledge: legal arrangement by means of which the borrower pledges some assets to the lender in order to collateralise a credit. By contrast with a repo, a pledge can only be used to generate cash credit.

Primary dealer: selected credit institution authorised to buy and sell original issuance of government securities in direct dealing with the Treasury.

Real-time gross settlement (RTGS) system: a settlement system in which processing and settlement take place on an order-by-order basis (without netting) in real time (continuously).

Repo: financial instrument which serves to exchange cash temporarily for securities for a predetermined period. Various legal arrangements exist to perform this basic economic function (repurchase agreements, reverse repurchase agreements, sell/buybacks and securities lending). All forms of repos entail a change in ownership.

Reserve maintenance period: period over which compliance with reserve requirements is calculated. For the ESCB this would be one month, starting on the 24th calendar day of each month and ending on the 23rd calendar day of the following month.

Reserve requirement: requirement for institutions to hold minimum reserves with the central bank.

Special collateral: collateral other than general collateral.

TARGET (Trans-European Automated Real-time Gross settlement Express Transfer system): TARGET is the RTGS payment system for the euro. It consists of 15 national RTGS systems and the ECB payment mechanism, which are interlinked so as to provide a uniform platform for the processing of cross-border payments.

Tier one assets: marketable assets fulfilling certain uniform euro area-wide eligibility criteria specified by the ECB. Among these criteria are the requirements that they must be denominated in euro, be issued (or guaranteed) by entities located in EEA countries, and be located in a national central bank or SSS of the euro area.

Tier two assets: marketable or non-marketable assets for which specific eligibility criteria are estabilised by the national central banks, subject to ECB approval.

Treasury bill: short-term government debt instrument issued at discount with a maturity of one year or less.

Treaty: the Treaty establishing the European Community. It comprises the original EEC Treaty (Treaty of Rome) as amended by the Treaty on European Union (signed in Maastricht on 7 February 1992).

UCITS: undertakings for collective investment in transferable securities.

Zero coupon bond: security issued at discount or a security which delivers a single coupon at maturity.

Annex 2

The ESCB market surveys

The ESCB market surveys referred to in this Paper were conducted in the context of the studies on the money market and on the bond market mentioned in the Foreword.

As regards the money market study, two different surveys were conducted, one focusing on the unsecured, the repo and the foreign currency swap markets, and one on the market for Treasury bills and other short-term paper.

The survey on the unsecured, the repo and the foreign currency swap markets was mainly quantitative, although some qualitative questions were included with the help of the NCBs to improve the understanding of the data obtained. The result of the quantitative survey is summarised in Table 1 of this Annex. It covered two periods chosen to identify, to the extent possible, the effects of the introduction of the euro on the relevant segments of the market, namely the fourth quarter of 1998 and the second quarter of 1999 (the latter was preferred to the first quarter of 1999 in order to avoid distortions related to the very first period after the introduction of the euro). The data reflect responses from 75 banks located in 7 euro area countries, with the following geographical distribution: 14 in Germany; 7 in Finland; 16 in France; 10 in Ireland; 11 in Italy; 10 in Portugal and 7 in Spain.

Other relevant details on the coverage on the unsecured, the repo and the foreign currency swap markets are as follows:

Table 1

Euro money market turnover [1)]

(daily transactions average in EUR millions)

	Unsecured transactions			Repo transactions			Swap against foreign currencies		
	1999 Q2	1998 Q4	Variation as a %	1999 Q2	1998 Q4	Variation as a %	1999 Q2	1998 Q4	Variation as a %
Breakdown of lending transactions by maturity									
Overnight	61,197	42,927	42.6	10,727	8,123	32.1	9,718	9,654	0.7
Tom next [2)]	9,062	8,794	3.0	11,916	9,289	28.3	15,383	18,944	-18.8
1 week	11,118	14,561	-23.6	8,983	7,378	21.7	2,689	3,486	-22.9
2 weeks	1,883	1,826	3.1	2,665	3,045	-12.5	2,316	2,301	0.7
1 month	1,986	2,408	-17.5	2,773	2,248	23.3	3,800	7,651	-50.3
3 months	1,984	3,197	-37.9	1,776	1,244	42.8	3,010	5,079	-40.7
6 months	704	1,553	-54.7	333	433	-23.2	1,160	2,156	-46.2
9 months	189	552	-65.8	109	148	-26.4	568	1,350	-58.0
1 year	403	450	-10.6	344	136	153.3	490	606	-19.1
> 1 year	79	32	145.6	20	5	303.0	185	243	-23.9
Total	**88,605**	**76,302**	**16.1**	**39,646**	**32,049**	**23.7**	**39,318**	**51,471**	**-23.6**
Breakdown of transactions by type of counterparty [3)]									
Domestic counterparties									
– borrowing	25,988	32,487	-20.0	16,257	13,220	23.0	2,894	1,985	45.8
– lending	39,534	43,900	-9.9	14,917	11,759	26.9	5,574	10,926	-49.0
Euro area									
– borrowing	11,312	7,391	53.1	6,470	3,715	74.2	2,856	1,995	43.1
– lending	30,753	13,167	133.6	11,394	9,209	23.7	17,871	18,387	-2.8
Others									
– borrowing	4,835	4,430	9.1	7,078	2,891	144.8	2,420	5,280	-54.2
– lending	11,668	7,094	64.5	8,414	7,012	20.0	12,709	17,921	-29.1

1) Reflects data from responses to ESCB market survey by seven euro area countries (Germany, Spain, France, Ireland, Italy, Portugal and Finland). Some discrepancies appear between the upper and lower parts of the table owing to errors in reported data by counterparts.

2) Transactions effective on the day after the contract (t + 1), maturing one day later (t + 2).

3) The breakdown only contains figures over three months.

All data (for the unsecured deposit market, repo market and foreign currency swap market) include only transactions between credit institutions. In particular, repo market data do not include transactions with central banks.

Repo transactions include all collateral (general and special) and also sell/buyback transactions and securities lending against cash.

The survey on the market for Treasury bills and other short-term paper was also mainly quantitative, but nonetheless had a qualitative component. Its main findings are shown in Tables 3, 4 and 5 of this Paper, together with some details on the coverage (see the notes to the tables). It covered the second half of 1998 and the first half of 1999. The data were provided by the relevant NCBs and reflect a variety of sources including NCB data and other official statistics, where available (mainly regarding Treasury bills data), and estimates based on ad hoc market surveys conducted by the NCBs. They include euro-denominated instruments. Turnover figures refer to total and outright transactions conducted in the period (i.e. no daily averages).

The survey on the bond market was of a qualitative nature. The reason for this was that, on the one hand, data availability for bond markets is relatively good compared, for instance, with that for the money market. Relatively exhaustive interviews were held with credit institutions (14 as a whole) and various categories of final investors (14 as a whole, including insurance and reinsurance companies and pension funds) located in 4 countries, namely France (3 credit institutions and 4 institutional investors); Germany (5 credit institutions and 4 institutional investors); the Netherlands (3 credit institutions and 4 institutional investors; and the United Kingdom (3 credit institutions and 3 institutional investors). The choice of the banks and investors to be interviewed was made with a view to ensuring that the results would be representative and fully reliable.

Annex 3

Evolution of the bid-ask spreads in the Italian MID ("Mercato Interbancario di Depositi") since the introduction of the euro

On the grounds of the fairly high degree of integration shown by different domestic markets – at least at the shortest maturities – looking at the evolution of bid-ask spreads on the MID may throw some light on the overall EU interbank market. For this purpose, differences between hourly averages of bid-ask rates – taken as a proxy for actual bid-ask spreads – have been related to daily coefficients of variation of interest rates and to a dummy variable for the last day of the reserve maintenance period, on the assumption that bid-ask spreads are likely to widen as uncertainty on interest rates (caught by daily coefficients of variation) increases and on the last day of the reserve maintenance periods.[1] Both the assumptions seem to be confirmed, but in 1999 spreads were slightly narrower (on average from 1.5 basis points to around 3 basis points). This change may be explained mainly in terms of improved competition – also in the domestic segment of the interbank market – which the enlargement of the market has brought about (in Stage Three the intercept is about 1 basis point lower) and, to a lesser extent, in terms of the lower volatility of interest rates. No significant change seemed to have occurred in the sensitivity of spreads with regard to interest rate variability and to the last day of the reserve maintenance period (which remained steady at some 5 basis points).

1 *In order to check for some Stage Three effects on spreads and on their sensitivity to interest rate variability and days at the end of a reserve maintenance period, the following functions have been estimated (data refer to overnight interest rates on the MID in the period between 1 January 1998 and 13 September 1999):*

$$SPR = 0.0189 - 0.0095 * STAGE3 + 0.0045 * CV + 0.0482 * RES$$
$$(t=7.59) \quad (t=-2.56) \quad (t=13.81) \quad (t=5.38)$$
$$(p>|t|=0.0001) \quad (p>|t|=0.0108) \quad (p>|t|=0.0001) \quad (p>|t|=0.0001)$$
$$R^2 = 0.37$$
$$F = 84.71$$
$$D.W.\ d = 1.90$$

where:

SPR	=	*ON interest rate bid-ask spread*
STAGE3 I	=	*0 in 1998*
I	=	*1 in 1999*
CV	=	*daily coefficient of variation of ON interest*
RES I	=	*1 on the last days of reserve maintenance periods*
I	=	*0 on the other days*
CVXSTG3	=	*STAGE3*CV*
RESXSTG3	=	*STAGE3*RES*

$$SPR = 0.0186 - 0.0091 * STAGE3 + 0.0045 * CV + 0.0538 * RES + 0.0004 * CVXSTG3 - 0.0182 * RESXSTG3$$
$$(t=7.36) \quad (t=-2.29) \quad (t=13.39) \quad (t=4.79) \quad (t=0.26) \quad (t=-0.85)$$
$$(p>|t|=0.0001) \quad (p>|t|=0.0225) \quad (p>|t|=0.0001) \quad (p>|t|=0.0001) \quad (p>|t|=0.7958) \quad (p>|t|=0.3951)$$
$$R^2 = 0.37$$
$$F = 50.83$$
$$D.W.\ d = 1.92$$

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