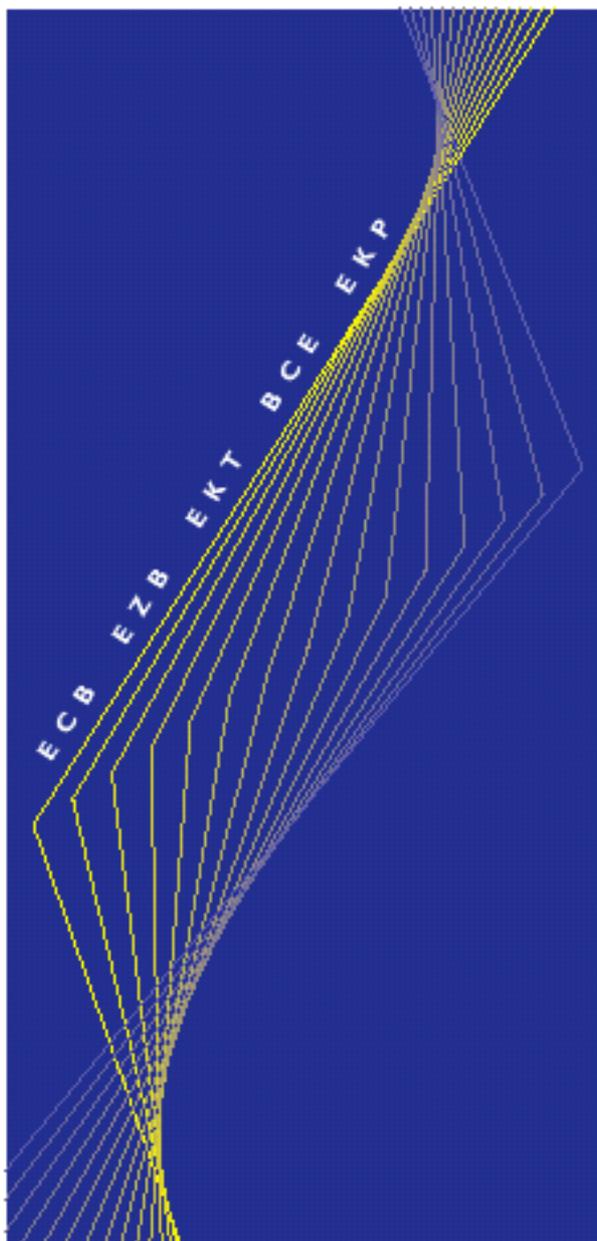




EUROPEAN CENTRAL BANK



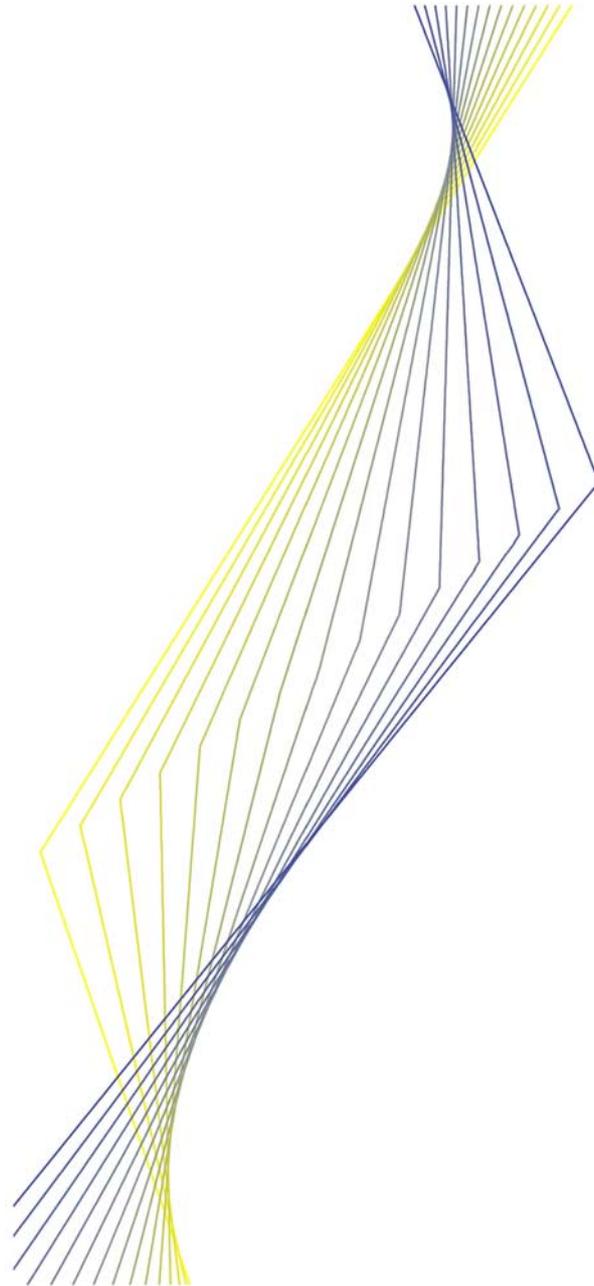
THE EURO BOND MARKET

July 2001





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The following country abbreviations are used in the report:

AT	Austria
BE	Belgium
DE	Germany
DK	Denmark
ES	Spain
FI	Finland
FR	France
GR	Greece
IE	Ireland
IT	Italy
LU	Luxembourg
NL	Netherlands
PT	Portugal
SE	Sweden
UK	United Kingdom
US	United States

I. Introduction

In the second half of 2000, the European Central Bank (ECB) and the national central banks (NCBs) of the European Union carried out, within the Market Operations Committee (MOC) of the European System of Central Banks (ESCB), an analysis of the functioning of the money, bond and equity markets in the euro area. This analysis followed up on similar studies that were performed for money and bond markets in the second half of 1999. The 1999 study aimed at 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 results were published in the report "The Impact of the Euro on Money and Bond Markets" (July 2000) in the Occasional Paper Series of the ECB. The analysis carried out in 2000, which is reported in this paper and in two companion papers ("The Euro Money Market" and a forthcoming publication on the equity markets) aimed at further elaborating on the findings of the previous analysis and at extending it to the equity market. The report benefited from extensive comments from the Banking Supervision, the Payment and Settlement Systems and the Statistics Committees of the ESCB.

This report presents the result of the study of the bond market. The information used includes data, provided by both public and private sources, as well as the collection of qualitative information from selected intermediaries and final investors.

2. Executive summary

The overall size of the euro-denominated bond market at the end of 2000 was €6,623 billion. While still significantly smaller in terms of outstanding amount than the largest bond market in the world, the one denominated in US dollar¹, the euro-denominated market is now on a par with the US dollar-denominated market in terms of new issuance.

The trends observed in 2000 confirm, for the most part, those identified in 1999². The more competitive environment brought about by the introduction of the euro continued to be the main driving force behind the structural evolution of the market. This was particularly significant in the sovereign bond sector, where competition was fostered by the relatively high level of homogeneity (and therefore substitutability) between government bonds, notably in terms of their financial characteristics and their creditworthiness.

On the primary market, the main structural development was the continued reduction in the relative share of government bond issuance, a consequence of ongoing fiscal consolidation. The share of public bonds in the market as a whole fell from 54% at the end of 1998 to just 50% at the end of 2000.

Simultaneously, the increased attention of national treasuries to the demands of final investors, itself a consequence of intensified competition, resulted in a number of measures aiming, inter alia, at improving the liquidity of the secondary markets for government bonds. The average size of individual public issues increased in the first two years after the introduction of the euro. Buybacks and bond exchanges were used by several European governments, both to reduce the level of their debt and to improve the liquidity of selected issues.

Newly issued government bonds have become more standardised. With limited exceptions (e.g. the French index-linked bonds, known as OATi), the issuance of indexed bonds and non-conventional instruments is shrinking. Floating-rate notes are no longer in favour, with the exception of the Italian indexed-rate CCTs.

Among non-government bond issues, fixed-rate issuance by credit institutions still holds the lion's share of the market. Private bonds issued by financial institutions represented just half of the gross issuance during the whole of 1999 and 2000, while they represented 41% of the stock of outstanding bonds at the end of 2000.

Particularly popular was the issuance of Pfandbrief-style products, facilitated by the setting-up of appropriate legal environments in several euro area countries (see also Annex I on this issue).

Continuing the trend initiated in 1999, bond issuance by private, non-financial issuers (corporate bonds) remained buoyant in 2000. This represented almost 9% of the total issuance of euro-denominated bonds over the period 1999-2000. The share of corporate bonds in the market as a whole thus rose from 5% at end-1998 to almost 7% at end-2000 (when including *non-monetary* financial corporations, the corresponding figures rise respectively from 9% at end-1998 to 12% at end-2000).

Based on current data, cross-border diversification of end-investors' bond portfolios appears to have developed further in 2000, even if not as extensively as might have been expected. The advantages of diversification are not clear-cut in the euro-denominated bond market, especially in its sovereign segment, where bonds tend to be very homogeneous in terms of price evolution, creditworthiness and other characteristics. Diversification, on the other hand, still entails some costs, such as that of acquiring knowledge of the various legal and technical environments prevailing in the twelve euro area countries.

¹ At the end of 1999, the euro-denominated bond markets were estimated to represent 20% of the world bond market, as opposed to 46% for all US dollar-denominated issues.

² See "The impact of the euro on money and bond markets", by Javier Santillán, Marc Bayle and Christian Thygesen, ECB Occasional Paper No.1, July 2000.

In the derivatives market, the benchmark status achieved in 1999 by the Bund futures contract traded on Eurex was confirmed in 2000.

The interest rate swap market seemed to benefit from the widening of the spreads between swap rates and government bond yields, which has resulted from a variety of structural and cyclical developments. Increased corporate issuance may benefit the swap market insofar as corporate issuers tend to swap their exposures. The interest rate swaps also tend to be used as a pricing reference and a hedging instrument for private bonds.

Following a trend seen in global financial markets, electronic trading has developed rapidly in the euro-denominated bond market. A variety of competing platforms has emerged, both for inter-dealer trading and for dealer-to-customer transactions. These developments remain relatively embryonic, and the final consequences of the development of electronic trading in the bond market cannot be drawn with certainty yet.

The process of consolidation of infrastructure, in particular securities settlement systems, continued in 2000. In Italy and Spain, notably, the number of central depositories decreased because of rationalisation at a national level. Cross-borders mergers also took place or are ongoing, as testified for instance by the merger of the activities of Euroclear, Sicovam and CBISSO (Central Securities Depository formerly operated by the Central Bank of Ireland) into Euroclear group, or by the merger between Cedel and DBC, giving birth to Clearstream International.

In spite of all the efforts and progress achieved towards integration of the euro area bond market, some barriers to integration persist. The infrastructure just mentioned remains too fragmented in the view of market participants, while tax issues and difficulties in assessing credit risk adequately (particularly in view of the heterogeneity of bankruptcy laws) also obstruct the full integration of the market.

3. Trends in the market

The general trends observed in the euro-denominated bond market in 2000 confirm, for the most part, the trends already identified in 1999. The first section of this chapter reviews the trends in the primary market, addressing in turn bond issuance by the public sector and bond issuance by the private sector. The second section focuses on trends in the secondary market, and in particular the issue of investors' diversification of assets within the euro area and into relatively new classes of investment. The third section reviews developments in the derivatives market (bond futures and interest rate swaps).

3.1. Primary market

3.1.1. Overall developments in the supply of bonds

Consistently with the trend observed in 1999, the euro-denominated bond market registered in 2000 a sustained rate of growth accompanied by a continuous shift in market structure. The share of outstanding government bonds fell from 54% at the start of Stage Three of Economic and Monetary Union (EMU) to just 50% at the end of 2000. Fiscal consolidation has reduced the net borrowing requirements of governments.

As regards private issuers, however, a combination of factors has promoted an increase in the recourse to capital markets for funding. First, the gap left open by reduced government issuance has improved opportunities for private issuance of bonds. Access to a larger potential pool of investors, following the introduction of the euro, is also an element supporting private bond issuance. The funding requirements associated with large mergers and acquisitions (including the purchase of UMTS licences) have also played a role. Furthermore, the growth of the euro-denominated private bond market is also the result of its increasing internationalisation. In 1999, the outstanding amount of euro-denominated bonds issued by non-euro area residents increased by 38%, compared with 9% for euro area residents. For 2000, the same pattern prevailed, with respective increases of 24% and 6%.

Table I
Euro denominated bonds by issuer type: historical development

	Outstanding				Gross Issuance				Net Issuance			
	Total in EUR billions	MFI (1)	Corporate (1)	Government	Total in EUR billions	MFI	Corporate	Government	Total in EUR billions	MFI	Corporate	Government
1999 1Q	5,715	36%	9%	54%	435	39%	13%	46%	186	34%	23%	42%
2Q	5,888	36%	9%	53%	402	38%	19%	42%	171	38%	39%	23%
3Q	6,064	36%	10%	52%	371	38%	18%	43%	173	32%	30%	38%
4Q	6,132	35%	11%	52%	324	45%	17%	36%	65	28%	52%	21%
2000 1Q	6,277	36%	11%	52%	393	42%	11%	45%	143	44%	17%	41%
2Q	6,408	36%	11%	51%	349	44%	18%	38%	130	46%	30%	26%
3Q	6,528	36%	12%	51%	337	43%	21%	36%	117	41%	42%	19%
4Q	6,623	36%	12%	50%	334	42%	20%	37%	95	31%	53%	16%
average	6,145	36%	10%	52%	373	41%	17%	41%	141	38%	33%	30%

Source: ECB securities database; the percentages represent the ratio between the amount of the indicated category and the total amount for the related quarter. Bonds issued by supranational issuers explain the remaining share. Due to rounding effects, totals may not add up to 100%.

(1) "Corporate" includes non-monetary financial corporations; "MFIs" include the Eurosystem and central banks.

Several common trends have been witnessed in both the public and private segments of the bond market (a more detailed analysis of the two sectors is provided in sections 3.1.2. and 3.1.3. respectively). One common trend is the intensification of competition, which was a widely expected consequence of the introduction of the euro. Increased competition has been particularly marked in the public sector, where national treasuries used to benefit from a quasi-monopoly situation and now compete for the same pool of funds. Enhanced

competition has improved transparency and encouraged standardisation of sovereign bonds. Competition has also developed in the non-sovereign bond segment, if only as a consequence of the rising number of issuers. In both cases, competition has also triggered a search for new types of instruments. Another form of competition has developed between national legislative and regulatory frameworks. This is leading to a gradual convergence towards "best practice", which is likely to provide significant long-term benefits to market participants. As an illustration, following the example of France, Spain and Luxembourg, also the Irish government is currently preparing legislation to allow the issuance of instruments similar to the German Pfandbriefe.

A second trend common to both the public and the private sector is the increase in the average size of outstanding bonds. One reason for this trend, which was particularly marked in the public sector in 1999, was the desire to enhance liquidity. In the private sector, the average size of individual issues also increased as a result of the market's ability to absorb larger issuances (as illustrated by the two record issuance programmes of Deutsche Telekom in 2000 and France Telecom in 2001). The heterogeneity of issue size remains, however, significant and reflects the diversity of issuers and investors.

In contrast with the common trends highlighted above, different developments have also occurred in the public and private bond sectors since the introduction of the euro. For instance, the issuance of floating rate notes remains marginal in the case of public issuers, with the notable exception of Italy. The opposite holds for private issuers, especially financial institutions. The relative shortage of floating rate notes issued by the public sector may have attracted private issuers to fill the gap left open.

Heterogeneity between the different types of issuers also exists in respect of the maturity of issuance. In the public sector, the trend is towards a lengthening of the maturity of newly issued bonds, while the issuance of treasury bills is being reduced. Heterogeneity exists within the private sector, in particular between the non-financial sector, where issuance tends to be concentrated in the medium-term segment of the curve, and the financial sector, where the short-term and long-term segments are relatively more important.

3.1.2. Sovereign issuance

The main developments in the primary market for euro area government bonds since the introduction of the euro indicate that two major driving forces exist.

On the one hand, the broad-based improvements in budgetary balances have provided government debt managers with challenges not unlike those faced in countries experiencing sustained budgetary surpluses, such as the United States. As a consequence of lower, or even negative, net borrowing requirements, governments in many EU Member States have undertaken buyback programmes or carried out bond exchanges.

On the other hand, the introduction of the euro has resulted in competition between governments for the same pool of funding. Numerous changes in the issuance of sovereign bonds, notably as regards issuance techniques and strategies, can be traced to this new competitive environment. This applies to large as well as small countries.

Overview of the sovereign bond market

A breakdown of the euro area sovereign bond market at end-2000 is provided in the table below. Reflecting both the relative sizes of the economy and the level of indebtedness of each government, the six largest national government debt segments are, in this order, those of Italy, Germany, France, Spain, Belgium and the Netherlands. Altogether, these six issuers represent 93% of the sovereign bond market.

Table 2
Domestic government debt markets

EUR billion, end of December 2000	Short-term debt	Long-term debt	Bonds average maturity
Italy	102	885	6.1
Germany	10	599	6.8
France	43	573	6.2
Spain	(1) 45	225	5.5
Belgium	(2) 27	(3) 173	6.1
The Netherlands	6	169	6.3
Austria	5	81	6.2
Finland	5	59	4.8
Portugal	0	46	4.7
Ireland	3	22	6.3
Luxembourg	0	1	4.1
UK	(4) 4	(5) 453	(6) 11.0
Greece (12)	(9) 5	88	(10) 5.2
Sweden	(7) 32	(8) 81	5.0
Denmark	(11) 5	(11) 79	4.8

Various sources. (1) Including Letras. (2) Including treasury certificates and treasury bills. (3) Including OLOs. (4) Including treasury bills. (5) Including Conventional Gilts and Index-linked Gilts. (6) Undated Gilts not included in the calculation. (7) Including treasury bills (also those issued on tap and with repurchase agreement). (8) Including treasury bonds (benchmarks, non-benchmarks and inflation-linked). (9) Including treasury bills. (10) As of June 2000. (11) Including domestic debt. (12) The data referring to the year 2000, in which Greece had not yet adopted the euro, Greece is listed alongside other pre-in Member States.

While there are many similarities between the overall characteristics of sovereign bond markets (the average maturity of government debts is, for example, relatively homogeneous), some governments have developed particular niches. The French government, for instance, is the only euro area sovereign government so far to have issued inflation-linked bonds. Elsewhere in the EU, the governments of the United Kingdom (with GBP 65.5 billion outstanding) and Sweden (with SEK 96.5 billion outstanding) have a longer experience in issuing inflation-linked debt. The development of this segment was illustrated in 1999 by the issuance by the French Treasury of a new 30-year index-linked security.

Another market niche of the French Treasury is the issuance of constant maturity bonds (known as "TEC") referenced to the ten-year segment of the French government yield curve. This segment accounts for 1.4% of the outstanding amount of French government bonds.

By contrast, the Italian treasury dominates the segment of floating rate issues, with an outstanding amount of €228 billion. However, since 1993 the Italian treasury has engaged in a debt-restructuring programme aiming, inter alia, at increasing the relative share of fixed rate debt. As a result, the composition of the Italian public debt has undergone a profound shift away from variable rate instruments, and their weight has decreased from 35% of the total debt in 1993 to just above 20% in 2000. A two-year floating rate note (for an outstanding amount of €3 billion) was the instrument chosen by the Italian treasury to test for the first time the capabilities of the internet for bond issuance, with direct connection with the underwriters' systems.

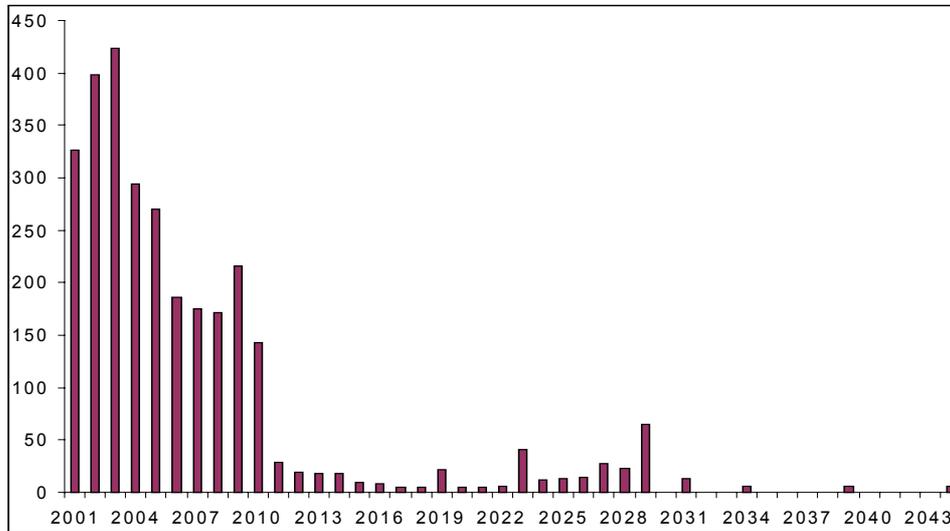
For other euro area sovereign issuers, the floating rate segment is either insignificant (e.g. in Belgium, where it amounts for under 1% of the total debt) or non-existent. The same applies to Greece, where issuance of floating rate notes has been discontinued.

A review of the structure of the euro area government bond market by maturity reveals the relative importance of bonds maturing in just under ten years (especially in 2009) and the very small amount of bonds maturing shortly afterwards (see Chart 1). This pattern reflects the concentration of sovereign issuance in the ten-year segment of the yield curve over the past few years, both as a means to exploit the environment of low yields and to boost the liquidity of these "benchmark" bonds.

Chart 1

Euro area government bond maturity profile

EUR billion

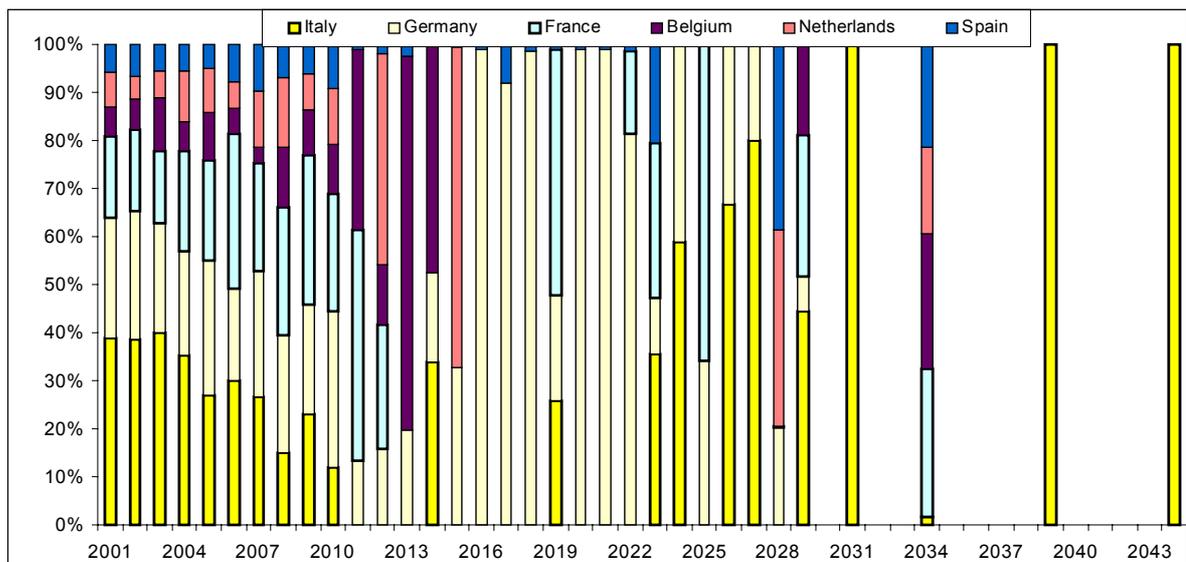


Various sources

The same analysis, focusing on the relative presence of sovereign issuers in various segments of the curve rather than on overall amounts, suggests that for maturities from ten years and onwards, sovereign issuers tend to avoid direct competition with each other. For instance, the German government has issued almost half of the debt maturing in 2010, while in the 15-year area, only Belgium, Italy and Spain have a significant presence. For longer-dated bonds, it is the three largest issuers, Italy, France and Germany, that dominate the market.

Chart 2

Maturity spectrum occupancy by the six biggest euro area sovereign issuers (percentage composition)



Various sources

Issuance activity

Fiscal performance in 1999 and 2000 in the European Union, and in particular the euro area, exceeded official expectations in many cases. The overall budget deficit for the euro area decreased from 2.1% of GDP in 1998 to 1.2% of GDP in 1999, while the whole euro area registered a small surplus of 0.3% of GDP in 2000. In 2000, these improvements were especially strong in Finland, Germany, Ireland and Italy. Six euro area countries (Belgium, Germany, Ireland, Luxembourg, the Netherlands and Finland) showed a balanced budget or a surplus in 2000.

The lower budget deficits had a noticeable impact on the issuance of both short-term securities (see the companion paper "The Euro Money Market") and long-term securities. Issuance of long-term euro-denominated securities by euro area central governments amounted in 1999 to €600 billion. It declined subsequently in 2000 to €476 billion. The reduction in the net borrowing requirements of euro area governments in 2000 is attributable to faster economic growth, but also to the exceptional revenues provided by the sales of UMTS licences and other windfalls. The income from the sales of UMTS licences varied from country to country. In Finland and Spain for instance, where these were awarded via "beauty contests", the receipts were comparatively low. The French government also opted for a "beauty contest". However, the revenues from the auction held in the United Kingdom (GBP 22.5 billion) led some governments to adopt similar allocation strategies. The income earned from the auctions was very high in Germany (€50.5 billion, equivalent to 2.6% of GDP), but smaller in the Netherlands (€2.7 billion) and Italy (€13.5 billion).

The potential significance for government debt markets of some of these amounts can be illustrated by comparing the size of the first down payment from the licence sales in the United Kingdom (GBP 12.5 billion) with the initial Gilt issuance programme for the year (GBP 12.2 billion). It is noteworthy, however, that rather than simply cancelling the bond issuance, the government of the United Kingdom decided to maintain a minimum issuance programme (GBP 10 billion) to ensure that the gilt market infrastructure remained operational. Instead, payments from the sales of UMTS licences were used to redeem foreign currency-denominated debt, reduce the issuance of Treasury bills and pay down other funding lines.

Table 3**Gross issuance, redemptions and net issuance for euro area central governments in 1999 and 2000**

EUR billion	1999			2000		
	Gross issuance	Redemptions	Net issuance	Gross issuance	Redemptions	Net issuance
Italy (1)	191.0	124.0	67.0	140.1	111.3	28.7
Germany	112.0	64.0	48.0	110.5	76.5	34.0
France	77.1	41.8	35.3	90.0	67.3 (2)	22.7
Spain	46.2	22.6	23.6	42.7	22.3	19.4
Belgium	27.4	13.9	13.5	32.2	23.1	9.1
Netherlands	25.2	19.5	5.5	18.3	23.4	5.1
Austria	18.9	6.4	12.5	17.4	6.8	10.6
Portugal	9.1	2.3	6.8	7.7	4.4	3.3
Finland	4.5	5.0	-0.5	7.4	9.0	-1.6
Ireland	1.7	2.0	-0.3	1.3	2.9	-1.6
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0

Various sources. (1) CCTs are excluded from this table. (2) Buyback of EUR 10 billion included.

A similar situation existed in Germany where, in spite of the overall improvement and the proceeds from the sales of UMTS licences, gross issuance of sovereign bonds in 2000 matched the level recorded in 1999. One reason for this is that the bulk of the receipts were used for an early drawing of the bearer bonds of the Currency Conversion Equalisation Fund in 2001, as well as net paydown of non-marketable debt.

In Italy, the treasury's favourable financial environment together with the relatively low redemptions (compared with 1999) meant that gross issuance of BTPs in 2000 was roughly of the same order of magnitude as that of Bunds. However, one counter-development was the trend towards an increased share of BTPs in Italian sovereign bonds, as the treasury lengthened the average maturity of its debt and negative net issuance of the shorter-term CCTs and CTZs became larger.

In France, the comparatively high amounts of OATs and BTANs maturing in 2000 (€15 billion more than the comparable figure for 1999) explains the increase in gross issuance by the French Treasury, in spite of the French government's improved fiscal position.

In Spain, gross issuance of Bonos decreased in 2000 along with the reduction in the government's borrowing requirements.

Gross issuance has also shrunk in the Netherlands and Belgium. The policies of the two countries have differed slightly, however: while the Dutch treasury has maintained its focus on issuance in the three- and ten-year maturity sectors, the Belgian government has rather concentrated on the five-year sector of the yield curve. The Belgian treasury has also adjusted to its lower funding requirements by reducing the frequency of its auctions.

A similar measure was adopted in Finland where the number of auctions has been halved. Furthermore, if no funding need emerges at the time of a particular tender, a reverse auction instead may be envisaged. Both in Finland and Ireland, the decreased level of gross issuance reflects the existence of budget surpluses.

Buybacks and exchanges

Independently of the changes mentioned above, the trend towards fiscal consolidation in the euro area has provided national treasuries with some leeway to cope with the short-term financial costs associated with the restructuring of their government debt markets, in order to increase efficiency. Buybacks and bond exchanges, which aim primarily at enhancing liquidity, have played a prominent role in the work of national debt managers in past years. Following a trend that started prior to the introduction of the euro, illiquid and/or short-dated debt instruments in particular have been targeted by those programmes.

Table 4
Buyback and exchange operations

EUR billion	1998	1999	2000
Italy	-	3.7 (b)	14.9 (b)
Germany	-	-	-
France	1.7 (b)	4.0 (b)	10.0 (b)
Spain	8.9 (e)	1.2 (b)	4.8 (b)
		5.6 (e)	5.9 (e)
Belgium	10.7 (e)	8.3 (e)	11.7 (e)
Netherlands	-	27.0 (e)	2.8 (e)
		0.2 (b)	5.0 (b)
Austria	-	-	1.1 (e)
Finland	3.2	2.7	5.6
Portugal	-	-	-
Ireland	-	12.0 (e)	-
Luxembourg	-	-	-

(e) stands for exchanges and (b) for buybacks

Various sources

Debt exchanges have taken place in substantial amounts. In May 1999, the National Treasury Management Agency of Ireland exchanged virtually all the bonds quoted on the stock exchange (whose features restricted their marketability) for new three, five, ten and sixteen-year benchmark bonds. In Spain, the year 2000 was the fourth in a row during which the Spanish Treasury conducted an exchange programme to enhance the liquidity of on-the-run bonds. Between July and November 2000, relatively illiquid bonds maturing between 2001 and 2003 were exchanged for three and five and ten-year benchmark bonds.

One of the most extensive government debt restructuring programmes has taken place in the Netherlands. After the exchange of small government loans for larger benchmark bonds in 1999, for a total amount of €27 billion, these operations continued in 2000. These exchanges were also combined with repurchases of bonds in 2000.

While smaller in size, the Finnish market was also the object of sizeable conversion operations, amounting to more than 15% of the outstanding amount of benchmark bonds.

Strategic measures

One of the expected effects of the introduction of the euro was intensified direct competition between sovereign issuers with similar credit standings. At the same time, the new environment brought about by the euro favoured some co-ordination between sovereign issuers, especially as regards the basic characteristics of instruments and procedures, with a view to achieving positive externalities. The adoption of a similar coupon calculation convention ("Actual/Actual") is one example of this. Bilateral and multilateral contacts have developed accordingly. One forum for such contacts is the Group on EU Government Bonds and Bills ("Brouhns Group³") established by the Economic and Financial Committee (EFC) of the European Union. While this group has no formal co-ordination power, it has successfully addressed a number of issues related to the harmonisation of public bond issuance in euro.

One consequence of the competition between national treasuries in a larger market is that working relationships with intermediaries able to provide distribution capabilities throughout Europe (and beyond), have strengthened. The services of these intermediaries have allowed national treasuries to expand their investor base outside their traditional "home" market. As a consequence, some treasuries have increased the number of primary dealers in their securities by including a higher number of non-resident banks. This has been especially true in the case of Spain where, following changes in the regulatory structure to allow for such a development, there has been a sharp rise in the number of non-resident primary dealers.

Table 5
Number of non-resident primary dealers

	1998	1999	2000
Italy	1	6	6
Germany	d.n.a.	d.n.a.	d.n.a.
France	10	11	11
Spain	0	5	9
Belgium	12	12	12
Netherlands	8	8	9
Austria	19	17	18
Finland	5	4	9
Portugal	6	8	8
Ireland	1	0	0
Luxembourg	0	0	0

Source: NCBs. d.n.a. = does not apply.

Another development arising from the introduction of the euro in 1999, and one which continued in 2000, was the increase in the outstanding amount of individual bonds. This was also a consequence of the efforts of issuers to enhance the liquidity of their debt. Already at the end of 1999, ten-year bonds issued by the French and German governments exceeded €20 billion, while a similar issue in Spain totalled €16 billion. These figures are comparable to the outstanding amount of US Treasury benchmarks (around USD 23 billion).

³ Named after its Chairman, Mr. Grégoire Brouhns, Secretary General of the Belgian Ministry of Finance.

Since intermediaries and investors demand predictability of issuance, the competitive environment faced by sovereign issuers in the euro area has led them to improve their funding policy communications. This has been achieved notably through the use of internet and the publication of periodical bulletins and annual reports, generalising a policy that existed in several countries, such as France, already before the introduction of the euro. The Dutch and Portuguese treasuries, for example, now publish on a quarterly basis the information previously distributed respectively annually and semi-annually. In Germany, as a complement to the quarterly issuance calendar, a preview of the Federal Government's issuance, redemption and interest payments for the whole calendar year has been published.

The reduction of costs and risks for the bidders in government bond auctions is another consequence of competition between treasuries. For instance, to reduce the period of uncertainty between the time of bidding and the announcement of the auction results, treasuries in Finland, Portugal, Belgium and France have resorted to fully electronic tender systems.

In the same vein, several public issuers have undertaken "e-placements" for government bonds. The treasuries of Finland, Italy, Portugal and Spain have all made use of the internet for this purpose. This underlines the potential for in-depth restructuring of government bond markets resulting not only from the competitive environment brought about by the introduction of the euro, but also from the new opportunities created by technological progress.

While competition has led to a certain homogeneity of issuers' actions as described above, it has not ruled out (in certain cases it may even have encouraged) some divergence in the strategies of different public debt managers.

One such divergence is related to the size of the funding needs and outstanding debt of each issuer. Achieving a significant level of liquidity is facilitated if the outstanding amount of each bond is at least €5 billion. This is clearly less easy for a small issuer like the government of Portugal to achieve than it is for the government of France, for instance. The former would have to concentrate most of its annual funding programme on just one line to achieve this objective, while the latter could reach it with just a few re-openings after an initial auction. Consequently, the issuing strategies of large and small countries have differed.

Large issuers typically continue to issue bonds across the maturity spectrum, in order to maintain a comprehensive and liquid yield curve. Some public issuers, however, have chosen to limit the number of auctions, while increasing the amount of each of them. In Belgium, the number of OLO auctions was reduced in 2000 from 12 to 5. Since 1999, 15-year bonds have been issued in Spain every other month, whereas the issuance beforehand was monthly. This policy was also pursued by smaller issuers, such as Finland, where the number of auctions has been reduced from two to one per month.

By contrast to the policy followed by large issuers, smaller issuers have tended to reduce the number of benchmark securities issued and/or to focus their efforts on "niches". The choice of issuance procedures also reflects the particular challenges faced by relatively small public issuers. The Finnish and Portuguese treasuries, for instance, have increasingly resorted to syndication rather than fully-fledged auctions. Even some larger issuers, like Belgium, have adopted syndication as a convenient means to front-load new lines, even though they may use regular auctions to increase their outstanding amount subsequently. One of the merits of syndication, especially for small issuers, seems to be that, by making use of the distribution capacities of the intermediaries, it may facilitate a broadening of the investor base. Not all public debt managers, as testified by the examples of Ireland and Austria, envisage, however, resorting to this issuance procedure.

In some cases, euro area governments have resorted to euro-medium-term notes (EMTN) programmes for issuance of debt securities, so as to take advantage of the flexibility and lower documentation costs of these programmes. This has been notably the case in Portugal, with €2.6 billion medium-term notes outstanding at end-1999 and €2.1 billion at end-2000, from €1.4 billion in 1998. The Italian treasury has also made use of this

option, although the relatively limited outstanding amount of EMTN issues by the Republic of Italy (around €15 bn at end-2000) illustrates the marginal character of this programme.

Finally, several governments have overhauled the institutional structure of their public debt management, in order to respond more effectively to the new competitive environment. France Trésor was hence awarded the status of debt agency with direct accountability to the Director of the Treasury and more active management capabilities. In the same vein, the German government has also announced a plan to gradually outsource its debt management operations to a federal agency. This process is expected to be completed by the end of 2002.

3.1.3. Non-sovereign issuance

The development of the private euro-denominated bond market in 1999 has been one of the most widely commented developments in financial markets in the first year of existence of the euro. Following this spectacular expansion, two schools of thoughts have developed. On the one hand, some analysts expected a continuation, or even an acceleration of this trend, reflecting a development of non-bank finance. On the other hand, a smaller number of observers believed that the increase in issuance of private bonds, and especially corporate bonds in early 1999 was essentially a one-off adjustment to the new environment created by the euro that would not be sustained, as bank finance remained predominant. As often, the truth lies roughly halfway between these two views.

This section provides a concise overview of the development of euro-denominated non-sovereign bond markets up to the end of 2000. While its emphasis is on a quantitative description of ongoing trends, explanation of these trends, sometimes admittedly of a speculative nature, is provided where appropriate. For the sake of conciseness, only the most noteworthy developments are highlighted.

Size of the non-sovereign bond market

According to the ECB securities database, the outstanding amount of euro-denominated non-sovereign bond markets was €3,305 billion at the end of 2000. This overall outstanding amount, which had increased by 16% in 1999, continued to increase in 2000, by 12%. This would tend to support the first of the two views presented above, i.e. that the rapid development of the private bond market after the introduction of the euro is more than a one-off adjustment to a new environment.

Location of issuance

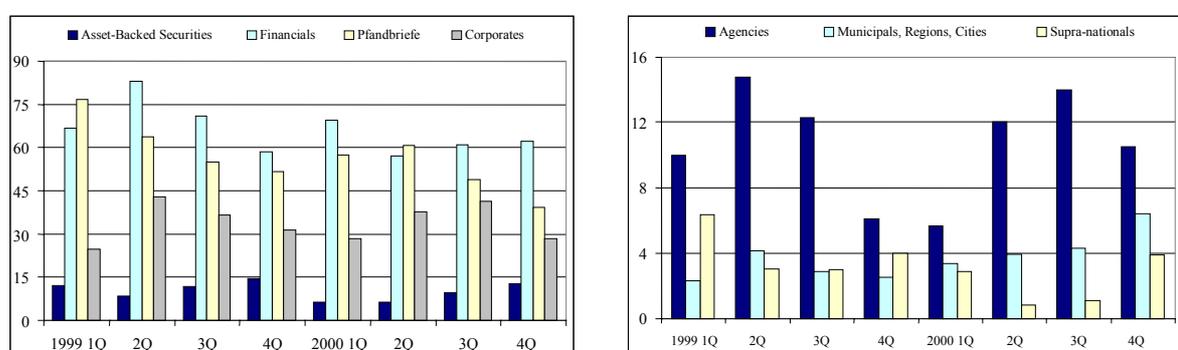
An element worth highlighting is the apparent preference of issuers for "international" rather than "domestic" issuance. This is more relevant for corporate bonds than for financial bonds, for which domestic regulations (e.g. the existence of a legal framework for issuance of mortgage bonds) are crucial. As regards corporate bonds, however, it would appear that Luxembourg is attracting a growing share of issuance. Since the concept of a "domestic pan-European" bond market does not yet exist, it seems that issuers resort to international issues as a substitute. This is consistent with the assumption that corporate issuers are trying to reach as wide a base of investors as possible through the issuance of global or international eurobonds. In addition, Luxembourg is already one of the preferred locations for the custody of corporate bonds. For instance, around one-third of the corporate bonds eligible as collateral in the context of the Eurosystem credit operations and issued by German institutions are in fact deposited in Luxembourg. Indeed, the Luxembourg Stock Exchange currently hosts 65% of the internationally listed bonds. This underlines the notion that the nascent euro corporate bond market is not merely a juxtaposition of national markets, but is, from this specific point of view, an integrated market. The same is less true, so far, for the market for bonds issued by financial institutions.

Type of issuers

While comments on the development of the non-sovereign bond market often concentrate on the corporate bond sector, it is probably useful to recall that the bulk of private bonds are in fact issued by financial institutions. These represent no less than 87% of the total outstanding amount of private bonds, which is a decrease from 89% since the introduction of the euro. In fact, many innovations with respect to private bonds have occurred in the sector of bonds issued by financial institutions, such as the apparition of "Pfandbrief-style" mortgage bonds in, inter alia, France and Luxembourg and its revival in other countries, like Spain. The domination of bank bonds is fairly homogeneous across all countries of the euro area, confirming the importance of bank finance in continental Europe.

Chart 3

Breakdown of gross issuance of euro-denominated bonds by type of issuer



Source: EU Commission, EUR billion

Residency of issuers

One of the most interesting features of the private bond market relates to the residency of issuers. Marked differences can be observed between euro area residents and non-residents. One natural difference is that the domination of bonds issued by the financial sector does not apply to such a large extent to non-resident issuers, in whose case as much as 36% of bonds are issued by non-financial corporations. In fact, this ratio is up from 19% at the end of 1998, implying that for non-resident issuers it is the non-financial sector that has been the most dynamic in taking advantage of the new opportunities created by the introduction of the euro. This difference between resident and non-resident issuers naturally reflects to a certain extent the relative weights of bank finance and non-bank finance in the euro area with respect to other economies. In addition, standard asset-liability management by banks makes it understandable that issuance in euro by foreign banks should be relatively less pronounced than issuance by domestic banks.

Another difference between resident and non-resident issuers is the pace of their activity. At the end of 1998, non-euro area issuers represented merely 13% of the outstanding amount of the market. At the end 2000, their share had risen to 18%. The outstanding amount of bonds issued by non-residents (excluding international institutions) has increased by 123% since the introduction of the euro, from an initial amount of €215 billion. For residents, it had increased by "only" 23% from a starting point of €2,198 billion. The very dynamic activity of non-residents, especially in 1999, followed by a considerable slowdown in 2000, is a key element that has led some analysts to suggest that the development of the private bond market was a one-off development. According to this analysis, international liability managers were quick to assess the opportunities to be seized from the introduction of the single currency and entered into a programme of issuance, whose aim was to re-

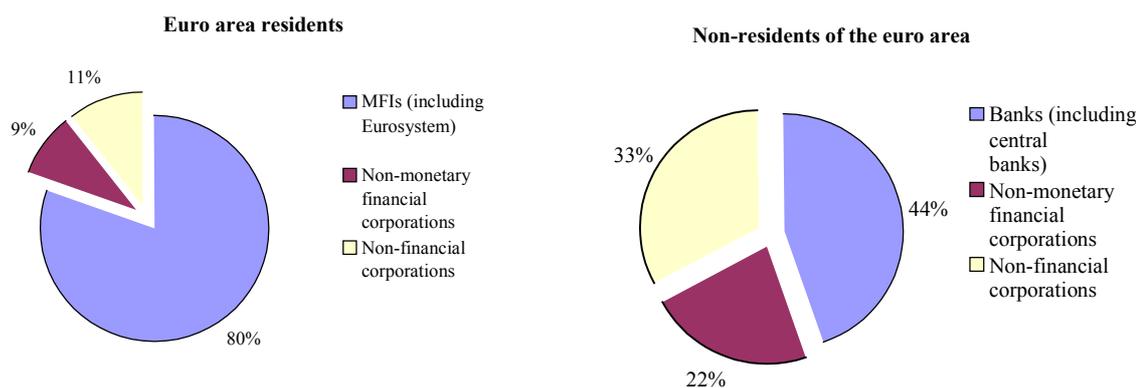
balance assets and liabilities. However, after the completion of this re-balancing, issuance would then rapidly dry up.

This thesis found some support, in particular as regards the non-financial corporations sector, since non-residents accounted for 71% of net issuance in 1999. However, this situation seems to have been reversed since the second quarter of 2000; for the first time, residents issued more bonds, on a net basis, than non-residents. Since the overall level of issuance, while irregular, has been broadly stable, this would suggest that residents are slowly catching up with non-residents.

Indeed, one can argue that a certain lag in the reaction of euro area corporations is justified. According to a study conducted by Merrill Lynch in April 2000, 53% of rated industrial companies in the US had issued bonds. In the euro area, the proportion was only 28%. It is understandable that companies that have never issued bonds take more time to access the market for the first time than companies that have already established a "name", have working relationships with investment banks and the necessary infrastructure in place for issuing debt securities. It is possible, albeit by no means certain, that as more European companies establish such an infrastructure, their recourse to the market will become more regular. In this case, the growth of the private bond market would probably remain significant.

Chart 4

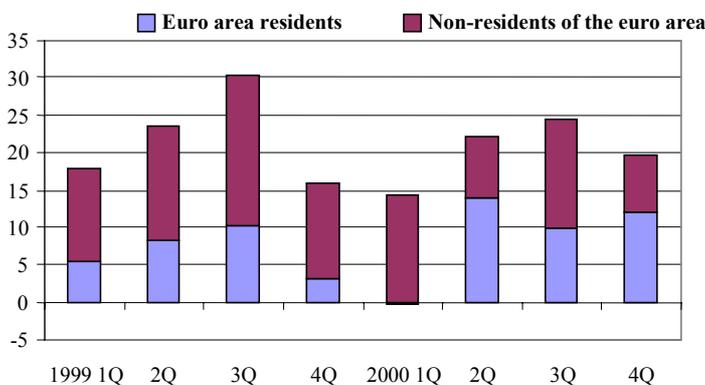
Breakdown of outstanding private euro-denominated bonds by type of issue and residency status



Source: ECB securities database, December 2000

Chart 5

Net issuance of private euro-denominated bonds by non-financial corporations



Source: ECB securities database, December 2000, EUR billion

As an illustration of the new developments in the euro-denominated bond market, Freddie Mac, an AAA-rated US Government Sponsored Enterprise, announced on 14 August 2000 the launch of a “EuroReference Note programme”. This programme was inaugurated in September 2000 with the issuance of a 10-year bond with an outstanding amount of €5 billion and continued in November with the launch of a 5-year bond for €5 billion. Thereafter, Freddie Mac will commit to offer €5 billion each subsequent quarter through either new issues or re-openings for a total annual issuance amount of €20 billion. This issuance plan is consistent with the intention to develop a benchmark programme across the yield curve. While this is not the first time Freddie Mac has issued non-US dollar debt, previous issues had been very irregular and small in size.

Maturity of issuance and relationship with government securities

An interesting question is whether the reduction in net funding needs by the public sector results in a “crowding-in” effect that facilitates the issuance of non-government bonds. The answer to this question is difficult to provide, if only because during the short period of observation a number of far-reaching developments, not least the introduction of the euro, may have distorted behaviour. A few observations and tentative comments may nonetheless be proposed. One would expect, in general, that the increase in private issuance would be stronger in the maturity sectors and in the credit risk categories particularly affected by the retrenchment of the public sector. At first sight, it would therefore appear that this crowding-in effect, if any, would benefit financial institutions of superior ratings rather than the corporate sector. Indeed, especially in 2000, it is for the financial sector that issuance of long-dated bonds – those for whom a reduction in government issuance would be expected to leave a gap – has increased. By contrast, the bulk of corporate issuance remains concentrated in the shorter segment of the yield curve with only around 4% of all issues having initial maturities above 10 years. In fact, the average maturity of corporate bonds appears to have shortened since the introduction of the euro.

Ratings and telecom bonds

While no clear trend appears as regards the rating of private issuers in the financial sector, there are indications that a gradual shift down the credit curve has occurred for non-financial issuers. In the second half of 1999 especially, the contraction of investment grade issuance has not been accompanied by a similar development for the B- or even C-rated bonds. The pattern is, however, irregular and it is difficult to draw any unequivocal conclusion at this stage. In any case, issuance below the B-grade remains anecdotal. Large issuance of bonds by telecom companies, which typically have ratings in the lower range of the A-segment, also tends to distort statistics.

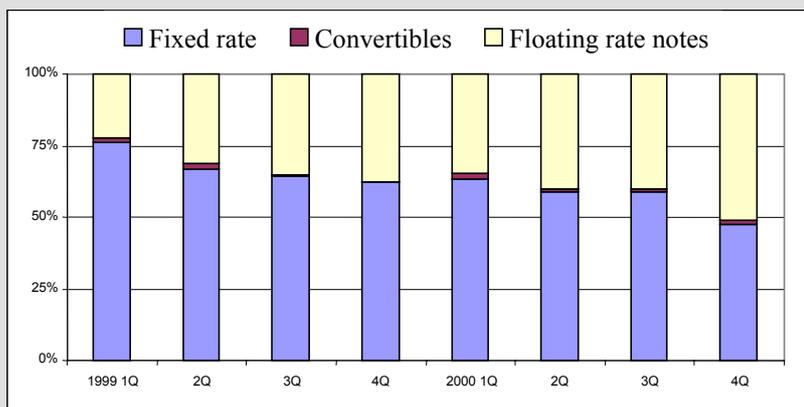
The development of “telecom bonds” is interesting as regards the growth of a credit culture in Europe. Indeed, telecommunication companies, which used to benefit from state monopolies in very stable markets, are now facing increased competition and deregulation, in markets where rapidly changing technologies considerably enhance return, but also increase risks. This change, together with the substantial rise in leverage associated with the financing of the purchases of UMTS licenses, caused a reduction of the rating of many of these companies in 2000, and consequently credit spreads have increased. It is arguable that the riskier nature of such bonds, for which there exists a very large investor base, contributes to a “learning process” whereby the holders become accustomed to the volatility associated with lower credit quality. This would in turn facilitate the development of a corporate bond market for lower rated issuers. On the other hand, it is possible that the large issuance of telecom bonds has “crowded out” other issuers with lower ratings, and that the under-performance of these bonds affects, in a permanent manner, demand for lower rated bonds. However, information available to date does not allow the drawing of unequivocal conclusions in this field either.

BOX I

Securities issued by MFIs and other financial corporations

The bulk of the private bond market is accounted for by securities issued by MFIs and other financial corporations. These represent 86% of the total outstanding amount of securities, marginally less in percentage terms than at the time of the introduction of the euro. The same dominance of financial institutions applies to gross issuance: since January 1999, these issuers have represented the bulk of the issuance (around 91%). The net issuance of private bonds has been somewhat irregular since the introduction of the euro. In particular, there appears to have been a drop in net issuance at the end of 1999, to around half the level of the previous year. This drop is essentially due to the reduction in issuance by MFIs, possibly resulting from the transition to the year 2000. Indeed, since then net issuance by MFIs has increased again and reached levels broadly comparable to the levels prevailing earlier in 1999. Bonds issued by financial institutions tend to be relatively well spread over the maturity spectrum, especially when compared with corporate issuers. In particular, the segment of long-term bonds (with a maturity of 10 years and over) represents between 10% and 15% of the issues, slightly less than three times as much as for corporate issuers. It is useful in this regard to underline that the group of issuers analysed here include issuers of mortgage bonds and government-guaranteed agencies. The size of the bonds issued by financial institutions is, at an average of €165 million since the introduction of the euro, half that of corporate issues. Any comparison is however difficult to interpret as financial issues encompass a very wide range of different assets, from Jumbo Pfandbriefe with outstanding amounts in excess of €5 billion to a wide variety of very small and illiquid notes. Nonetheless, it is interesting to see that the average size of issues has not really increased since the introduction of the euro. The strategy of concentrating issuance on a few very large bonds to achieve a critical mass and enhance the liquidity of the bonds therefore appears to be pursued by only a small number of issuers. As regards the breakdown by type of issue, it should be noted that the bonds issued by financial institutions were mainly of the fixed rate type at the beginning of 1999 (around 75% of the total). At the end of 2000 floating rate bonds were matching fixed rate issues, while convertible bonds remained very marginal. This contrasts with corporate issuance, where convertible bonds amount on average to slightly more than 10% of the total issued since January 1999.

Breakdown of euro-denominated financial institutions' issuance by issue type



Source: Capital Data Bondware

3.2. Trends in the secondary market

Under the impact of the EU policies aiming at the completion of the Internal Market in the field of financial services, the drive towards the integration of EU financial markets started before the introduction of the euro and goes beyond its borders. For instance, the Investment Services Directive (93/22/ECC), published in 1993, allows authorised intermediaries established in any Member State of the European Union to operate in any other Member State. In particular, these intermediaries may operate directly in any regulated market of the EU. For electronic regulated markets, intermediaries may operate without opening a branch in the country where the market is located.

However, while regulation (or deregulation) can facilitate the integration of the market, this process is ultimately achieved by market participants themselves. From that point of view, the introduction of the single currency, by removing a major barrier to the cross-border diversification of portfolios, was expected to foster the integration of the euro area bond market, as seen from the point of view of investors. This section reviews developments in this field.

3.2.1. Geographical diversification within the euro area

One indicator of the level of integration of the euro-denominated bond market is the extent of the "home bias" shown by investors within this market. "Home" means the national segment of the euro area market, in which the investor is located. Geographical diversification therefore relates in this section to the reshuffling of bond portfolios previously denominated in legacy currencies within the euro area, rather than to diversification in securities denominated in third currencies.

While little data is available there are some indications of increased – albeit slow and limited – diversification within the euro area. The limited benefits derived by investors from geographical diversification, especially in the government bond sector, seem however to slow down the process.

According to available data, the share of public bonds held by "domestic" investors (investors resident in the same euro area Member State as the issuer) have declined since the introduction of the euro. The share held by non-residents as a whole (including non-euro area residents) has accordingly increased. Where data is available (in particular in Spain and Belgium) it appears that these shifts are largely attributable to purchases by investors from other euro area countries. Anecdotal evidence provided by institutional investors confirm this trend towards diversification.

The current process is an ongoing one that started before the introduction of the euro (and even before the formal announcement of the start of EMU and the official bilateral conversion rates in May 1998).

The fact that diversification is first and foremost underpinned by risk/return considerations serves to explain in part why the process is slow. Indeed, in view of the administrative costs entailed by diversification (for instance, in terms of the need to acquire legal and technical knowledge of the specific environment of other euro area market segments), expectations of substantial additional returns are required to lure investors away from their home market. In the years prior to the introduction of the euro, for instance, such additional returns were provided by the perspective of significant yield spread tightening between various categories of government bonds. The potential additional returns to be earned from geographical diversification now seem to be less attractive.

The relative homogeneity of the euro area bond market is one relevant element in this respect. Around half of the euro-denominated bonds are sovereign bonds. In the context of the fiscal discipline guaranteed by the Stability and Growth Pact, all euro area governments enjoy high and relatively homogeneous credit ratings. Furthermore, a large share (over 80%) of the bonds issued by the private sector also enjoys a high level of creditworthiness. The relative homogeneity of the different securities translates into relatively limited (and

stable) yield spreads, thereby reducing the incentive for diversification. Other obstacles to integration often mentioned by market participants are listed in section 5.

However, some diversification seems to have occurred in favour of those sovereign issuers with relatively lower ratings and higher yields. This is reflected in the increase in the share of public bonds held by foreign investors in Spain, Belgium and Italy, for instance. Meanwhile, the trend towards a slight widening of yield spreads between French and German government bonds has been attributed by market participants to the removal of obstacles to diversification brought about by the introduction of the euro, allowing demand by French institutional investors to be diverted away from their "home" market, thus alleviating a structural "squeeze" on French government bonds.

Another incentive that fosters diversification is the preference for liquidity. In this regard, German government bonds continue to hold a particular attraction for many investors because of the perception of their "safe haven" status and because of their deliverability against the highly liquid Eurex futures contracts. Preference for liquidity and the importance of deliverability against highly liquid futures contracts is also reflected in the reported premium enjoyed by "on-the-run" issues in Germany, while such premia seem to be relatively limited in France or Spain. Another element in favour of German government bonds is the fact that, due to their "benchmark" status prior to the introduction of the euro, their (legal and technical) characteristics are better known to a broader base of investors than those of bonds issued by other governments. This illustrates the importance of "administrative" costs to diversification, which are nonetheless expected to diminish gradually as investors become more accustomed to various categories of securities, and as standardisation of the features of the bonds extends.

3.2.2. Diversification into the "credit" sector

Prior to the introduction of the euro, investors seeking higher expected returns, at the cost of accepting higher risks, often diversified their assets into sovereign bonds outside their home market. Different yield curve developments and, of course, exchange rate movements provided the potential additional return. As indicated above, these opportunities have mostly disappeared within the euro area. This has encouraged diversification into alternative classes of assets, potentially providing additional return. The most noteworthy of these is the diversification of bond portfolios into asset classes bearing credit risk, the so-called "credits". In addition to bank bonds and Pfandbriefe, these include corporate bonds and, to an increasing extent, also "structured products" (asset-backed securities, collateralised debt obligations, etc.).

The trend towards diversification into credits has also been reinforced, on the supply side, by the relative shift in the structure of the bond market away from public issuance and towards private issuance, as discussed in section 3. In particular, the trend towards a lower supply of government bonds makes diversification into other classes of assets a necessity. In addition, if a reduced supply of sovereign bonds results in a scarcity effect that lowers their yields relative to private bonds, this would increase the incentive for diversification. The current low absolute level of bond yields tends to further reinforce this incentive.

One point to note regarding diversification into more risky assets is that, due to the asymmetric probability of losses and gains of a corporate bond over a given time horizon, a large number of bonds is needed to achieve sufficient diversification benefits in a portfolio. This asymmetry results from the possibility of a default of the issuer (major downside risk with a low probability) normally not matched by a corresponding probability of a large gain. Hence, to be able to offset the losses brought about by one or two issuers' default in a portfolio, an investor would need a portfolio encompassing very many bonds. This suggests that diversification into riskier bond categories entails costs, in terms of setting up sufficient credit analysis capabilities to deal with a wide number of different issuers.

In this context, the broadening of the investment universe brought about by the introduction of the euro seems to have provided the necessary economies of scale to make this investment profitable. This is in part due to the increase in the number of assets potentially available to each investor within the boundaries of

his/her currency area. Indeed, a large number of institutional investors are subject to statutory or contractual limits governing their investments in foreign currency-denominated assets.

A final element favouring sectoral diversification seems to be a lower aversion to risk on the part of retail investors. The rising share of households' financial assets accounted for by stocks seems to be pointing in this direction. The recent increase in the number of retail investment funds specialising in European corporate bonds are, in this context, facilitating diversification of retail investors' assets into this market segment.

3.2.3 Adjustments to euro area-wide benchmarks

The ongoing adjustments to the benchmark portfolios used by institutional investors as a reference for the measurement of their performances mirror the two trends mentioned so far: firstly, national government bond indices have been replaced by euro area-wide government bond indices; secondly, investors diversifying into the credit sector now tend to use indices that encompass this category of assets. However, the process of adjusting benchmarks is not complete. National indices are still used in a number of cases.

Broad-based indices for euro-denominated bonds tend to reflect both the structure of the market and the preference of the investors for whom they are destined. These benchmarks typically include only investment-grade bonds. Sovereign and public bonds also tend to be over-represented in the benchmark (in comparison with total market capitalisation), which is a consequence of the requirements for inclusion in the indices, in particular in terms of the minimum outstanding amount. Many Pfandbriefe and corporate bonds (a fortiori sub-investment grade bonds) do not meet these requirements.

3.3. Developments in the derivatives markets

3.3.1. Bond futures

Developments in euro-denominated bond futures in 2000 did not differ significantly from those already observed in 1999⁴. The German government bond contracts (2, 5 and 10-year) traded on the Eurex derivatives exchange continued to attract the bulk of trading. Confirming the trend initiated in 1999, Eurex confirmed its status as the most active derivatives exchange globally, ahead of the Chicago Board of Trade (CBOT), while the Bund contract established itself firmly as the most actively traded futures contract in the world (see the companion report "The Euro Money Market"). Most of the surge in exchange traded volumes in the first months of 2000 occurred in the field of fixed income derivatives.

The success of the Bund contract partly hinges on the fact that it remains the most widely used hedging instrument for all euro-denominated issues. However, trading activity on the euro notional ten-year futures contract of the Matif continued to recover, following in particular the introduction of the Matif Intervention Bancaire (MIB) market-making scheme, which is supported by nine major French banks. Some market participants have argued that the increased use of the Matif notional contract is linked to a slight decline in the correlation between movements in the prices of German and other euro area government bonds. This would make the Matif contract a more appropriate hedging instrument than the Bund contract for bonds other than German government bonds.

⁴ See "The impact of the euro on money and bond markets", by J. Santillán, M. Bayle and C. Thygesen, ECB Occasional paper No.1, July 2000.

3.3.2. Interest rate swaps

Another development consistent with the trend initiated in earlier years is the continuous expansion of the interest rate swap market⁵. The considerable development in this market should be seen in the light of developments in the government bond markets. Indeed, the absence of a single, clearly defined, benchmark sovereign yield curve has encouraged market participants to seek a liquid and more homogeneous reference for the valuation of non-sovereign bonds in particular. The swap market has provided such a reference. Another factor that has enhanced the depth of the swap market is the growth in issuance of these non-sovereign bonds, and especially corporate bonds. Corporate issuers may indeed make use of swaps to convert fixed-rate liabilities into floating rate ones.

The structural developments that have led to the expansion of the swap market are also reflected in the behaviour of swap spreads (defined as the difference between yields on benchmark government bonds and Euribor swap rates) throughout 2000. Following a pattern broadly similar to their US dollar counterparts, euro swap spreads have risen in 2000 to levels last seen in the aftermath of the 1998 crisis. This trend has been partly driven by cyclical considerations (which are not developed here) but also by important changes in the structure of euro area capital markets.

The first such development is the reduction in the net supply of euro area sovereign bonds examined above. This has resulted, in turn, in a weakening of the correlation between government bond yields and other euro-denominated fixed-income instruments, including non-sovereign bonds and swaps. This, eventually, supports the use of swaps for hedging or valuation purposes. The same factors that resulted in the widening of swap spreads therefore also encouraged the development of the swap market.

It must be noted that, while the total supply of government bonds has decreased, new issuance of bonds with a maturity of five years or longer has actually increased. Excess demand for long-dated government bonds may therefore reflect expectations of scarcity in the future rather than current conditions.

Mirroring the developments mentioned above, increased recourse to euro-denominated bond issuance by the private sector has also contributed to both the development of the swap market and swap spread evolutions. Until recently, bond issuance by euro area issuers tended to be conducted in the deeper US dollar market rather than in the shallower local currency markets. There is evidence of changes to that practice, following the introduction of the euro. In its 70th Annual Report, the BIS estimated that some three-quarters of all debt issued since July 1998 by private sector borrowers located in the euro area had been denominated in euro (or legacy currencies), compared with half for the period ranging from 1990 to June 1998. The BIS further estimated that the proportion of debt issues in euro by private sector borrowers located outside the euro area had risen from 10% to 20% of their total issuance over the same period. As mentioned above, increasing corporate activity in the bond market tends to support the development of the swap market.

While the funding of the euro area corporate sector remains largely dominated by bank credit, greater use of capital markets seems to be an emerging trend. Should this trend continue, it may have an effect on both the activity in the interest rate swap market, but also, in a structural manner, influence the evolution of swap spreads.

⁵ For an analysis of developments in the shorter-term overnight interest rate swap market, see "The Euro Money Market" report.

4. Developments in market structure and infrastructure

The field of the euro area bond market structure, and in particular infrastructure, is one where developments continue at a rapid pace, but also one where further developments seem the most inevitable. This section reviews developments that have taken place in 2000 in the field of retail markets, wholesale electronic markets and that of clearing and security settlement systems.

4.1. European retail markets

In retail bond markets, developments fostered by technological innovation or by the introduction of the euro have not been as significant as in other segments (e.g. wholesale markets, which are considered in section 4.2). Already at the beginning of Stage Three of EMU, almost all retail markets used an electronic platform.

As regards the level of integration of euro area retail markets, one indicator is the number of intermediaries operating in markets located in other countries of the EU. Where data is available, this number appears to have increased after the introduction of the euro. However, as most regulated retail markets are multi-product ones, in the sense that bonds, equities and other securities are listed on the same market, it is not possible to assume that this increase, strictly speaking, is linked to the integration of the bond market. On the contrary, it seems that it is the greater cross-border demand for equities that is the main reason for the increase in the number of intermediaries that operate in one given market by remote access.

However, some bonds are quoted in parallel on the markets of several countries. This is the case, for instance, of some debt securities of Italian issuers (the “EuroMOT”), initially quoted only outside Italy and now also quoted on the Borsa Italiana.

4.2. Wholesale electronic markets

Developments in wholesale markets have been substantial over the past few years. At the end of 1998, most wholesale markets in the European Union were “telephone based”, with the exception of MTS in Italy and HDAT in Greece. This situation has been reversed as the consequence of a combination of factors. The much broader euro-denominated market, compared with those of legacy currencies, has led to an increase in the number of actors (issuers, intermediaries, investors and infrastructure providers), in almost every segment, and intensified competition within each category. This has reduced the advantages of telephone trading, such as ex ante knowledge of one’s counterparty or the ability to conduct a transaction without it being disclosed to the rest of the market. At the same time, increased competition has led to increased demand for the efficiency that can be provided by technological innovation. This demand originated both from the investor side and from the issuer side, insofar as a liquid secondary market supports investor’s interest in the primary market as well.

While the trend towards more widespread use of technology in the bond market has been reinforced by the introduction of the euro, this is not a consequence of the single currency per se. Developments in the euro area are mirrored by developments in other currency areas (e.g. the United States)⁶.

Several different patterns of development of wholesale markets have been witnessed in the euro area. A first strategy displayed by the MTS group consisted in “exporting” the Italian electronic model MTS to other European countries. At the end of 2000, the MTS group consisted of 5 “national” MTS markets (Italy, the Netherlands, France, Belgium and Portugal) as well as the London-based EuroMTS (see box).

⁶ For a more comprehensive discussion of the consequences of the introduction of electronic trading in financial markets, see “*The implications of electronic trading in financial markets*”, Committee on the Global Financial System, January 2001 (available at www.bis.org).

Other developments included the launch in 1999 in Spain of an electronic platform (Senaf) created by the four previously active interbroker-dealers, aimed at concentrating wholesale trading in Spanish fixed income. Another national initiative was Eurex Bonds, launched in October 2000. Eurex Bonds provides a platform for wholesale transactions (initially only for German government bonds) as well as the ability to carry out so-called basis trades, in which offsetting cash and derivatives transactions are conducted simultaneously. The shareholders of this private joint venture are Eurex Frankfurt AG and several leading market participants in the bond market. The strategy of the initiative is to provide a vertically integrated market for some of the most important euro-denominated securities. Since the end of October 2000, Eurex Clearing AG has also been acting as a central counterparty for cash transactions.

In addition to these national initiatives, a number of global private inter-dealer platforms have been launched. Several of these Electronic Communication Networks (ECN) provide capabilities for trading both US and European government bonds (e.g. BrokerTec).

Finally, mirroring developments on the inter-dealer front, initiatives have been taken to develop dealer-to-customer platforms, where institutional investors can compare the prices provided by several intermediaries simultaneously. Here again, initiatives tend to be multi-product ones, providing services for both US dollar and euro-denominated products (examples are TradeWeb, Bondclick). While there are numerous initiatives, many market participants believe that a certain degree of consolidation in the field of electronic trading platforms is inevitable.

The heterogeneity of platforms included under the generic term “electronic trading platform” is illustrated, as mentioned above, by the distinction between inter-dealer and dealer-to-customer platforms. But another substantial distinction should be made between the markets which are “regulated”, as defined by the Investment Services Directive (ISD) of the European Union (such as some MTS markets) and the platforms that, from a regulatory point of view, are not considered as regulated markets but as investment services firms. The difference between the two is significant, insofar as all authorised intermediaries in the EU are allowed access to regulated markets, while this may not be the case for non-regulated markets. The distinction between the two is however not fully settled, as Senaf, for instance, is very close to the concept of regulated market.

Box 2

The MTS model

MTS S.p.A., founded in 1988 and privatised in 1997, was the first wholesale electronic market for government bonds.

MTS is a quote-driven market in which market-makers quote continuously two-way prices during the entire trading session for agreed securities, with a maximum bid-ask spread that depends on the characteristics of the security.

Over the last few years, MTS has followed a strategy of expansion in two directions: a broadening of the range of securities traded on the system, and the extension of the MTS model to other countries of the euro area.

Since 1997, repos, both for general collateral (GC) and “specials”, strips, corporate bonds and when-issued bonds have been added to the traditional “cash” segment. Furthermore, MTS Italy has expanded its activities to encompass trading in German securities.

Since the introduction of the euro, four additional “national” MTS companies were created: MTS Amsterdam (which started to operate in August 1999), MTS France (which started to operate in April 2000), MTS Belgium (which started to operate in May 2000) and MTS Portugal (which started to operate in June 2000). The

shareholding structure of these companies include MTS Italy and national treasuries as well as major market firms of each country.

The rules (conditions of access, obligations of market-makers, list of traded securities) in each market are established by the shareholders according to national law. However, all the markets are quote-driven and based on the obligation for market-makers to quote two-way prices for the whole day. All markets also use the same platform as MTS Italy. Participants in the market can use the same workstation to access all the MTS markets they have joined, thereby ensuring a certain homogeneity for the users.

Another element of the MTS group is EuroMTS, a London-based company that started to operate in April 1999, and which is also owned by MTS and major international financial firms. EuroMTS differs slightly from other MTS markets in that it is a "super-wholesale" inter-dealer market, where minimum trades are twice as large as for the other markets. Only benchmark issues are traded on EuroMTS and only the largest international firms are active in this market. EuroMTS also differs from other MTS markets in so that benchmark government bonds of several euro area countries are traded (Italy, Germany, France, Spain, the Netherlands, Belgium, Austria, Portugal and Finland). EuroMTS is not a regulated market, and its access is accordingly not automatically granted to all authorised intermediaries.

In spite of these differences, EuroMTS uses the same trading platform as other MTS markets and also functions as a quote-driven market with market-making obligations.

In 2000, the average daily turnover on MTS Italy was equal to €7.9 billion. On other national MTS markets, the average daily turnover ranged between €200 million (Portugal) and €360 million (France). Given that these markets have only operated for a limited period, it is difficult to draw clear conclusions from these data. As for EuroMTS, the average daily turnover at the end of 2000 amounted to €3.3 billion. Interestingly, some turnover of Italian securities migrated from MTS Italy to EuroMTS occurred in 1999 and 2000.

Finally, at the end of 1999, MTS created two new divisions devoted to the trading of private bonds, MTS/Corporate and EuroCreditMTS. These have been added respectively to the activities of MTS Italy and EuroMTS. Only private bonds with a large outstanding amount are quoted on these markets. The number of securities quoted and the trading volumes remain relatively low.

4.3. The integration of clearing and security settlement systems

The setting-up of links between euro area central securities depositories (62 links at last count) and the ongoing mergers combined to change substantially the infrastructure for the euro-denominated government bond market in particular. While all newly issued government bonds in the euro area are registered in book-entry form, central securities depositories are still relatively heterogeneous across the euro area in terms of settlement and custody procedures.

The trend since the introduction of the euro has been to consolidate local market infrastructure for custody and settlement into one local central securities depository (CSD). In Spain, a merger between CADE and SCLV, the central depositories for government and private securities respectively, to form a new CSD called Iberclear, has been announced. In Italy, government securities held in the depository of the Banca d'Italia (CAT) were transferred to Monte Titoli in December 2000. In Ireland a similar reform has taken place. The activity of CBISSO, a CSD operated by the Central Bank of Ireland for the settlement of Irish government bonds, was transferred to Euroclear in early December 2000.

4.3.1. The situation on the clearing side

Clearing and settlement systems exert a significant influence on the secondary market for bonds as they influence, inter alia, the transactions costs (and the risks) associated with trading. They can therefore influence activity and liquidity conditions in the market. The diversity of infrastructure in the euro area is still considered as an impediment to a complete integration of the euro-denominated bond market. However, substantial changes have taken place already and the ongoing process of merger, creation of links and other initiatives are expected to change substantially the overall framework for clearing and settlement and to reduce transaction costs dramatically.

Demand for clearing and netting facilities has developed rapidly in Europe as a means to reduce operational risks, enhance efficiency in the usage of capital and lower transaction costs. At this stage, two clearing houses, Clearnet and the London Clearing House (LCH), are extending their services for clearing and netting facilities to more segments of the euro area bond and repo markets. Eurex is also developing capacities as central counterparty through Eurex Clearing AG, aiming at extending its services beyond German government and agency securities.

The future direction of the clearing industry in Europe remains uncertain at this stage. One school of thought prefers the creation of a single central counterparty for all euro-denominated bonds, with a view to facilitating further integrated development of the secondary bond market. However, other market participants believe that underlying legal discrepancies, in particular as regards bankruptcy laws, hamper the creation of such a single central counterparty. This second school of thought suggests that each market platform should be associated with one clearing unit.

4.3.2. The situation on the settlement side

Since the start of Stage Three of EMU, considerable improvements have been made in the field of security settlement systems (SSS). The ECB standards for use of SSS in Eurosystem credit operations set an important benchmark in this respect. Intra-day finality of settlement and links have gathered considerable importance. The development of links, which facilitates cross-border transactions, is however not considered as a viable solution in the long term by a number of market participants, owing to the difficulty of use and cost issues. It should also be noted that most of the links set up between various systems do not function on a delivery versus payment (DVP) basis, but remain "free delivery" links.

Confirming the trend initiated in 1999, integration of security settlement systems in Europe is increasing. Indeed, following the domestic integration described above, some euro area integration is now taking place. The merger between Cedel and Deutsche Börse Clearing (DBC) gave birth to Clearstream International, whose two subsidiaries (Clearstream Banking S.A., Luxembourg, and Clearstream Banking AG, Frankfurt) comprise the core clearing and settlement business. In contrast, the merger of Euroclear, CBISSO, Sicovam into Euroclear group, which CIK and Necigef will join later, is proposing a progressive model of integration based on the interconnection of the technical platforms before merging them into one single platform. The purpose of both organisations is to achieve a model of integration offering a single access to an efficient real-time settlement process, in the form of interconnected platforms as a first step.

5. Prospects for further integration

The introduction of the euro has played a crucial role in fostering a deeper and more liquid, euro area-wide bond market. The single currency per se does not, however, remove all the barriers to market integration.

This point is illustrated by the work carried out by public authorities in the European Union, with the aim of achieving the completion of the Internal Market in the field of financial services. The publication of the report of the Committee of Wise Men on the Regulation of European Securities Markets, chaired by Alexandre Lamfalussy, is a testimony to that effect.

At the same time, market integration does not mean that the market has to become entirely homogeneous.

This second point is illustrated by the remaining spreads between government bond yields across the euro area, reflecting both liquidity and credit risk differences. It is also noteworthy that self-imposed constraints by investors themselves seem, in some cases, to hamper cross-border arbitrage.

5.1. Early expectations and bond yield developments since the introduction of the euro

At the start of Stage Three of EMU, it was expected that the small yield spreads between sovereign bonds issued by euro area governments would narrow further. The underlying rationale was that these spreads reflected both liquidity premia and credit risk differentials. As smaller issuers were expected to adopt a strategy of concentrating issuance on a small number of larger issues, the liquidity premia were expected to narrow as a result. Meanwhile, strict adherence to the terms of the Stability and Growth Pact was expected to result in a general strengthening of the fiscal positions of Member States, thereby reducing perceived differences of creditworthiness.

A consequence of this reasoning is that many market participants expected a benchmark yield curve to emerge consisting of the most liquid German, French and Italian sovereign bonds.

As indicated in section 3.2., these expectations were only partly met. Yield spreads between euro area sovereign bonds widened slightly, if anything. A single benchmark yield curve did not emerge. Caution must be exercised when interpreting these developments, as they are not necessarily a sign of insufficient integration. For instance, the benchmark status of the German government yield curve, especially in the ten-year sector, can be in part traced to the success of the Bund futures contract, which is to a certain extent the true underlying benchmark for this part of the curve for the whole euro market. However, it also appears that investors are not yet totally impartial as regards the purchase of two bonds from two different euro area countries, for reasons which reflect a still incomplete integration.

5.2. Remaining barriers to integration

According to market participants, the heterogeneous tax environment in the euro area (which goes beyond the scope of this report and will not be analysed further here) represents a significant barrier to further integration. An example often quoted is the Italian withholding tax. While exemption from this tax is possible, it requires time-consuming operations that deter some investors from purchasing Italian assets.

More generally, administrative costs for investors who invest outside their “home” (understood here as national) market still remain a barrier to integration. These costs are related, inter alia, to infrastructures, credit assessment and the legal environment.

As regards infrastructure, it is generally agreed that the fragmentation of the clearing and settlement systems in the euro area continues to be an obstacle to integration. Integration at the infrastructure level is perceived by investors as likely to reduce the time and administrative burden needed to execute transactions (see also section 4.2).

The still relatively low number of rated companies in the euro area (compared, for instance, to the United States) is also perceived as an obstacle to integration, especially in the non-sovereign sector of the market. Indeed, a widespread rating would facilitate cross-border investment for investors, who have limited knowledge of the creditworthiness of medium-sized issuers in other euro area Member States.

A third example, also often quoted, of administrative costs potentially hampering further integration relates to heterogeneous insolvency regimes across the euro area, as well as differences in accounting and disclosure rules. Credit risk assessment and the estimation of the recovery rates, which vary according to the location of the issuer, are rendered more complex as a result. The non-standardised characteristics of individual bonds (e.g. in terms of the covenants) require expensive and time-consuming reviews, which deter cross-border arbitrage between otherwise similar bonds.

The above comments are taken seriously by authorities, infrastructure providers and issuers alike. It is noteworthy, for instance, that legal obstacles to cross-border diversification, once a major obstacle to integration, are being dismantled. As an example, the legal requirement for Belgian pension funds to invest at least a minimum part of their assets in Belgian bonds has been removed. Nevertheless, regulations governing some French associations and public or semi-public institutions still require them to invest at least part of their assets in French government bonds.

As “exogenous” barriers to integration imposed on investors are gradually dismantled, it appears that “endogenous” barriers, imposed by investors themselves, form most of the remaining restrictions to cross-border diversification of portfolios across the euro area. This illustrates the fact that, while public authorities can only *facilitate* market integration, it is private market participants who, by taking advantage of arbitrage opportunities across the euro area, are actually *achieving* integration.

Annex I Pfandbriefe in the euro area

In view of the enormous success of German Pfandbriefe with foreign investors, especially those resident in other euro area Member States, other countries have introduced legislation allowing for the issuance of similar instruments. This was the case in 1997 in Luxembourg (Lettres de Gages), in 1999 in France (Obligations Foncières) and in 2000 in Finland. The Irish government has recently proposed new legislation to the same effect in Ireland. Meanwhile, the Spanish version of the Pfandbriefe market – Cédulas Hipotecarias – was revived in 1999.

In Germany, Pfandbriefe are debt securities, which are used to refinance first-rank loans secured by mortgages or land charges (mortgage Pfandbriefe) or to refinance loans to the public sector (public Pfandbriefe, which were formerly known as communal bonds). They are, in essence, covered debt securities. They can be issued by private mortgage banks by virtue of the Mortgage Bank Act, by private ship mortgage banks by virtue of the Ship Mortgage Bank Act, and by public sector credit institutions by virtue of the Public Pfandbrief Act.

The high degree of security for investors provided by German Pfandbriefe is based above all on strict statutory provisions. These include the priority claims of Pfandbrief holders on the assets used as collateral in the event of an issuer defaulting, the quality of the assets used as collateral (for example, only 60% of the loan value of a property – which is about 15% below market value on average – may be used to cover Pfandbriefe) and in the case of private mortgage banks the prescribed maximum ratio of an issuer's outstanding Pfandbriefe to his equity capital.

This special protection for investors makes certain privileges possible. For example, in accordance with the UCITS Directive of the European Union, investment companies and insurance companies may hold larger proportions of an issuer's Pfandbriefe in their portfolios than applies to other bank bonds. Under the Solvency Ratio and Capital Adequacy Directives, the risk weighting of Pfandbriefe is set at only 10%.

While public bonds represented the larger part of the German bond market at the beginning of the 1990s as a result of the high level of public funding required to finance German unification, Pfandbriefe regained the lead in 1999 (in terms of the outstanding amount of bearer bonds issued by borrowers resident in Germany). At the end of December 2000 Pfandbriefe accounted for 36%, or approximately €826 billion, of all outstanding fixed-interest bearer bonds issued by borrowers resident in Germany. With more than 83% of the Pfandbriefe market, public Pfandbriefe have gained ground at the expense of mortgage Pfandbriefe in recent years.

Until a few years ago, non-resident investors were relatively unfamiliar with German Pfandbriefe. This situation, however, has now been reversed. Although a high degree of liquidity prevails in the primary market in the case of traditional Pfandbriefe, whose terms of issue are tailored to meet the requirements of individual investors, a certain shortage of liquidity, a lack of transparency and relatively wide bid-offer spreads characterise the secondary market. Yet, liquidity in the secondary market has become increasingly important for investors, who have moved away from a traditional "buy-and-hold" attitude towards a more active style of management. Liquidity premia contributed to a widening of yield spreads between government bonds and Pfandbriefe, making refinancing for Pfandbrief issuers more expensive.

The relative lack of liquidity of the Pfandbrief market was resolved by the issue of a first Jumbo Pfandbrief with a volume of DEM 1 billion on 26 May 1995. The highly liquid market segment of the Jumbo Pfandbriefe is now well established, with certain standard characteristics. The features of a Jumbo Pfandbrief that ensure liquidity and transparency include: a minimum issue volume of about €500 million; fixed interest and a single fixed maturity date (straight bonds); the participation of at least three market makers, who quote tradable bid-ask prices for tickets normally of about €15 million; and a stock market listing (more than 90% of turnover is however thought to be generated by OTC trading). There are also recommendations regarding the maximum bid/ask spreads which the issuer is entitled to require market makers to quote.

Secondary market liquidity has also benefited from the setting-up of a group of market makers in the Pfandbrief repo market. In addition, large-volume Jumbo Pfandbriefe have been traded on EuroCreditMTS since 22 May 2000. Finally, Pfandbriefe have been included in a number of euro-area bond indices which investors use as benchmarks. As a result, Jumbo Pfandbriefe have also become attractive for performance-oriented international investors. The success of Jumbo Pfandbriefe (with an average issue volume for each individual issue at €1.8 billion in 1999) is also reflected by the fact that by the end of 1999 about 30% of all outstanding Pfandbriefe were Jumbo Pfandbriefe.

The rising international demand for Pfandbriefe has also encouraged the introduction or revival of Pfandbrief-like systems in other European countries. These are often modelled on the very strict German provisions for Pfandbrief issues. The term Pfandbriefe is often used as a generic term for all these instruments. They are all issued by credit institutions and are secured by collateral. However, some differences in the statutory provisions have to be taken into account when assessing the credit risk. Significant differences in liquidity levels also exist from one Pfandbrief market to another.

According to the Association of German Mortgage Banks, Pfandbriefe accounted for a share of approximately 21%, or about €1,390 billion, of the European bond market at the end of 1999. German Pfandbriefe had a 76% share of this outstanding amount. The other Pfandbriefe were issued in Denmark (10%), Sweden (6%), France (3%), Switzerland (2%) and in Austria, Spain, Norway, the Netherlands and Finland (each with less than 1%). In 1999, gross issuance of Pfandbriefe accounted for about 18% of all euro-denominated bonds issued in euro-area countries and thus easily exceeded corporate bonds (10%) and other asset-backed securities or agency bonds (each with 3%). It is not only the still dominant German Pfandbrief market but also the emergence or revival of Pfandbrief markets elsewhere that is contributing to the special significance of the Pfandbrief segment within the non-sovereign bond market.

Annex 2 Glossary

Active fund: is a fund that has an active strategy for choosing which shares or assets to invest in and when to buy or sell them, rather than a strategy of following an index.

AEX (Amsterdam Exchange): stock index of the 25 largest companies listed on the Amsterdam Stock Exchange.

Alternative trading systems (ATs): systems that offer additional means of trading compared to established exchanges. They operate electronically (lowering transaction costs) and focus on services that established exchanges do not always provide (e.g. central limit order book, after hours trading or direct access for institutional investors).

Amex: American Stock Exchange

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

Asset allocation: the process of deciding in which assets to make investments and what proportion of total capital available should be allocated to each choice.

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

Benchmark: value used as a reference or means of comparison for measuring the performance of an investment

Benchmarking: basing the investment allocation on an industry standard and/or on a fixed securities index.

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

BIS: Bank for International Settlements.

Block trade: large, potentially market-moving trade.

Blue Chip: term for the most prestigious industrial shares.

Bon à taux fixe (BTF): French Treasury bill.

Bonos del Estado (Bonos): Spanish Treasury bonds with original maturity between two and five years.

Bons du Trésor à taux fixe et à intérêt annuel (BTAN): negotiable fixed-rate medium-term French Treasury notes with annual interest. On issue their maturity is either two or five years.

Broker: firm which operates in a market on behalf of other participants to arrange transactions without being a party to the transactions itself.

Bubill: German Treasury bill.

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

Buoni Poliennali del Tesoro (BTP): Italian Treasury bonds with original maturity of three to thirty years.

CAC 40: stock index of the 40 largest companies listed on the Paris Stock Exchange.

Capitalisation : see Market capitalisation.

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.

Centralisation: tendency for trading activity, price determination and information generation to be concentrated in a single market.

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

Certificati di Credito del Tesoro (CCT): Italian Treasury floating rate securities with a seven- year original maturity.

Central securities depository (CSD): a facility for holding securities which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be

dematerialised (i.e. so that they exist only as electronic records). In addition to safekeeping, a central securities depository may incorporate comparison, clearing and settlement functions.

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.

Collective investment funds: funds where assets are purchased and managed on behalf of all the participants in the fund, and the benefits of the fund are shared out in proportion to participants' holdings. Investors buy units, or alternatively shares, in the funds. In an open-ended collective investment fund the managers can create new units or cancel existing ones, as supply and demand dictate. In a close-ended collective investment fund the supply of units is fixed, and those entering or leaving the fund have to buy or sell existing units.

Commercial paper (CP): short-term obligations with maturities ranging from 2 to 270 days issued by banks, corporations and other borrowers. Such instruments are unsecured and usually discounted, although some are interest bearing.

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.

Convertible bond: bond exchangeable for equity at a set price.

Counterparty: the opposite party to a financial transaction.

Credit risk: the risk that a counterparty will not settle an obligation for full values, either when due or at any time thereafter.

Cross margining: netting of margin requirements for the simultaneous sale and purchase of securities.

Crossing network: system matching buy and sell at a price determined in another market. Such systems play no part in price discovery.

Currency risk: the risk that the operations of a business or the value of an investment will be affected by changes in exchange rates.

DAX (Deutscher Aktienindex): stock index that tracks the price movements of the 30 largest and most actively traded German stocks.

Day trading: purchase and sale of a position during the same day.

Dealer: firm whose primary business is entering into transactions on both sides of wholesale financial markets and seeking profits by taking risks in these markets.

Defined benefit insurance policies: policies for which the benefits are defined ex-ante.

Delisting: when a company is no longer included in the listed companies at the exchange.

Dematerialisation: the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.

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

Depository: an agent with the primary role of recording securities either physically or electronically and keeping records of ownership of these securities.

Derivative: a financial contract the value of which depends on the value of one or more underlying reference assets, rates or indices. For analytical purposes, all derivatives contracts can be divided into basic building blocks of forward contracts, options or combinations thereof.

DJ Stoxx indexes: the Dow Jones STOXX SM indexes are published by STOXX Limited, a partnership of Deutsche Börse AG, Dow Jones and Company, Euronext Paris SA and SWX Swiss Exchange. They are a family of investable and tradable European equity indexes that are fully integrated with the Dow Jones Global Indexes. The best known DJ Stoxx indexes are the DJ EuroStoxx 50, focused on the euro area, and the DJ Stoxx 50 which is Pan-European.

DJIA: Dow Jones Industrial Average.

Electronic trading: in broad terms, this refers to any use of electronic means of sending orders (bids and offers) to the market.

EMU: Economic and Monetary Union.

End-user: an entity that takes positions for investment or hedging purposes. An end-user often deals only on one side of the market.

Equity swaps: a transaction that allows an investor to exchange the rate of return (or a component thereof) on an equity investment (an individual share, a basket or index) for the rate of return on another non-equity or equity investment.

ESA 95: new European System of Accounts where 95 is the reference year. The previous system was ESA 79.

EU: European Union.

Eurex: German/Swiss 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 49 prime banks⁷

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 49 prime banks⁸

Euronext: company born from the merger of the exchanges of Amsterdam, Brussels and Paris on 22 September 2000.

European Master Agreement: legal contract sponsored by the European Banking and the European Savings 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.

Exchange traded funds (ETFs): a fund that is traded on a stock exchange like a share.

FEFSI (Federation Europeenne de Fonds et societes d'investissement): European Federation of Investment Funds and Companies.

FIBV (Federation Internationale des Bourses de Valeurs): International Federation of Stock exchanges. This is the trade organisation for regulated securities and derivative markets, and related clearing houses world-wide.

Financial services action plan (FSAP): elaborated and adopted by the European Commission in 1999, the action plan was endorsed by the Lisbon European Council in March 2000, which set a deadline for its implementation of 2005 at the latest. Its purpose is to improve the single market in financial services in order to reap the full benefits of the euro. The action plan suggests indicative priorities and time-scales for legislative and other measures to tackle three strategic objectives, namely ensuring a Single Market for wholesale financial services, open and secure retail markets and state-of-the-art prudential rules and supervision.

Flow back: shares used to pay for a (cross-border) acquisition and sold quickly by investor.

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 deposit.

⁷ Number of panel banks as of 19 January 2001.

⁸ Number of panel banks as of 19 January 2001.

Forwards: purchase or sale of a specific quantity of a commodity at the current price, with delivery and settlement at a specified future date.

Free float: freely traded securities.

FTSE 100: stock index of the 100 largest companies listed on the London Stock Exchange. It is calculated and maintained by FTSE International Ltd.

FTSE International Ltd: index provider co-owned by the Financial Times (FT) and the London Stock Exchange (LSE).

Futures: agreement to buy or sell a specific amount of a commodity or financial instrument at a particular price on a stipulated future date.

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

Hedge fund: private investment partnership whose offering memorandum allows for the fund to take both long and short positions, use leverage and derivatives, and invest in many markets.

Hedging: strategy to offset investment risk.

Home bias: tendency of investors to limit their holdings to the domestic market.

Investment services directive (ISD): refers to the Council Directive 93/22/EEC of 10 May 1993 on provision of investment services in the securities field. One of the main achievements of the ISD has been to provide a single European passport for investment firms by allowing them to provide services, or establish branches in other Member States, on the basis of home country authorisation. As a corollary, the ISD has introduced the right of investment firms to become member or to have access to regulated markets of another Member State either with a presence in that State or by remote membership.

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

IPO: Initial public offering. A company's first offering of stock to the public.

International central securities depository (ICSD): a central securities depository which clears and settles international securities or cross-border transactions in domestic securities.

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

Large capitalisation: stock with a large market capitalisation, usually at least USD 5 billion.

Lead manager: main underwriter of securities offerings. Usually leader with a syndicate of underwriters.

Leverage: company debt expressed as a percentage of equity capital. High leverage means that debts are high in relation to assets. The equivalent UK term is gearing.

Leveraged Buy Outs (LBO): see Management Buy Outs.

LIFFE: London International Financial Futures and Options Exchange.

Liquid (market): three aspects of liquidity are tightness in bid-ask spreads, depth and resiliency. It is characterised by the ability to transact in a market without significantly moving prices.

M&A: mergers and acquisitions.

Management buy-out: purchase of all of a company's publicly held shares by the existing management, which takes the company private. (*Leveraged buy-out*, if the management has to borrow heavily to finance the transaction).

Market capitalisation: value of a corporation as determined by the market price of its issued and outstanding common stock.

Market maker: dealer obliged to quote buy and sell prices in return for certain privileges within a market (sometimes used to refer to anybody who provides quotes).

Market transparency: ability of market participants to observe (pre-trade) quotes, (post-trade) prices and volumes in timely fashion.

MATIF: Marché A Terme International de France (French international futures and options exchange).

MDAX: index comprising the 70 German companies that rank behind the 30 DAX stocks in terms of size.

Mercato Interbancario dei 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.

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

Morgan Stanley Capital International (MSCI); index provider

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.

Mutual funds: investment company that raises money from shareholders and invests the proceeds (also *investment funds*).

NEMAX: index of the 50 largest growth stocks listed in Frankfurt Neuer Markt.

Net Asset Value: for an investment fund, is calculated by taking the market value of all securities owned plus all other assets such as cash, subtracting all liabilities, then dividing the result (total net assets) by the total number of shares outstanding.

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 assets are not.

NM markets: new markets set up in Europe in the second half of the nineties to meet the needs of fast-growing young companies seeking capital to finance expansion. The 6 NM markets are: Amsterdam NM, Brussels NM, Helsinki NM, Neuer Markt, Nouveau Marche, Nuovo Mercato.

Non-collective investment funds: funds not managed on a collective basis, but on behalf of an individual institution, or possibly of an individual. Important institutional investors are pension funds and insurance companies, which might delegate the management of funds to an external fund manager or within the financial group to which it belongs. By contrast with collective investments, "non-collective investments" may be characterised as private placements not marketed to the general public but established by direct contracts between the investor and the fund manager.

NYSE: New York Stock Exchange.

Obligaciones del Estado: Spanish Treasury bonds, with initial maturity of more than five years.

Obligations Assimilables du Trésor (OAT): French fungible Treasury bonds with original maturities from seven to thirty years.

Obligations Linéaires-Lineaire Obligaties (OLO): Belgian fungible medium- and long-term Treasury bonds with original maturity up to thirty years.

OECD: Organisation of Economic Cooperation and Development.

Online: in electronic money systems, this indicates that a direct connection is made to a centralised computer system for authorisation or validation before a transaction can be executed.

Open interest: total number of contracts in a commodity or options market that are still open; that is, they have not been exercised, closed out, or allowed to expire.

Open outcry: method of trading on commodity exchanges. The term derives from the fact that traders must shout out their buy or sell orders.

Options: right to sell or buy a security in exchange for an agreed sum.

Order book: a centralised market where prices are determined by an order execution algorithm from participants sending firm buy and sell orders.

Order routing: delivery of messages from end-users to the execution system.

Order-driven market: a market where sell and buy orders are centralised in a single order book which collects information such as the limit price, volume and time of order. Deals are then made at an equilibrium price that results from the confrontation of supply and demand.

OTC (over-the-counter): over-the-counter, bilateral transactions not conducted on a formal exchange.

Passive management: a style of investment management, which seeks to replicate the performance of a market index. Passive management is also called index management.

Pfandbriefe: German mortgage bond.

Pledge: legal arrangement by 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.

Price-driven market: a usually decentralised market where a class of participants, possibly market makers, post bid and offer quotes, often indicative, with prices being determined through bilateral negotiation.

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

Primary market: market for new issues of securities.

Private equity: shares that are not listed on a stock exchange.

Privatisation: process of converting a publicly operated enterprise into a privately owned and operated entity.

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).

Remote access: access to a system granted to a participant which has neither its head office nor any of its branches located in the country where the system is based.

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.

Retail investor: investor who buys securities and commodities on his own behalf, not for an organisation.

Return on equity: amount, expressed as a percentage, earned on a company's common stock investment for a given period.

S&P 500 (Standard & Poor's): stock index of the 500 leading American companies.

Screen-based trading: trading conducted through a network of electronic terminals.

Secondary market: exchanges and over-the-counter markets where securities are bought and sold subsequent to the original issuance, which took place in the primary market.

Settlement: completion of a transaction by exchange of instruments and funds.

Small capitalisations: small cap stocks usually have a market capitalisation equivalent to USD 500 million or less.

Smart agent: an enhanced search engine that can compare different sites and find the best deal.

Special collateral: collateral other than general collateral.

Standard & Poor's (S&P): index provider

Straight-through processing (STP): the capture of trade details directly from front office systems to back office.

Swap: an agreement for an exchange of payments between two counterparties at some point(s) in the future and according to a specified formula.

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 established by the national central banks, subject to ECB approval.

TMT: Technology, Media, Telecom.

Treasury bill: short-term government debt instrument issued at a 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.

Unit linked insurance policies: policies in which the policyholder's premiums are used to buy units in a fund run by the insurer. The value of the policyholder's units fluctuates and is directly linked to the value of the underlying assets.

Variation margin: funds that are paid to (or received from) a counterparty (clearing house) to settle any losses (gains) for a given confidence level (e.g. 95%).

Venture capital: an investment in a start-up business that is perceived to have excellent growth prospects, but does not have access to capital markets. This type of financing is sought by early-stage companies seeking to grow rapidly.

Warrants: a security that entitles the holder to buy a proportionate amount of common stock at a specified price, usually higher than the price at the time of issuance, for a period of years or in perpetuity.

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

Annex 3 Co-ordination of studies

The three studies of the Market Operations Committee (MOC) of the ESCB were conducted by working groups involving representatives from the NCBs and the ECB. The working groups were chaired respectively by:

- Mrs. Elisabeth Pauly of the Banque de France – the Euro Money Market
- Mr. Emerico Zautzik, co-chaired by Mr. Andrea Santorelli, of the Banca d'Italia – the Euro Bond Market
- Mr. Eloy W. Lindeijer of De Nederlandsche Bank – the Euro Equity Markets.

Mr. Paul Mercier, of the European Central Bank, co-ordinated the editorial group, which prepared the publication of these reports.