



EUROPEAN CENTRAL BANK



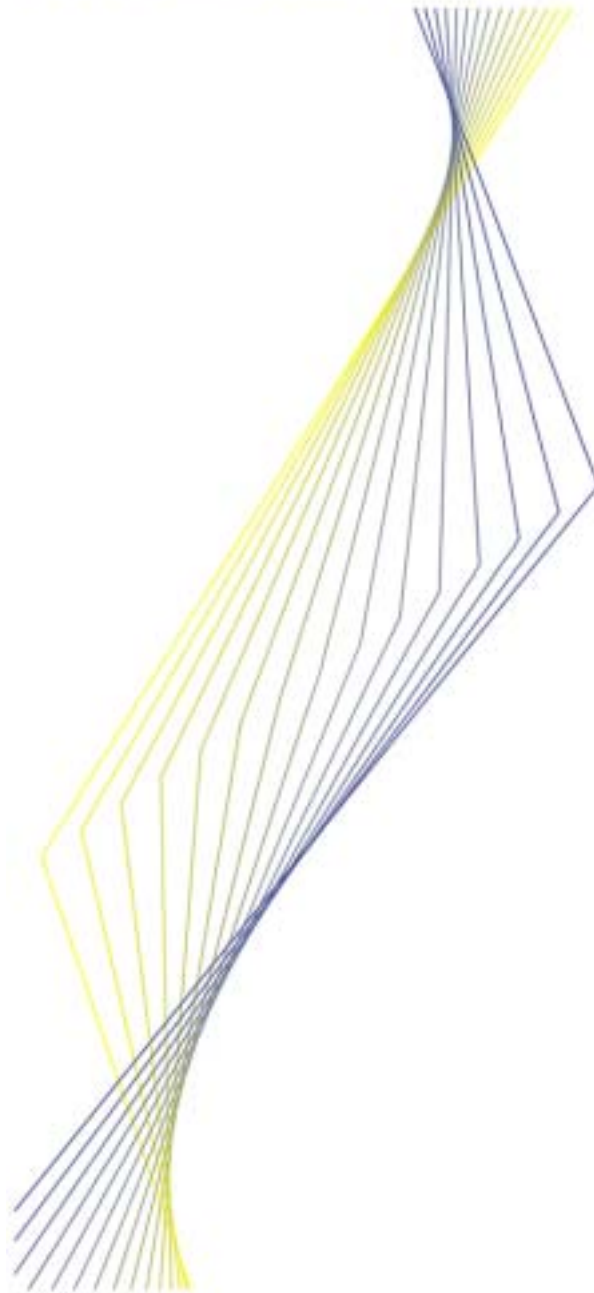
**MONEY MARKET
STUDY
2002**

November 2003





EUROPEAN CENTRAL BANK



**MONEY MARKET
STUDY
2002**

November 2003

© European Central Bank, 2003

| | |
|-----------------------|--------------------------------------------------------------------|
| Address | Kaiserstrasse 29 D-60311 Frankfurt am Main Germany |
| Postal address | Postfach 16 03 19 D-60066 Frankfurt am Main Germany |
| Telephone | +49 69 1344 0 |
| Internet | http://www.ecb.int |
| Fax | +49 69 1344 6000 |
| Telex | 411 144 ecb d |

All rights reserved.

Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

ISBN 92-9181-434-2 (print)

ISBN 92-9181-435-0 (online)

Table of Contents

| | |
|------------------------------------------------------------------------------|----|
| Executive summary | 5 |
| 1. Introduction | 7 |
| 2. Main trends in the different market segments | 8 |
| 2.1 The euro money market in 2002 | 8 |
| 2.2 Developments in the unsecured market | 9 |
| 2.2.1 Turnover analysis | 9 |
| 2.2.2 Maturity analysis | 10 |
| 2.2.3 Market structure | 13 |
| 2.3 Developments on the secured market | 15 |
| 2.3.1 Turnover analysis | 15 |
| 2.3.2 Maturity analysis | 17 |
| 2.3.3 Market Structure | 19 |
| 2.4 Developments on the OTC derivatives markets | 22 |
| 2.4.1 Turnover analysis | 22 |
| 2.4.2 Maturity analysis | 24 |
| 2.4.2.1 The overnight interest rate swap market (EONIA swap market) | 24 |
| 2.4.2.2 FX swaps | 26 |
| 2.4.2.3 FRAs | 27 |
| 2.4.2.4 IRS | 29 |
| 2.4.2.5 Cross-currency swaps | 30 |
| 2.4.3 Market structure | 31 |
| 2.5 Developments in the short-term interest rate futures and options markets | 33 |
| 2.6 Developments on the short-term securities market | 35 |
| 2.6.1 Turnover analysis | 35 |
| 2.6.2 Outstanding amounts and issuance | 36 |
| 2.6.3 Market structure | 39 |
| 2.7 Cross-market segment analysis | 40 |
| 2.7.1 Turnover analysis | 40 |
| 2.7.2 Maturity analysis | 41 |
| 2.7.3 Market structure | 43 |

| | |
|-------------------------------------------------------------------------------------------------------------|----|
| Annexes | 46 |
| 1: Technical annex | 46 |
| 2: A comparison of the ISMA European repo survey and the ECB survey on euro interbank money market activity | 49 |
| 3: Glossary | 51 |
| 4: Co-ordination of the study | 55 |

Executive summary

This fourth study on the structure and functioning of the euro money market is the result of a survey conducted by the European Central Bank (ECB) and the national central banks (NCBs) of the European System of Central Banks (ESCB). The turnover data collected from banks cover the second quarters of 2001 and 2002. Overall growth in money market activity continued in 2002, although at a lower rate than in previous years. The survey confirms that activity in the unsecured market has slowed down further, while for the secured market, growth in turnover persisted in 2002. This money market segment is now the most important one, surpassing that of the unsecured market. The preference towards limiting credit risk exposure might have contributed to this evolution as well as to the concentration of activity, in both segments, in very short-term maturity (up to 1-week). For the unsecured market, 80 % of the activity takes place in the 1-business day maturity, much more than in the secured market, reflecting difficulties in same-day settlement of collateral.

Regarding the secured money market, many findings are similar to the ones of the ISMA's European money market repo survey: strong growth in turnover, comparable geographical distribution, etc. The possible differences derive from the methodologies adopted or from the composition of the respective reporting panels.

As for the OTC derivatives markets, the Overnight Index Swap (OIS), Foreign Exchange Swap (FX swap) and Cross-currency Swap (Xccy swap) markets contracted while, in contrast, the Interest Rate Swap (IRS) and the Forward Rate Agreement (FRA) markets recorded significant growth. Despite their contrasting evolution, the OIS and FX swap markets remain by far the most important market segments for OTC derivatives.

The rate of increase in activity on the euro futures and options market slowed down in 2002, after the high growth levels observed in 2001. The persistent expectations throughout most of 2002 that official interest rates would remain unchanged partly explain the limited growth.

Finally, in 2002 the volume of outright transactions in the short-term securities market recorded its highest increase since 2000.

In general, market participants reported that they continue to be satisfied with the degree of market efficiency and integration, especially in the unsecured deposit and derivative markets. The secured and short-term securities markets are still characterised by a lower degree of

integration, as a consequence of the still-national character of the collateral used for secured transactions, and of the lack of harmonisation of practices together with integration in the securities settlement infrastructure in some segments of the market for short-term securities. Initiatives have been taken in both market segments to facilitate even greater integration. In particular, the ACI Short Term Paper (STEP) task force has presented several recommendations designed to achieve a better integration in the short-term securities market¹.

The OTC derivatives market segments are the ones with by far the highest concentration among the largest market players.

Looking at the geographical distribution, the bulk of the transactions in segments such as unsecured, secured, OIS and short-term securities are concluded between two counterparties located in the euro area. Activity in the secured and short-term securities markets is still, largely traded between two counterparties from the same euro area country. For products involving FX swaps, cross-currency swaps, FRAs and other IRSs, activity is more evenly distributed between euro and non-euro area counterparties.

¹ The analysis and recommendations of the ACI Short Term Paper Task Force are reported in the document entitled "The short Term Paper Market in Europe", 2 September 2002 (edited by the ACI)

I. Introduction

In the second quarter of 2002, the European Central Bank (ECB) and the national central banks (NCBs) of the European System of Central Banks (ESCB) conducted, under the auspices of the Market Operations Committee of the ESCB, a qualitative and quantitative survey among banks in 14 countries regarding the euro area money market. Based on the results of this survey, this study analyses the euro area money market continuing in the path of similar studies conducted for the years 1999, 2000 and 2001². It aims at assessing trends and developments in the integration and efficiency of the euro money market, using information derived from the survey. Data are from the second quarter of 2002 and the second quarter of 2001. Each NCB selected a number of banks with a view to obtaining a representative coverage of money market activities. Altogether, a total of 121 banks participated, of which 3 were located in Belgium, 16 in Germany, 8 in Greece, 14 in Spain, 10 in France, 11 in Ireland, 12 in Italy, 5 in Luxembourg, 4 in the Netherlands, 7 in Austria, 14 in Portugal, 5 in Finland, 4 in Sweden and 8 in the United Kingdom. The methodological remarks contained in the questionnaire are enclosed in Annex I of the study.

In addition to the survey, other data sources have been used: the section on futures and options markets (section 2.5) relies on data published by the London International Financial Futures and Options Exchange (LIFFE), while the section on the short-term securities market (section 2.6) also draws on data from both the ECB's securities database and the EUROCLEAR database.

It should be noted that the number of reporting banks varies considerably from one market segment to another: indeed not all banks are active in each segment of the money market and therefore not all banks filled in the questionnaire for each individual segment. However even if the reporting panel for the different segments does not include the same number of banks, a (rough) comparison between the various segments can still be made. This assumes that the banks did not report volumes in a particular segment either because they do not have any activity at all or because they have no important activity. The number of banks participating in each of the successive annual surveys also varies significantly. To compare the findings of the previous surveys, only data contributed by a constant panel (i.e. only those banks that reported

² See ECB: "The impact of the euro on money and bond markets", July 2000; "The euro money market", July 2001; "Euro Money Market Study 2001", December 2002.

data for the money market surveys in 2000, 2001 and 2002) were used to analyse the different trends over the last three years.

Unlike the previous surveys, the 2002 money market survey also collected information on the average maturity per maturity bracket. This information allows us to calculate maturity-adjusted volumes³. Per segment, the relative weight of the maturity brackets is analysed based on both criteria i.e. the nominal and the maturity-adjusted volumes. The measure of maturity-adjusted volumes is presented with the aim to balance the impact of different maturities in turnover data, which would otherwise be biased towards the shorter end. Maturity adjusted volumes as presented in the report allow us to assess the relative relevance of different maturity brackets in terms of total volume outstanding without the bias of different original maturities. On the other hand, a pure turnover analysis, without a weighting scheme, may provide an indication on the actual market liquidity of different maturity brackets.

Finally it should also be stressed that the quantitative data were not obtained from the standard reporting systems of credit institutions. Collecting the data from a sample of credit institutions implies that the survey does not provide comprehensive information on the volumes of transactions in the euro area money market. Instead, its purpose is to highlight the main trends affecting the market structure. As a consequence, this study neither assesses the overall size of the different segments of the euro money market, nor does it compare the euro area money market with that of other major markets, such as those in the United States or Japan.

2. Main trends in the different market segments

2.1 The euro money market in 2002

Money market activity in 2002 occurred against a background of great financial market uncertainty and international geopolitical tensions.

Given the lower level of economic growth in 2001, worsened by the terrorist attacks in the US on 11 September of that year, the beginning of 2002 saw a moderate recovery in euro area economic conditions, and this created expectations of a future interest rate increase by the ECB. These expectations were reflected in an upward-sloping deposit yield curve, which lasted until the end of August.

³ Maturity-adjusted volume: multiplying the reported volume by a weight factor (the average maturity of the maturity bracket) divided by the total average maturity

However, from September 2002 onwards, the yield curve became inverted as the market revised downwards interest rate expectations owing to the slowing of the economic growth recovery, along with growing geopolitical tensions (mainly related to the crisis in Iraq). The sustained appreciation of the euro, in conjunction with weak economic growth, strengthened these expectations by reducing inflation risks in the euro area.

Against this backdrop, in 2002 the ECB Governing Council kept the minimum bid rate of main refinancing operations unchanged, at 3.25%, for most of the year. Official interest rates were only changed in December, with a reduction of 50 bps.

Overnight interest rates closely tracked the pattern of MRO marginal interest rates during the year and recorded quite low volatility⁴, as liquidity conditions were generally well balanced.

2.2 Developments in the unsecured market

2.2.1 Turnover analysis

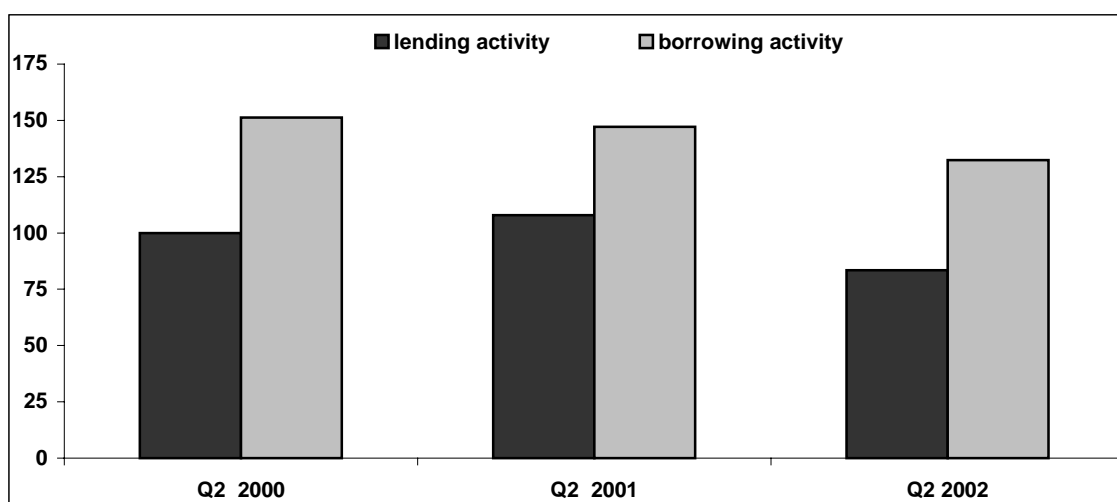
The turnover analysis of unsecured money market activity, between the second quarter of 2000 and the second quarter of 2002, reveals a downward trend both in borrowing and lending activity, although this is somewhat less clear in the latter.

According to the data from survey participants, cash borrowing and lending activity decreased by 13% and 17% between the second quarter of 2000 and the second quarter of 2002 (chart 1). Therefore, in the sample considered, total unsecured money market activity in the second quarter of 2002 was 14% lower than in the corresponding period of 2000.

⁴ EONIA volatility recorded 12 bps in 2002, as measured by the standard deviation. Excluding the month of December the volatility was only of 8 bps.

Chart 1

Unsecured cash borrowing and cash lending average daily turnover for 2000, 2001 and 2002



Average daily turnover (Base 100 for cash lending activity in Q2 2000);
Panel of 93 banks

The environment of uncertainty prevailing in 2002 is likely to have restricted somewhat the activity in the unsecured money market, especially in transactions involving longer-term maturities. The preference for limiting credit risk exposure might also be restricting this money market segment while conversely fostering repo and derivatives segments. Furthermore, decreasing cash borrowing activity is related to the recourse to own issuance of commercial paper and Euro commercial paper, as this provides an important alternative means of funding for banks.

Moreover, within the sample considered, borrowing activities in each of the past surveys has always been more important than the lending part of the market. In the second quarters of 2000, 2001 and 2002, cash borrowing exceeded cash lending activities respectively by 51%, 36% and 59%.

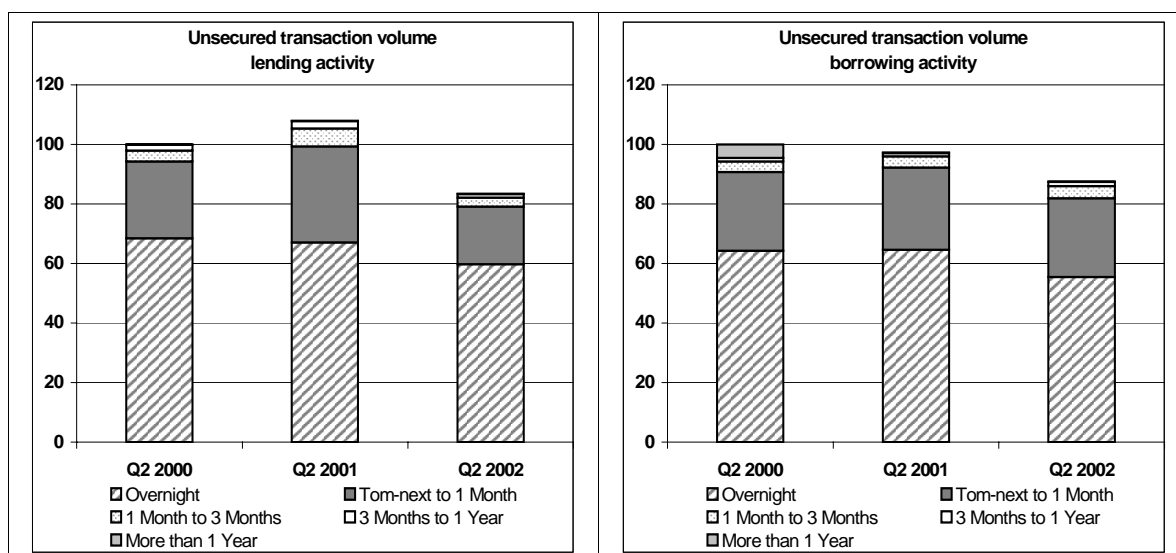
2.2.2 Maturity analysis

In chart 2 comparing 2000, 2001 and 2002, the total volume of 2000 is used as the base value (100). The first column in these charts indicates the relative weight of each maturity bracket in the base year (2000). The second and third columns express the turnover in each maturity bracket as a percentage of the total turnover in the base year; therefore, the sum of these ratios for the years 2001 and 2002 will not add up to 100. Nevertheless, these ratios provide an

indication of the evolution of the total volume of the segment and of the relative importance of the different maturity brackets over time.

Although the sharpest percentage falls were recorded in longer maturities (-99% in cash borrowing above 1 year, -55% in cash lending above 1 year and -35% in cash lending between 3 months and 1 year), the fall recorded in unsecured transaction volumes between the second quarters of 2000 and 2002 can mainly be explained by the evolution of shorter-term segments. In particular, overnight transactions recorded a decrease in both cash lending and borrowing (13% and 14% respectively). Taking borrowing and lending together, increases in transaction volumes were only recorded for the borrowing activity segments between 1 month and 1 year.

Chart 2
Evolution of unsecured lending and borrowing activities over the past three years

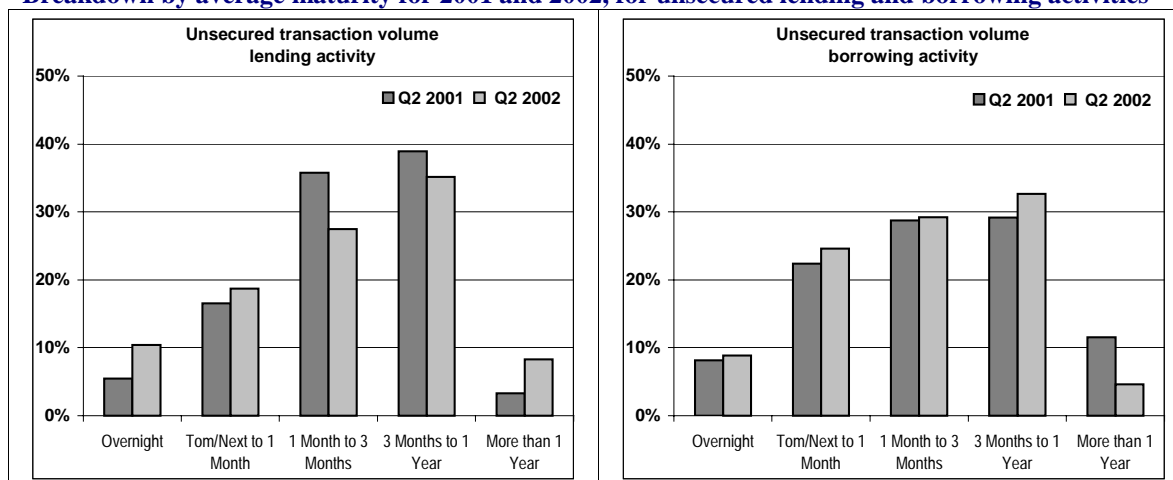


Average daily turnover (Base 100 for cash lending activity in Q2 2000); Panel of 93 banks
Average daily turnover (Base 100 for cash borrowing activity in Q2 2000); Panel of 93 banks

In fact, as in previous years, the turnover breakdown confirms a significant concentration of unsecured business in maturities up to 1 month, especially in the overnight segment. In terms of the panel of 93 banks, for which figures are available since 2000, the share reached by the overnight segment was 72% of lending and 63% of borrowing activities in the second quarter of 2002. Moreover, in all the years considered, unsecured transactions for maturities above 1 month have not even reached 10% of total activity, either on the lending or the borrowing sides of the market. Nevertheless, a slight fall in the weight of the overnight segment in borrowing activity was recorded in 2002 when compared with previous years, while the share of transactions between tom-next and 1 month has increased.

Chart 3

Breakdown by average maturity for 2001 and 2002, for unsecured lending and borrowing activities



Panel of 114 banks

The analysis of average maturity-weighted turnover (available only for the second quarters of 2001 and 2002) reinforces the idea of an increase in market concentration in the shorter-term segment in lending activity, given that the share of the overnight segment in adjusted turnovers terms increased by 5 percentage points (p.p.) to 10%, and the share of transactions between tom-next and 1 month rose by 2 p.p. to 19%. Conversely, the share of turnovers from 1 month to 3 months and from 3 months to 1 year fell to 27% and 35% (-9 p.p. and -4 p.p. respectively). In borrowing activities the importance of the maturity brackets up to 1 year increased, albeit only slightly, whereas transactions above 1 year became less important.

As described in previous money market studies, the concentration of unsecured business in the overnight segment is related to factors such as:

- Balance sheet/cost considerations that lead banks to concentrate their short-term interest rate exposure in shorter maturities;
- The fact that unsecured overnight business is easy to handle from an operational point of view, whereas in secured overnight business, difficulties with collateral settlement may arise.

The averaging mechanism of the Eurosystem's reserve requirement framework and the maturity and frequency of the main refinancing operations may also have contributed to the strong concentration of activity in maturities up to 1 month.

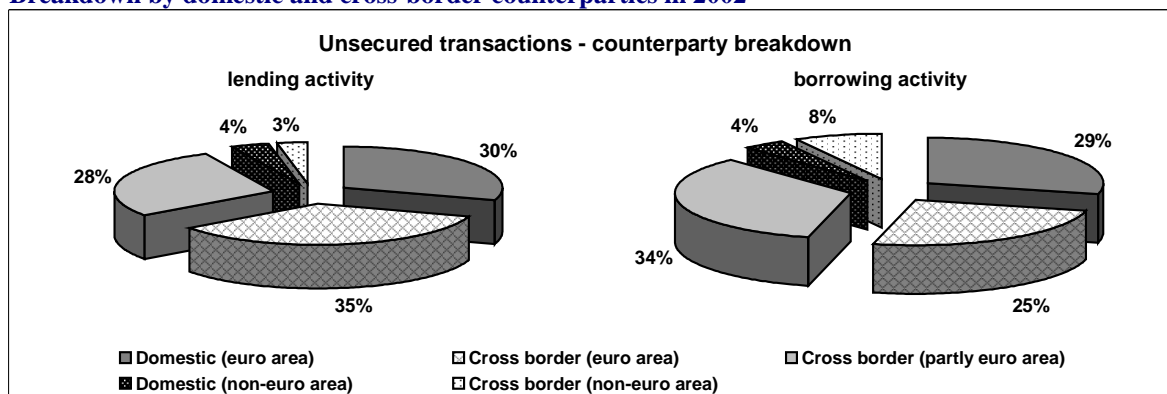
2.2.3 Market structure

The qualitative survey indicates that a large majority of participating banks continued to be satisfied with the degree of efficiency of the unsecured market. Additionally, most participants reported that market liquidity was either unchanged or slightly improved compared with the previous survey.

In addition, the counterparty breakdown (domestic and cross-border) shows that transactions solely between domestic counterparties (deals performed between two counterparties from the same country in the euro area) are still very significant within the euro area, with figures for the second quarter of 2002 showing a share of 30% and 29% of the total number of counterparties, in unsecured lending and borrowing respectively.

Chart 4

Breakdown by domestic and cross-border counterparties in 2002



Panel of 93 banks

Moreover, compared with the second quarter of 2001, the share of domestic counterparties within the euro area increased 4 p.p. in both lending and borrowing activities. On the lending side, cross-border transactions within the euro area (35%) are also important, as well as transactions between a counterparty in the euro area and another one outside it (28%). On the borrowing side, the importance of these two groups reverses with shares of 25% and 34% respectively.

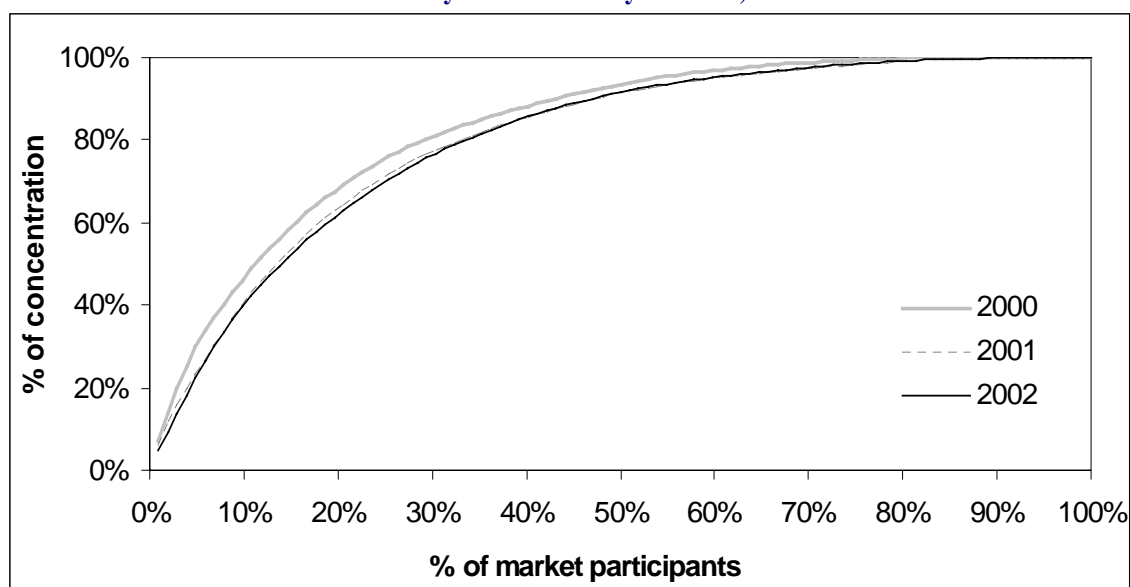
As regards the trading structure, no significant changes from previous years have taken place. Direct trading continues to be the most important way of carrying out business (63%), while alternative trading procedures such as voice broker or electronic devices are used in 26% and 11% of the volume respectively. Within the unsecured cash markets, e-MID is still considered to be the market leader in electronic trading. Over the past year, e-MID has attempted to expand

its business within the euro area; nevertheless despite these attempts it remains to a large extent predominantly a domestic platform. Consolidation within the Italian banking sector has seen the number of trading e-MID members fall to just under 200 (of which 135 were Italian). The average daily turnover increased marginally to EUR 18.5 billion by April 2003 up from EUR 18 billion in 2002.

In terms of market activity concentration, a strong degree of concentration among market players was found in the period under analysis. Nevertheless, Lorenz curves⁵ reveal a gradual, if very slight, reduction in the concentration levels of the total unsecured activity between the second quarters of 2000 and 2002.

Chart 5

Lorenz curves – Total unsecured money market activity for 2000, 2001 and 2002



On the lending side of this market segment, the level of concentration decreased in 2002, following expansion in 2001. As for the concentration in unsecured borrowing rather different evolution is apparent, with a major decrease occurring in 2001 followed by a slight increase in 2002.

⁵ Lorenz curves are cumulative frequency curves that compare the distribution of one variable (money market activity) with the uniform distribution that represents equality (diagonal line in the chart). For convenience of interpretation, the Lorenz curves presented in this report have been plotted above the equality line, instead of below of it (which is the more standard mode of presentation), since market players were sorted by descending order of their activity share. This allows us to conclude, for instance, that the 10 largest players represent around 40% of unsecured market activity.

The share of the 5, 10 and 20 largest players in the total unsecured market decreased, from 30%, 46% and 68% in 2000 to 22%, 40% and 61% in 2002 respectively.

2.3 Developments in the secured market

2.3.1 Turnover analysis

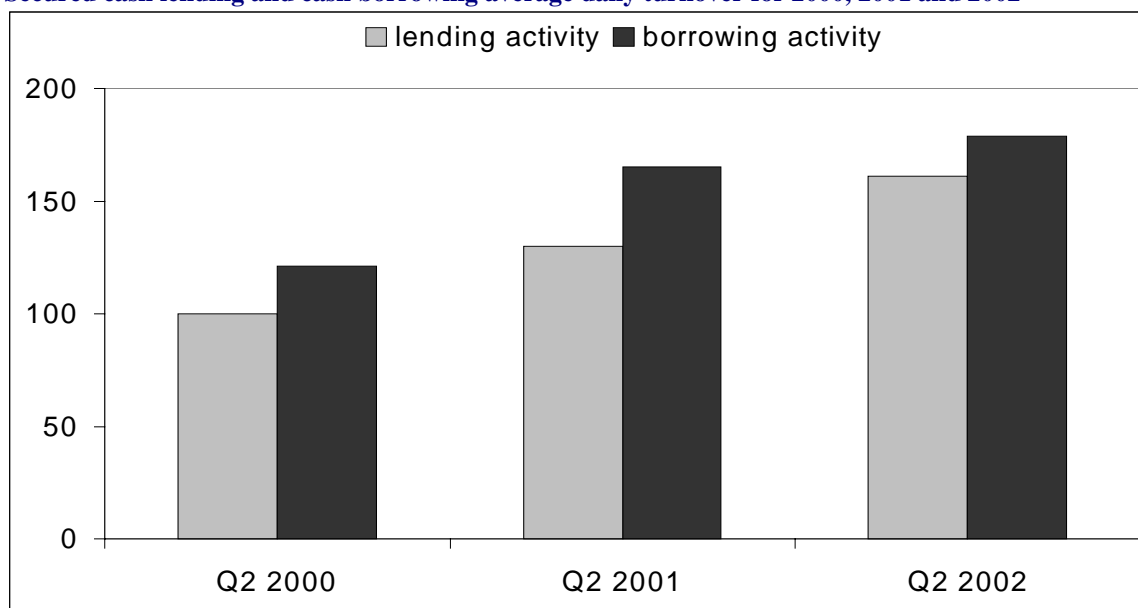
Turnover growth persists in the secured market. Using the results supplied by the 71 credit institutions, that participated in the last three surveys, reverse repo activities (i. e. cash lending against securities) grew by 61 % between the second quarter 2000 and the second quarter of 2002. Repo transactions (i. e. cash borrowing against securities) increased by 48 % during the same period. Obviously, growth in the euro-denominated secured markets has been considerable, though it has eased off slightly in recent months. In actual fact, slightly lower growth is more pronounced in repo activities than in reverse repo activities.

Altogether, from the second quarter of 2000 to the second quarter of 2002 the overall secured market activities increased by 54 %. The reasons already emphasised in the previous reports for the robust growth of (reverse) repo activities apply here as well, namely:

- the increasing need to limit credit risk exposures together with constraints resulting from capital adequacy requirements, both of which foster the securitisation process;
- the emergence of new players, especially small and medium-sized banks entering this segment of the money market;
- the fact that secured transactions offer more favourable funding costs compared with the (unsecured) deposit business (particularly if capital costs are considered as opportunity costs).

Chart 6

Secured cash lending and cash borrowing average daily turnover for 2000, 2001 and 2002



Average daily turnover (Base 100 for cash lending activity in Q2 2000)

Panel of 71 banks

Since June 2001, the European Repo Council's⁶ has been conducting biannual surveys of the Europe's repo markets. These surveys ask a sample of European banks for the value of the cash leg of repo and reverse repo contracts outstanding on the second Wednesday in June, and again in December. Although there are some considerable methodological differences, some comparisons are nevertheless possible between the result of the ERC survey and this report (see Annex 2 for a table summarising the differences and similarities between the two surveys). The ERC survey confirms the persistent and strong growth of the secured money market. Looking at the replies of the 42 institutions, that participated in both the June 2001 and June 2002 surveys, the aggregate volume of outstanding repos grew by 16 % over this period. This can be compared with the ESCB study's findings of year-on-year growth in reverse repo activities of 24% and 8% for repo activities, which if we aggregate the returns for cash lending and cash borrowing activities, results in an almost identical growth rate of 15%.

⁶ The European Repo Council (ERC) is a regional repo council under the International Repo Council, a special interest group established by the International Securities Market Association (ISMA) and the Association Cambiste Internationale (ACI) for members active on the international repo markets. Its members comprise the major banks and securities houses active on Europe's cross-border repo market.

2.3.2 Maturity analysis

An analysis of the breakdown by maturity of the data, provided by 91 credit institutions for the second quarter of 2002 shows that turnover is concentrated on the short end of the yield curve for both cash lending and cash borrowing activities. In the second quarter of 2002, transactions with an initial maturity of one business day (including O/N, T/N and S/N business) accounted for 55% of the total reverse repo activity. Operations above 1 business day and up to 1 week amounted to 24%. The share of reverse repo activity above one week up to one month was 9%. Finally, maturities above 1 month totalled 12% of turnover. The maturity structure of repo activities was nearly identical to that of reverse repo activities.

As in the deposit market, there is undoubtedly, a preference for short-term transactions in the secured market. Nonetheless, secured “pure” O/N business (excluding Tom/next and Spot/next) is not as predominant as in the unsecured market (the share of reverse repo activities was 11 %, and 13% for cash borrowing). Securities settlement constraints are reported to have limited O/N repo activity.

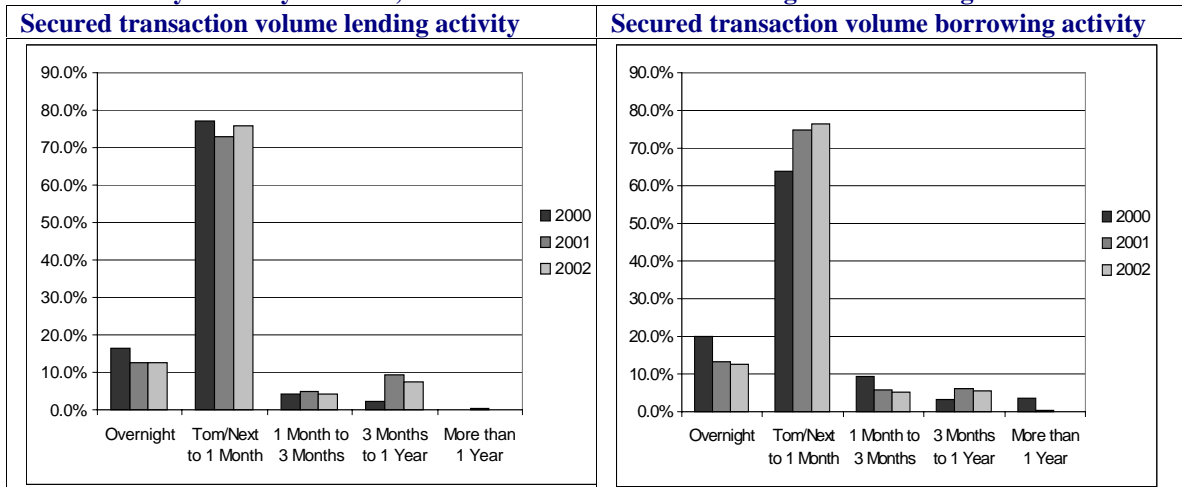
A historical analysis of the development of the maturity structure (based on the data provided by the 71 institutions, that delivered data for the three consecutive years) shows that no fundamental structural changes have occurred for either reverse repo or repo business.

An in-depth-analysis reveals that as regards cash lending activities the share of O/N business decreased from around 16 % in the second quarter of 2000 to 12% in the second quarter of 2002. The segments T/N to 1 month and 1 month to 3 months remained stable (in the second quarter of 2002, at 76% and 4% respectively). Furthermore, the share of 3 months to 1 year increased from around 2% in the second quarter of 2000 to 7% in the second quarter of 2002⁷. Regarding cash borrowing activities, the share of O/N business decreased from around 20% in the second quarter 2000 to around 13% in the second quarter of 2002. Simultaneously, T/N to 1 month increased from 64% to 76%. 1 month to 3 months decreased from around 9 % to 5 %, while 3 months to 1 year, finally, rose from 3% to 5%.

⁷ Transactions with an initial maturity of more than 1 year are negligible for both reverse repo and repo transactions.

Chart 7

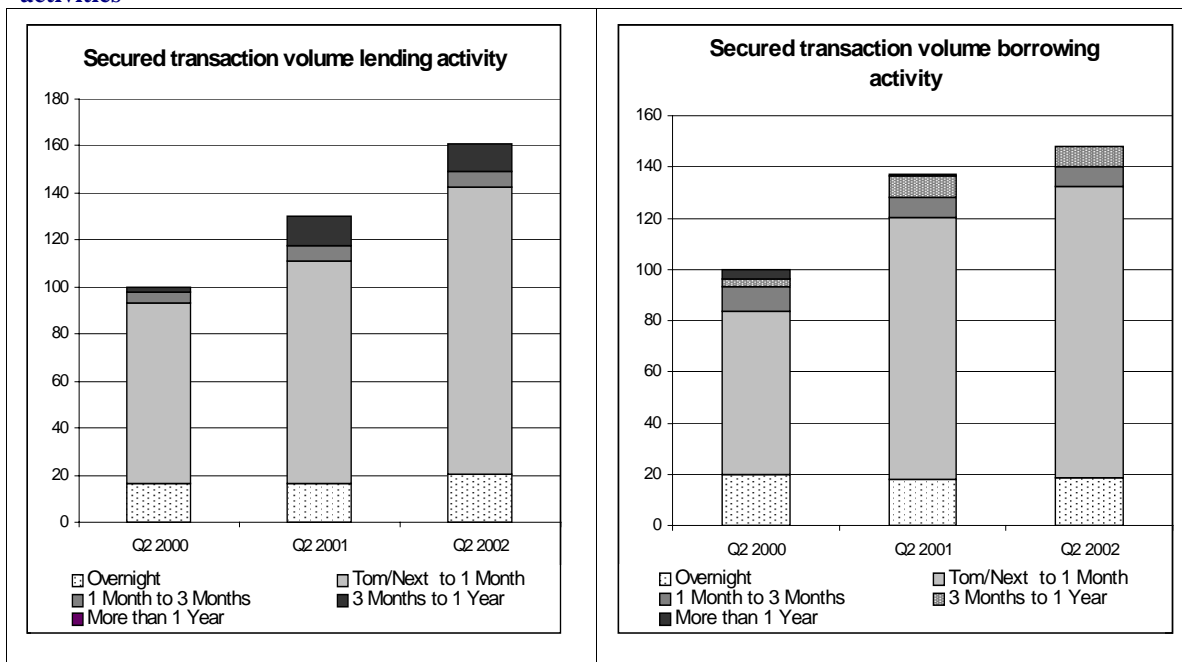
Breakdown by maturity for 2000, 2001 and 2002 for secured lending and borrowing activities



Panel of 71 banks

Chart 8

Evolution and breakdown by maturity for 2000, 2001 and 2002 for secured lending and borrowing activities



Panel of 71 banks

The differences with the ERC concerning the maturity structure (as already highlighted in the previous reports) persist. Whereas the ECB survey identifies considerable business with an initial 1 business day maturity (55% as regards cash lending and 58 % as regards cash borrowing activities, each including O/N, T/N and S/N business), the ERC survey is not so slanted towards these maturities (19%). On the other hand, the ERC survey identifies a significant proportion of

business beyond 1 month (28%). However, this segment, is according to the present study rather negligible (12% cash lending and 10 % cash borrowing activities). These discrepancies can, mainly be attributed to differences in methodology. Firstly, whereas this study queries initial maturity, the ERC survey is focused on residual maturity, making a direct comparison potentially misleading. Secondly, the flow methodology used in this study tends to show larger volumes as it includes intra-day trading activities and adds up the daily volume for overnight transactions and for the roll-over of short-term maturities, while the stock analysis of the ERC repo survey purely displays a snapshot of one day. Therefore, the ESCB study shows a higher volume for overnight transactions. Furthermore, this could be traced back to the different composition of the two underlying groups of surveyed banks.

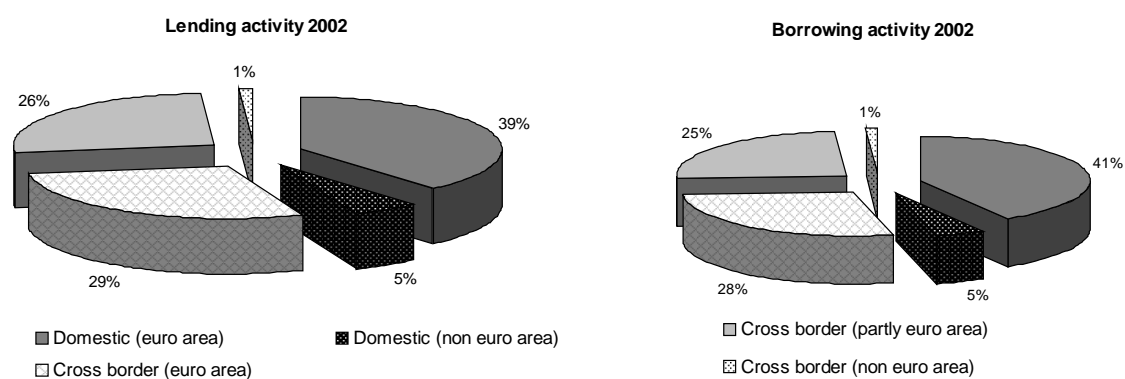
2.3.3 Market structure

The feedback from the qualitative part of the survey shows that the overwhelming majority of market participants deem the secured market to be significantly or at least sufficiently efficient. Compared with the results of the previous surveys, market participants are altogether more satisfied with the given degree of efficiency. As regards market liquidity, the replies suggest an unchanged or slightly improved situation.

A geographical counterparty analysis of cash lending activity (referring to the 91 banks that delivered data for the second quarter of 2002) shows that 44% of counterparties are domestic (of which 5% are located in the United Kingdom or Sweden), 29% of all deals are performed between counterparties from two different euro area countries, while for 26% of all deals only one party to the transaction is located in the euro area. The corresponding figures for cash borrowing are nearly identical. Compared with the results of the previous survey, no major shifts have taken place. For cash lending and borrowing activities, around 68% of transactions are performed exclusively in the euro area with around 40% still conducted at a national level. With respect to the relative turnover share of national counterparties and counterparties outside the euro area, the results of the ERC survey and this study are to a large extent in line. The fact that the proportion traded at the national level inside the euro area is much more important than for the unsecured market shows that the integration of the national repo markets across the euro area continues to be, despite considerable progress, a slow and complex process, so that repo markets are lagging behind the level of integration reached in other market segments. The remaining obstacles to integration lie in the diversity of the types of securities in the euro area

(i.e. different credit rating implying different rates and haircut), in the fragmentation of the infrastructure (cross-border arrangements remain complex), in outstanding legal and fiscal issues and in the diversity of market practices (there is a lack of documentation in some countries). The Eurosystem's efforts to establish a single list of collateral eligible for the regular refinancing operations is just one of the numerous initiatives possibly contributing to a greater market integration.

Chart 9
Geographical counterparty structure in 2002



Panel of 91 banks

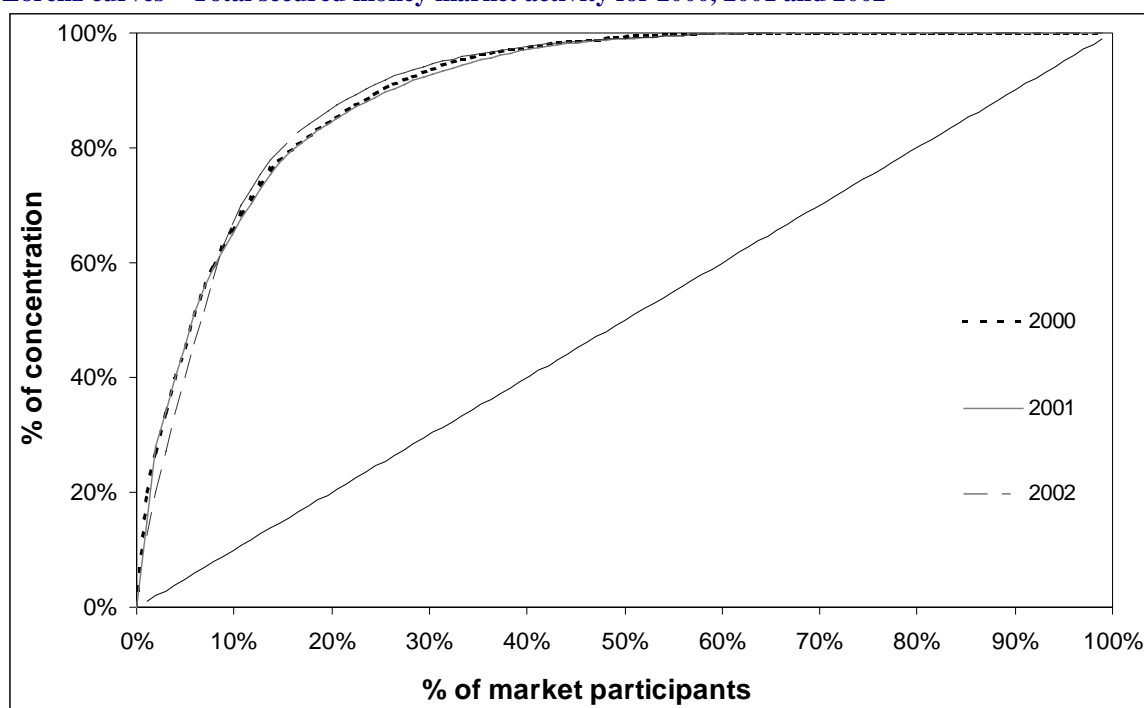
Concerning the trading structure 54 % of repo transactions were executed directly, 33 % via voice broker and 13 % via electronic devices. In previous surveys, it was noted that there was real potential for the growth of electronic trading in repo activity, with many of the major market participants planning expansion. However, despite these plans, virtually no changes have occurred (the shares according to the last previous surveys were 51%, 36% and 13%, respectively). Thus, it is somewhat surprising that in spite of the emergence of several electronic platforms for repo transactions (BrokerTec, MTS, EurexRepo), electronic trading systems still account for the smallest share of overall trading. This result is, also consistent with the European Repo Council's June 2002 survey, which found that around only 13% of repo transactions were conducted via electronic platforms. However, more recent data from the same institution's December 2002 survey suggests that this share has since increased to nearly 17%.

As regards concentration (based on the replies by the 71 institutions, that participated in the last three surveys) in the secured cash lending segment, the 5 largest players accounted for 41% of the total turnover during 2002, the 10 largest for 65% and the 20 largest for 86%. The

corresponding figures for secured cash borrowing are 46%, 70% and 88%, respectively. The secured money market shows a particularly high degree of concentration. Nevertheless, a year-on-year comparison reveals that since 2001 the share of the 5 largest players has decreased significantly, from 45% to 41% as regards secured cash lending, and from 54% to 46% as regards secured cash borrowing. The share of the 10 largest players has declined slightly (from 66 % to 65 % and from 71 % to 70 %, respectively). Conversely, the share of the 20 largest players, instead, has remained quite stable. The ERC survey shows a lower degree of concentration probably due to the higher number of participating banks (86 banks in the June 2002 survey). In the ERC survey, the top ten banks accounted for 55 % of total reported repo business, the top twenty for 78 % and the top thirty for 91 %⁸.

Chart 10

Lorenz curves – Total secured money market activity for 2000, 2001 and 2002



Panel of 71 banks

⁸ The corresponding figures for June 2001 are 64 %, 88 % and 97 %, although the comparison is not appropriate since this survey encompassed only 48 banks.

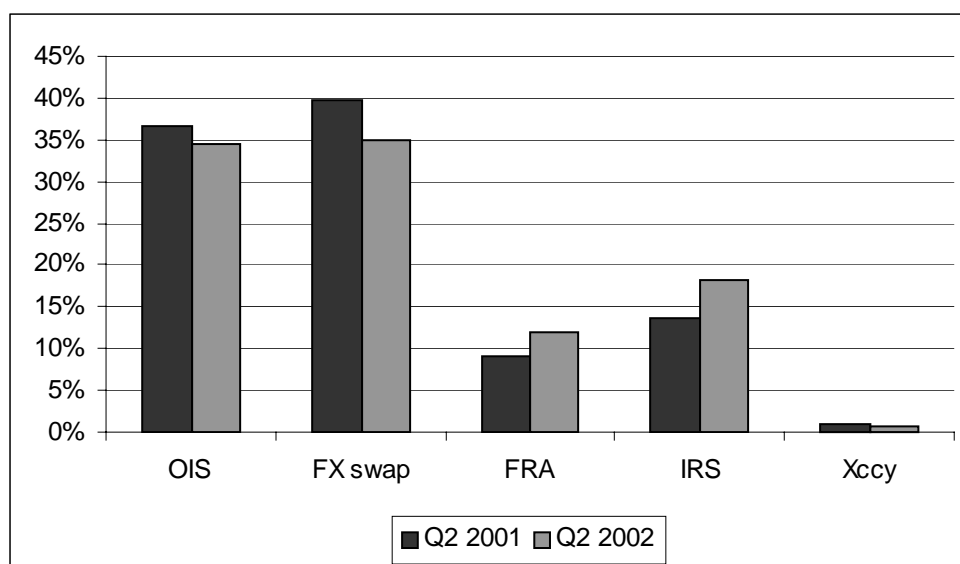
2.4 Developments on the OTC derivatives markets

2.4.1 Turnover analysis

Turnover data were collected on the following euro-denominated OTC derivatives market segments: the interest rate swap market, comprising OIS and others (IRS); FRAs; and derivatives instruments linked to the foreign exchange market, comprising foreign exchange swaps (FX swaps) and currency swaps (cross-currency swaps or Xccy).

Chart 11

Development of market shares in the various swap market segments



Based on the volumes reported by a sample of banks that reported data for both Q2 2001 and Q2 2002

The reported volumes (for the sample of banks that reported data for both the second quarter of 2001 and the second quarter of 2002) indicate that the total turnover increased by around 3%. The IRS and FRA markets recorded growth rates of around 35%, bringing their respective shares in the total turnover to 18% and 12%. The two largest segments in 2001, the OIS and the FX swap markets, both contracted (by 4% and 10% respectively), although these segments remained by far the most important ones (each representing around 35% of total turnover), as Chart 11 demonstrates.

These developments have to be assessed against the background of the specific market situation that prevailed during the second quarter of 2002.

The small decline (4%) in **OIS** volume, which is the main trading instrument for speculating on and hedging against interest rate movements, has to be seen against the background of an absence of strong interest rate expectations, together with the fact that interest rate decisions throughout the period were largely expected by market participants. As a matter of fact, in the absence of interest rate speculation, the overnight interest rate was rather stable, apart from the usual volatility recorded at the end of either each month or the maintenance periods.

The survey results confirm the ongoing trend of decreasing turnover on the **FX swap** market (-10% in the second quarter of 2002). This evolution is linked to diminished activity on the foreign exchange market in general, increased market concentration, greater consolidation in the banking industry (leading to a reduced number of players and a tendency to fund in-house), and the availability of other, more flexible (without having an impact on liquidity) instruments for hedging and position-taking on the interest rate market. As a consequence, FX swaps seem to be increasingly less used as a trading tool.

The volume of **IRS** increased by 37% in 2002. According to the BIS ⁹, the market for euro-denominated swaps grew rapidly from the second half of 2001 onwards, mainly driven by two factors: a surge in the issuance of euro-denominated bonds, boosting arbitrage and hedging activity, and the emergence of squeezes in some euro area government bond markets and related exchange-traded derivatives, resulting in a search for more reliable hedging and position-taking instruments for non-government liabilities.

After last year's increase, the volume of the relatively small **cross-currency** segment decreased by 25% in the second quarter of 2002. Cross-currency swaps are often used in connection with issuance activity in the euro bond market (the proceeds of which are often swapped into other currencies).

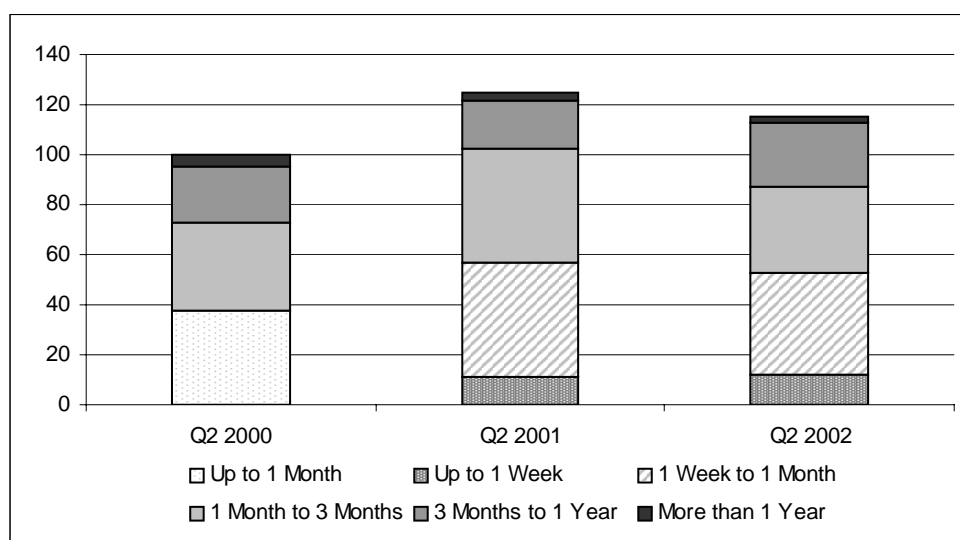
⁹ BIS, Quarterly Review, June 2003, pp. 8-9.

2.4.2 Maturity analysis

2.4.2.1 The overnight interest rate swap market (EONIA swap market)

Chart 12

Evolution of the OIS segment over the past three years



Q2 2000 volume as base value 100

Panel of 63 banks¹⁰

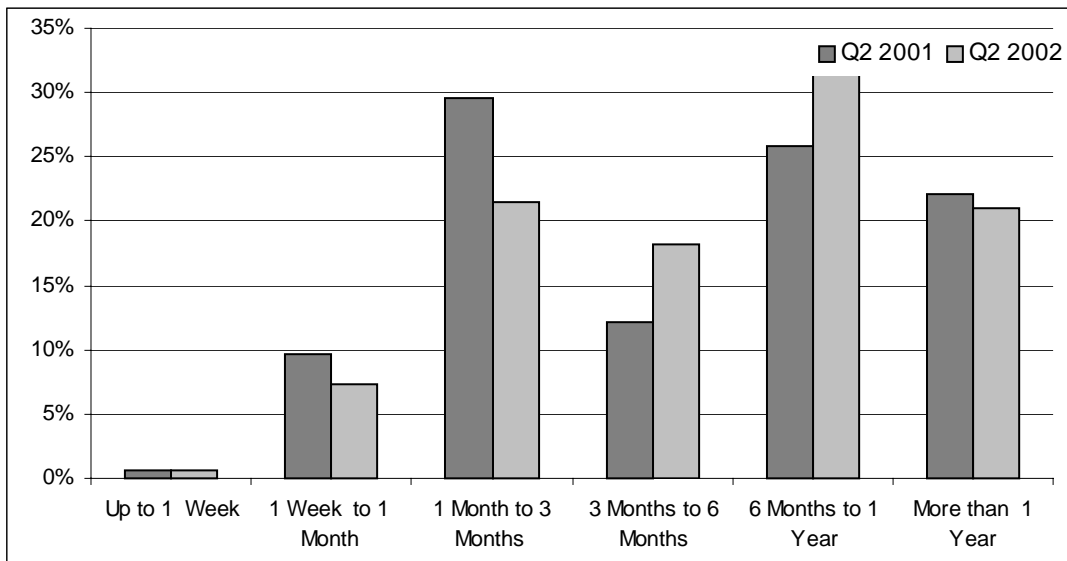
Chart 12 shows the evolution of the OIS segment (in nominal terms) over the past three years (using a stable panel of 63 reporting banks over the period). After the OIS market turnover saw sharp growth in 2001 of +25%, which was mainly visible in the shorter maturities (+48% in the "up to 1 month" segment, i.e. the sum of the "up to 1 week" and "1 week to 1 month" segments, and +32% in the "1 to 3 months" segments), volumes dropped slightly in 2002 (-8% for the panel of 63 banks)¹¹. This drop was predominantly located in the "1 to 3 months" segment (-26%; falling back to the 2000 level) as well as, to some extent, the "up to 1 month" segment (-7%).

¹⁰ Up to 1 month (only for 2000), up to 1 week and >1 week to 1 month (only for 2001 and 2002).

¹¹ For the larger panel of 71 banks that reported data for 2001 and 2002, the volume declined by 4%.

Chart 13

Breakdown by maturity for 2001 and 2002 of the OIS market (maturity-weighted).



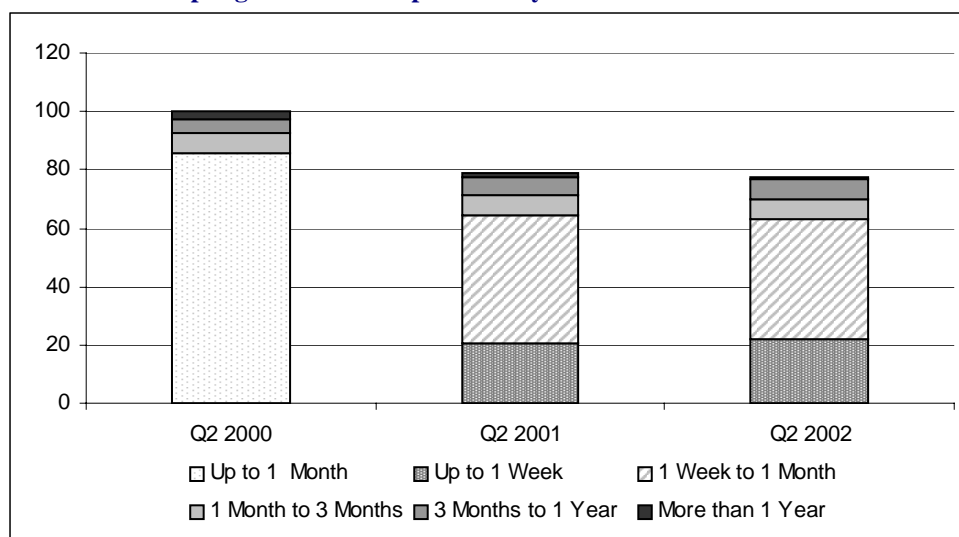
Panel of 71 banks

Chart 13 provides a detailed breakdown by maturity for 2001 and 2002, using maturity-weighted data provided by all the banks that reported data for 2001 and 2002. This chart shows that the average maturity rose. This reflects a shift from the "up to 3 months" maturity bracket to the "3 months to 1 year" segment. The relative importance of the "1 week to 3 months" segment in the maturity-weighted volume declined from 40% to 28%, whereas that of the "3 months to 1 year" segment rose from 38% to 49%.

2.4.2.2 FX swaps

Chart 14

Evolution of the FX swap segment over the past three years



Q2 2000 volume as base value 100

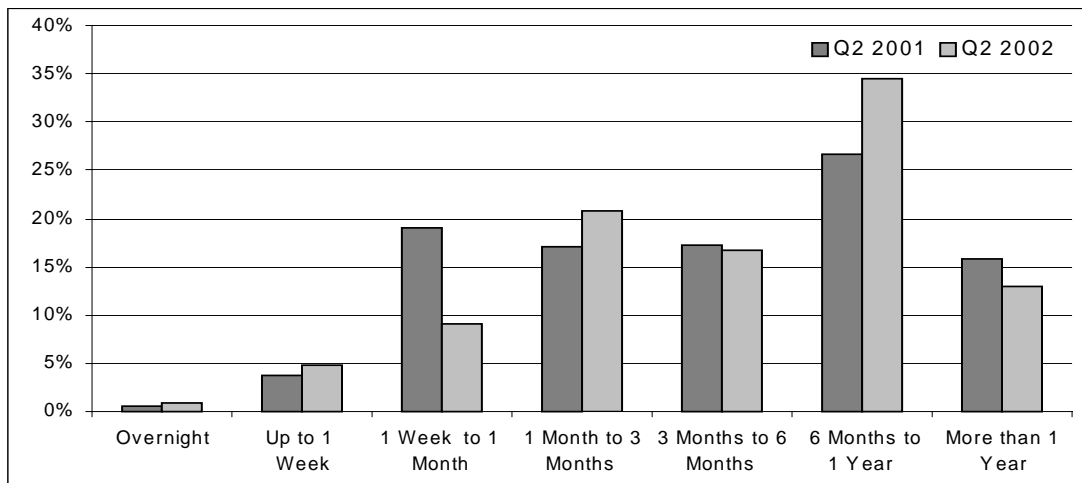
Panel of 76 banks¹²

In 2001, as shown in Chart 14, the volume of FX swaps declined by around 20%. This was mainly driven by a sharp decrease in the segment "up to 1 month" (-25%), which represented 86% of the total nominal volume in 2000. In 2002, the volume and the relative importance of the maturity brackets remained more or less the same as in 2001 for the sample of 76 banks that reported data for the three years. In nominal terms, the "up to 1 month" segment remained by far the most important, with around 80% of the total volume. It should be noted, however, that an examination of the larger sample of banks that provided data for 2001 and 2002 (86 banks) reveals that the volume continued to decrease (-10%).

¹² Up to 1 month (only for 2000), up to 1 week and >1 week to 1 month (only for 2001 and 2002).

Chart 15

Breakdown by maturity for 2001 and 2002 of the FX swap market (maturity-weighted).



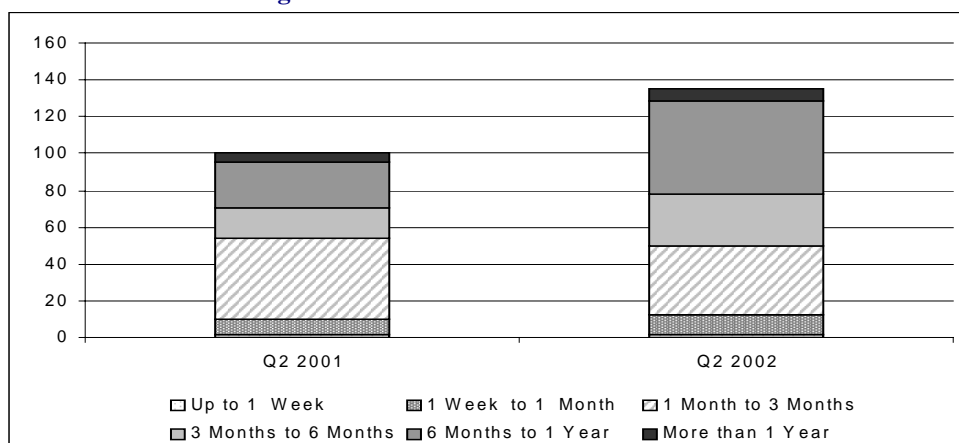
Panel of 86 banks

The maturity analysis in Chart 15, which makes use of maturity-weighted data provided by all banks that reported figures for 2001 and 2002, shows that this further decline was mainly concentrated in the "1 week to 1 month" maturity bracket. The "6 months to 1 year" segment, in which maturity-weighted already represented the most important maturity bracket in 2001, further increased in importance in 2002 (rising from 27% to 35%).

2.4.2.3 FRAs

Chart 16

Evolution of the FRA market segment in 2001 and 2002



Q2 2001 volume as base value 100

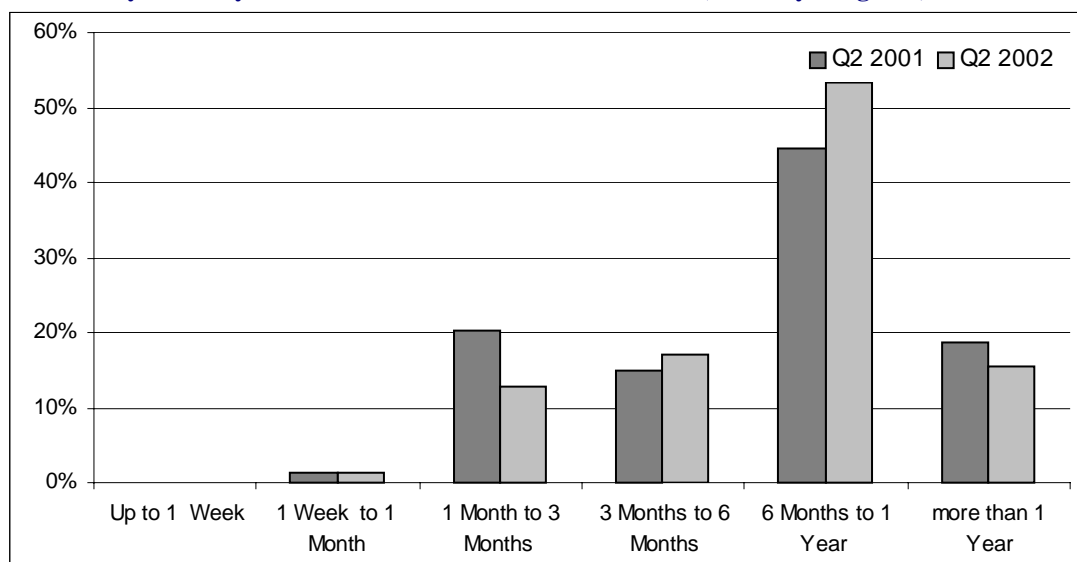
Panel of 41 banks¹³

¹³ Data are only available for 2001 and 2002.

As no data on FRA turnover in 2000 were available, analysing the market segment's evolution for the period 2000-2002 is not possible. Chart 16, however, shows the development using nominal volumes for the evolution from 2001 to 2002, taking the volume of the second quarter 2001 as base value 100. This chart shows that the activity in FRAs rose considerably in 2002 (+35%), especially the "6 months to 1 year" segment, which recorded a strong expansion (+107%) that increased its nominal share in the total volume from 24% to 37%. In terms of maturity-adjusted turnovers (Chart 17), its share in the total volume rose from 45% to 53%. The importance of the "1 to 3 months" segment decreased considerably (both in nominal and maturity-adjusted terms).

Chart 17

Breakdown by maturity for 2001 and 2002 for the FRA market (maturity-weighted).

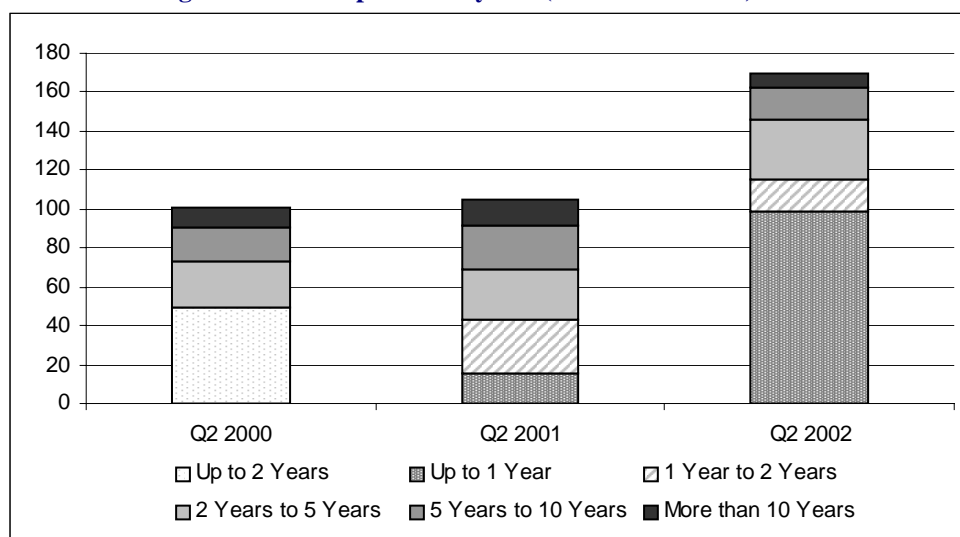


Panel of 41 banks

2.4.2.4 IRS

Chart 18

Evolution of the IRS segment over the past three years (in nominal terms)



Q2 2000 volume as base value 100

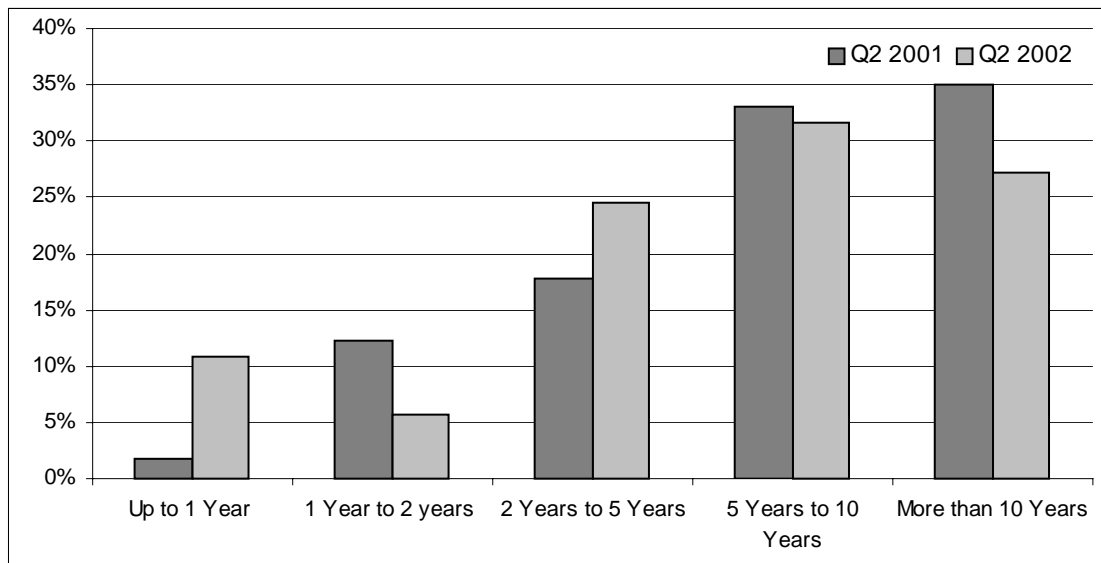
Panel of 76 banks¹⁴

Chart 18 depicts the evolution of IRS volumes. While in 2000 and 2001 volumes and maturity composition (nominal) were rather stable, volume rose sharply in 2002 (+62%). This increase was especially strong in the "up to 1 year" segment. In nominal terms, the importance of this segment has risen sharply to become clearly the most important maturity bracket (58% of total turnover). If one considers the larger sample (taking into account the data from all the banks that reported figures for 2001 and 2002), the rise is smaller (+37%). On a maturity-weighted basis (Chart 19), the longer segments (beyond 2 years) continue to contain the bulk of activity (84%). The rise in the volume "up to 1 year" was partly offset by the fall in the segment between 1 and 2 years.

¹⁴ Up to 2 years (only for 2000), up to 1 Year and >1 year to 2 years (only for 2001 and 2002).

Chart 19

Breakdown by maturity for 2001 and 2002 for the IRS market (maturity-weighted).

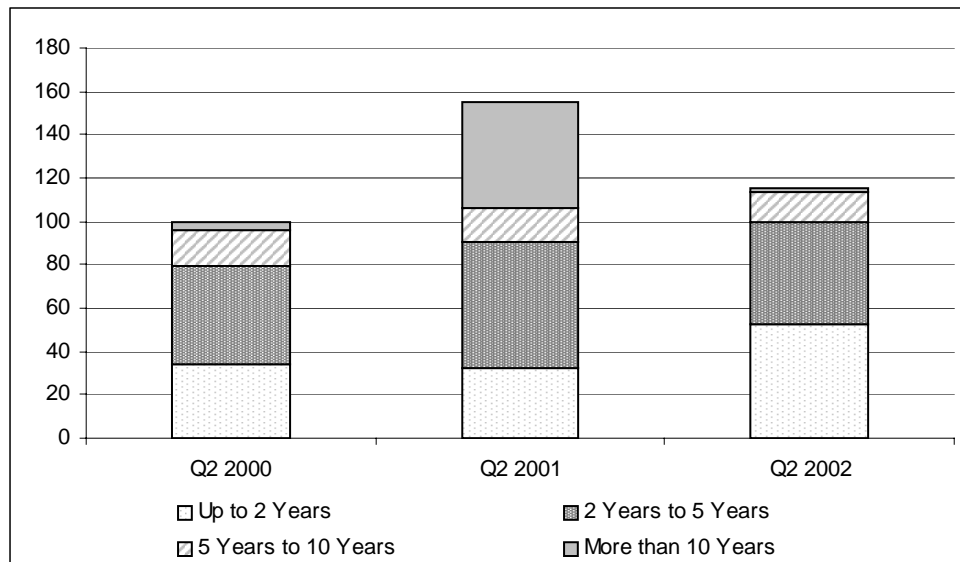


Panel of 85 banks

2.4.2.5 Cross-currency swaps

Chart 20

Evolution of the Xccy segment over the past three years (in nominal terms)



Q2 2000 volume as base value 100

Panel of 39 banks

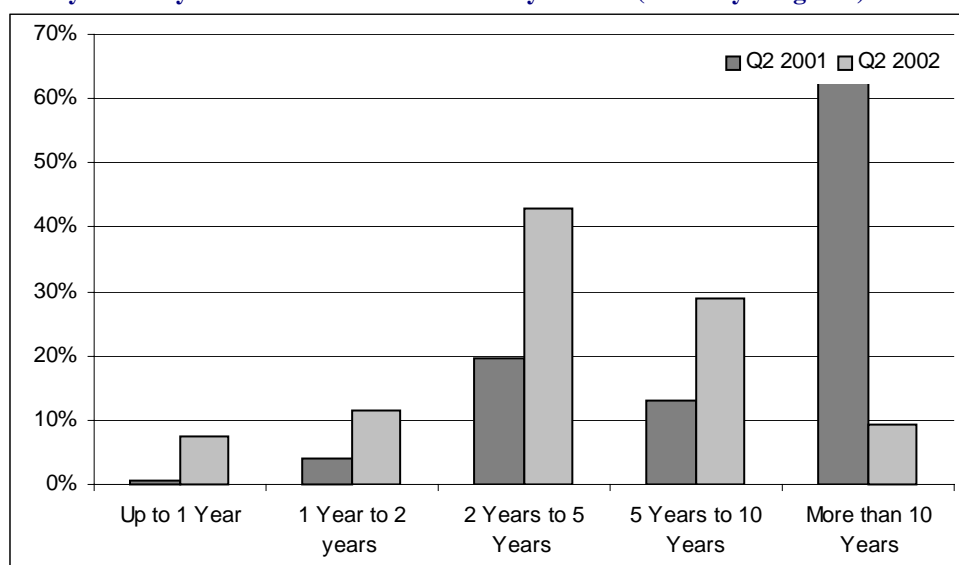
The cross-currency segment, by far the smallest segment of the Euro OTC derivatives market, rose sharply in 2001 (+55%), driven by a sharp rise in the "2 to 5 years" and especially in the

"beyond 10 years" segments. However, in 2002 most of this increase was reversed, with the decline only limited by a rise in the "up to 2 years" segment.

Both in terms of nominal (Chart 20) and maturity-weighted (Chart 21), the segment "2 to 5 years" is very significant. The very long segment (beyond 10 years), which had become very important in 2001 for both nominal and maturity-weighted, fell sharply in 2002 back to the low level recorded in 2000.

Chart 21

Breakdown by maturity for 2001 and 2002 on the Xccy market (maturity-weighted).



Panel of 54 banks

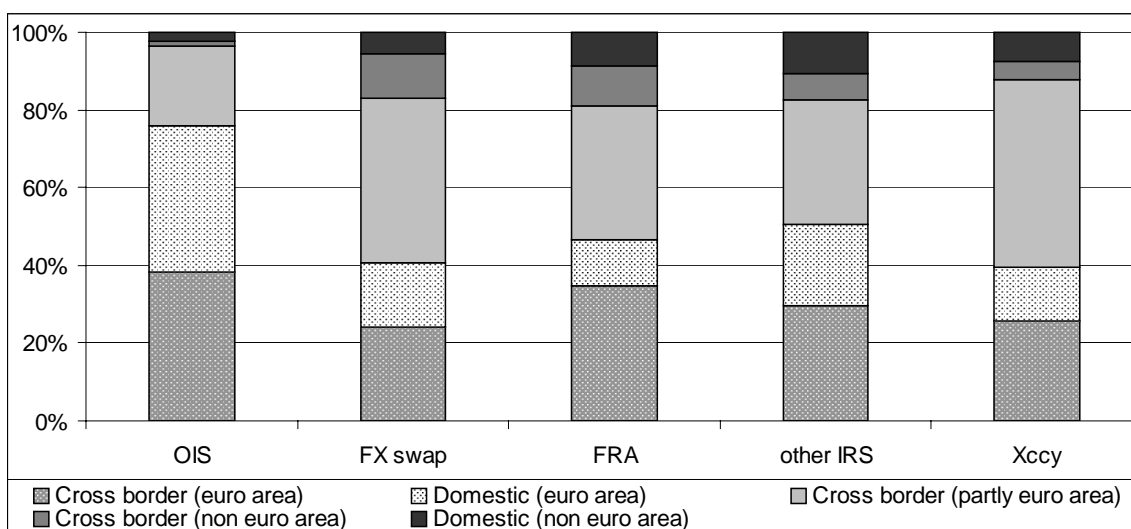
2.4.3 Market structure

According to the replies from participating banks, the OIS and IRS markets continue to be perceived as the most efficient, followed by the FX swap market, while the cross-currency swap market is still considered to be significantly less efficient. Possible explanations for this are the lower number of banks actively participating in this market segment (as was also shown by the lower number of banks reporting data for this segment), the complexity of the Xccy product (a cross between a foreign exchange and an interest rate product), and the limited number of market makers.

As regards liquidity, reporting institutions noted the largest improvement in liquidity (as in the 2001 study) in the OIS and IRS markets, which were also noted as the two most efficient market segments. The cross-currency market was seen as having progressed the least.

A geographical counterparty analysis (Chart 22) of the second quarter of 2002 turnover data shows that in the OTC euro interest rate derivatives markets (in decreasing order of importance: OIS, IRS and FRA), counterparties based in the euro area mostly trade with other players in the euro area (domestic euro area and cross-border euro area). This is most visible in interest rate derivatives (namely the OIS (76% of transactions), IRS (50%) and FRA (46%) markets), but also, if to a lesser extent, in the FX swap (41%) and cross-currency swap (39%) markets, where euro-based counterparties trade much more cross-border with counterparties outside the euro area. Compared to 2001, the proportion of transactions exclusively conducted in the euro area (domestically and cross-border) rose by between 12 and 16 p.p.

Chart 22
Counterparty breakdown for the Euro OTC derivatives markets

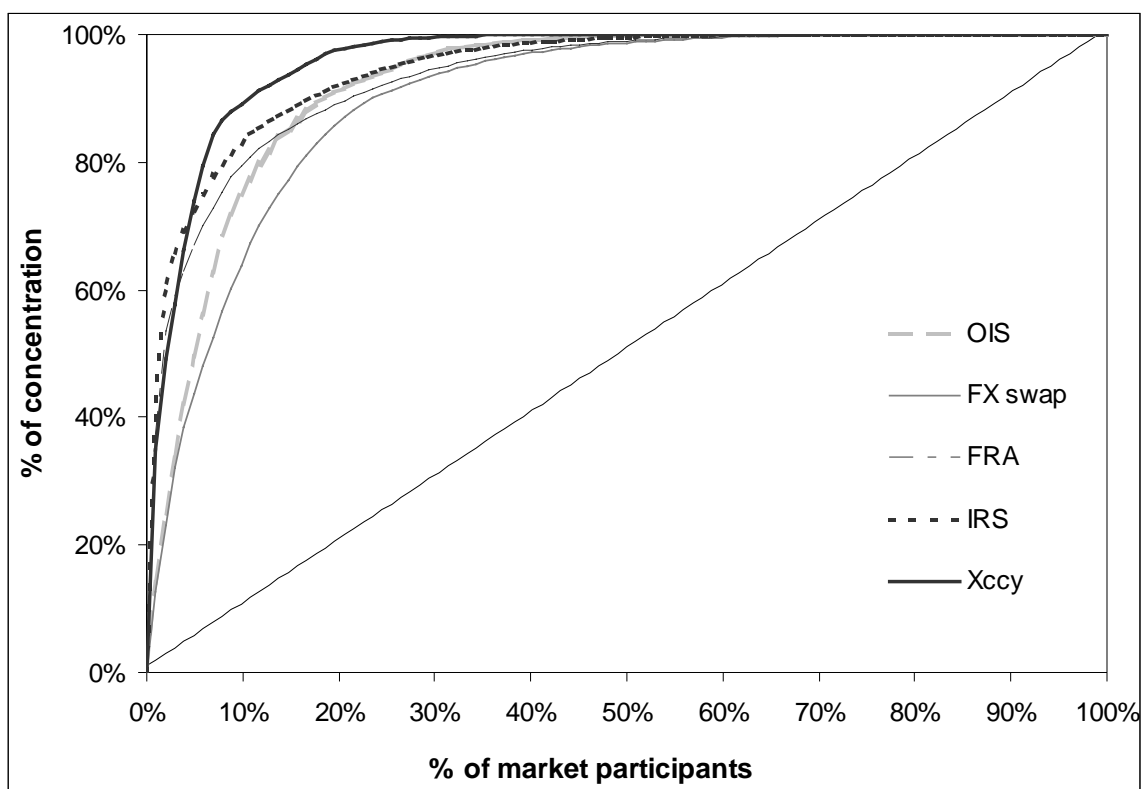


The growth in electronic transactions has continued in some sectors over the year under review, although their share of total market transactions remains low in all market segments. The highest levels of use of electronic platforms for trading are found within FX swaps and forwards (representing 17% of all transactions). Volume traded on multi-dealer platforms remained rather low in the second quarter of 2002.

As regards concentration, overall the survey data further confirm that activity in the Euro OTC derivatives markets remains highly concentrated. In some segments (IRS, FRA and Xccy) the two major players even account for half of the activity. However, over the past three years, activity in foreign exchange OTC derivatives (the FX swap and Xccy market) seems to have become less concentrated.

Chart 23

Lorenz curves for the Euro OTC derivatives markets (Q2 2002)



2.5 Developments on the short-term interest rate futures and options markets

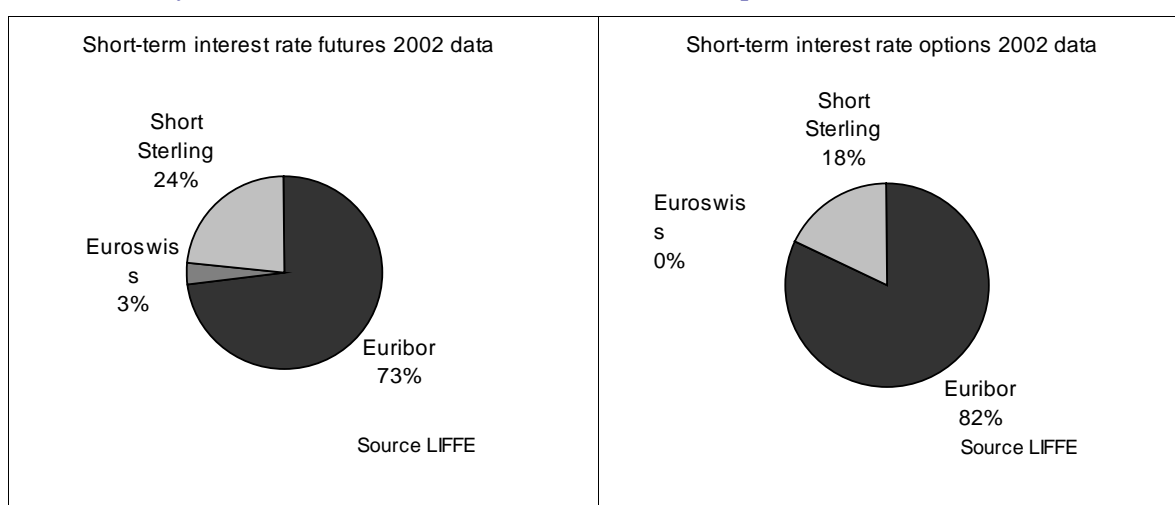
The rate of increase in activity on the euro futures and options markets slowed during 2002, compared with the high growth levels seen during 2001. This slowdown is probably partly related to market expectations of unchanged official interest rates for most of 2002. Activity on the euro futures and options markets increased by 24% during 2002, according to data published by the London International Financial Futures and Options Exchange (LIFFE), compared with a rate of increase of 70% during 2001. Almost all futures contracts (over 99%) are traded on

LIFFE, with the residual amount traded on Eurex. Growth in euro futures and options outpaced total growth in futures and options. Data from LIFFE show that the total activity in futures and options traded on LIFFE increased by 16% during 2002, as opposed to growth of 64% during 2001.

The number of Euribor contracts traded on LIFFE increased by 16% during 2002 compared with growth of 56% during 2001. Volumes traded are now three times greater than in 1999.

Chart 24

Breakdown by volume of short-term interest rate futures and options in 2002

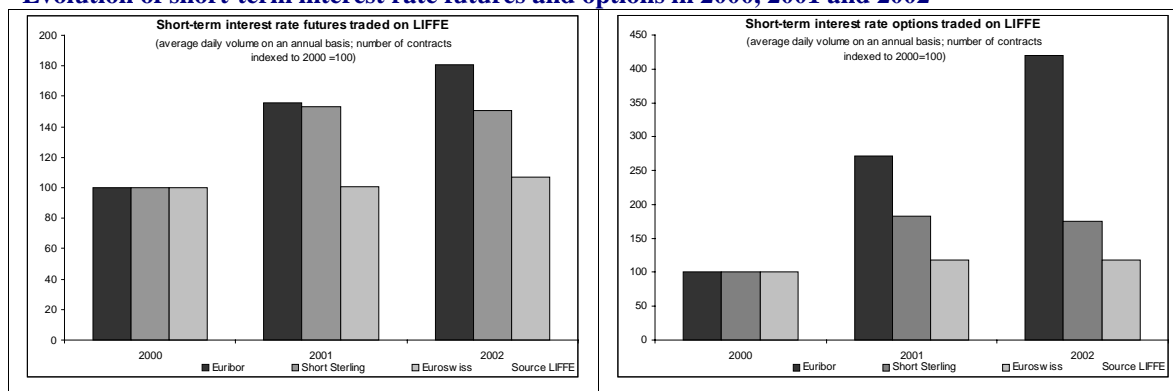


As in previous years, Euribor futures are the most commonly traded short-term interest rate futures in Europe. During 2002, Euribor contracts accounted for 73% of futures activity (by volume) on LIFFE. Short sterling contracts accounted for 24%, while Euroswiss futures accounted for 3% of futures trades.

Growth in Euribor options also slowed during 2002 to a year-on-year increase of 54%, compared with growth of 170% during 2001. The growth in total options trades on LIFFE also slowed during 2002 to 39%, down from 140% during 2001. During 2002, Euribor options accounted for close to 82% of the options activity on LIFFE, with short sterling accounting for 18% and Euroswiss for less than 1% of all options trades.

Chart 25

Evolution of short-term interest rate futures and options in 2000, 2001 and 2002



Q2 2000 volume as base value 100

2.6 Developments in the short-term securities market

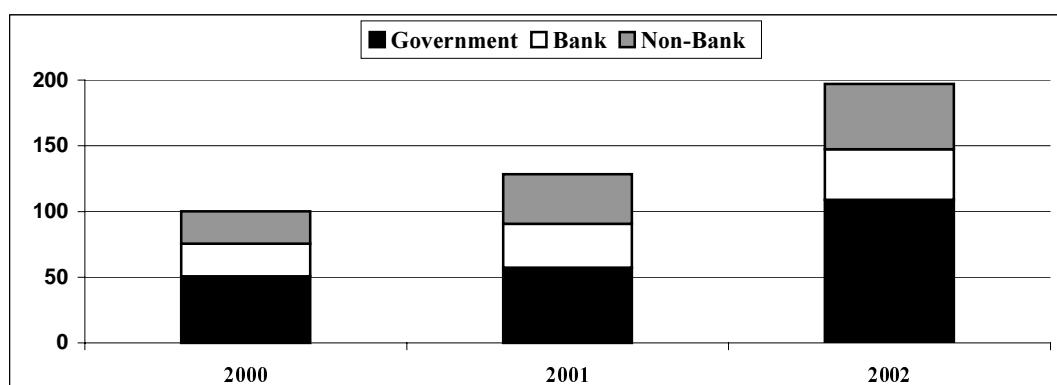
The short-term securities market includes government securities (T-bills) and private securities. The private securities mainly comprise commercial paper (CP) issued by non-financial corporations and certificates of deposits (CDs) issued by banks. Short-term securities can be issued either inside or outside the euro-area. The Euro Commercial Paper market, in which the major dealers are international banks, mostly London-based, is an example of the latter.

2.6.1 Turnover analysis

As regards the secondary market, the survey shows that the volume of transactions in short-term securities has expanded significantly over the years, although it still remains far below the volumes traded on other segments of the money market. Overall, growth reached 54% in 2002. The volume of transactions in T-bills in 2002 recorded the highest increase ever, expanding over the period under review by 90%. At the same time, it accounted for 55% of total transactions, reversing the declining trend witnessed in the previous year. Transactions in both certificates of deposits and non-bank commercial paper increased as well, but at a slower pace than in the previous year (16% and 32% in 2002 compared with 33% and 55% in 2001, respectively). Consequently, the share of the former in the total volume of transactions in 2002 decreased to 20%, and the share of the latter to 25%.

Chart 26

Evolution of outright transactions over the past three years



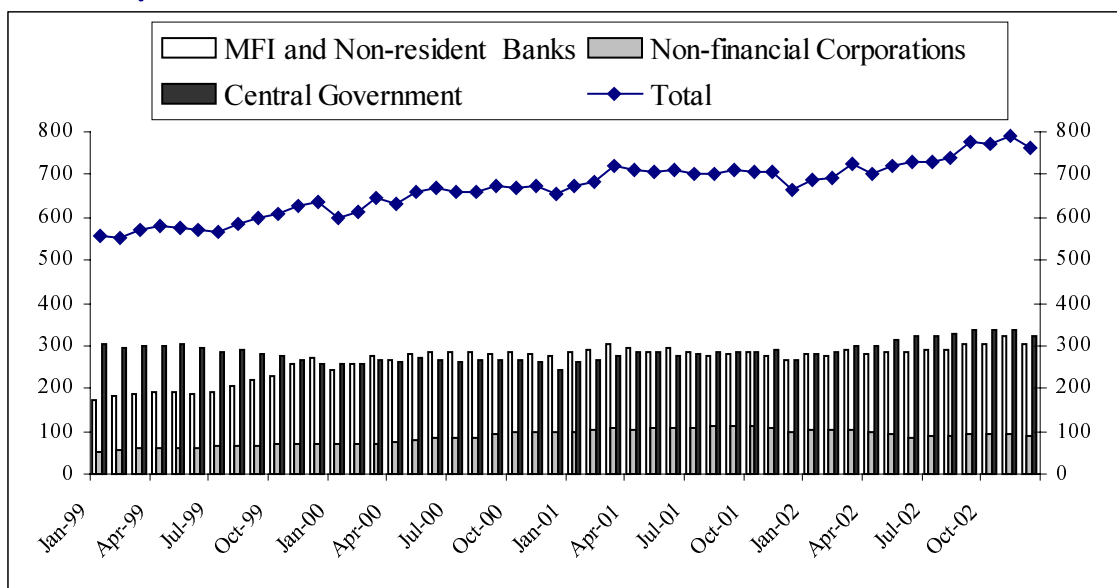
Q2 2000 volume as base value 100

Panel of 54 banks

During this three-year period (2000-2002), the growth rate of transactions in short-term securities reached 97%. The volume in T-bills and non-bank commercial paper more than doubled (increasing by 115% and 104%, respectively), while transactions in certificates of deposits exhibited a relatively moderate growth rate of 54%.

2.6.2 Outstanding amounts and issuance

The outstanding stock of euro-denominated short-term securities increased from EUR 653 billion in December 2000 to EUR 762 billion in December 2002 (source: ECB securities database), reaching a peak of EUR 793 billion in November 2002. The outstanding amount of short-term securities issued by the private sector surpassed that of the public sector in October 1999; this trend has remained unchanged ever since. A more detailed breakdown reveals that, apart from a four-month period (May–August 2002), the share of banks and financial corporations continued to exceed that of the public sector. In addition, banks and financial corporations represented 45% of the total amount outstanding in December 2002 (compared with 44% in 2001 and 47% in 2000). The share of the public sector continued to increase and accounted for 42% of the total outstanding amount in December 2002 (compared with 37% in 2000 and 40% in 2001).

Chart 27**Outstanding amounts of euro-denominated short-term securities (in billion euro) by issuer sector since January 1999**

Source: ECB securities database

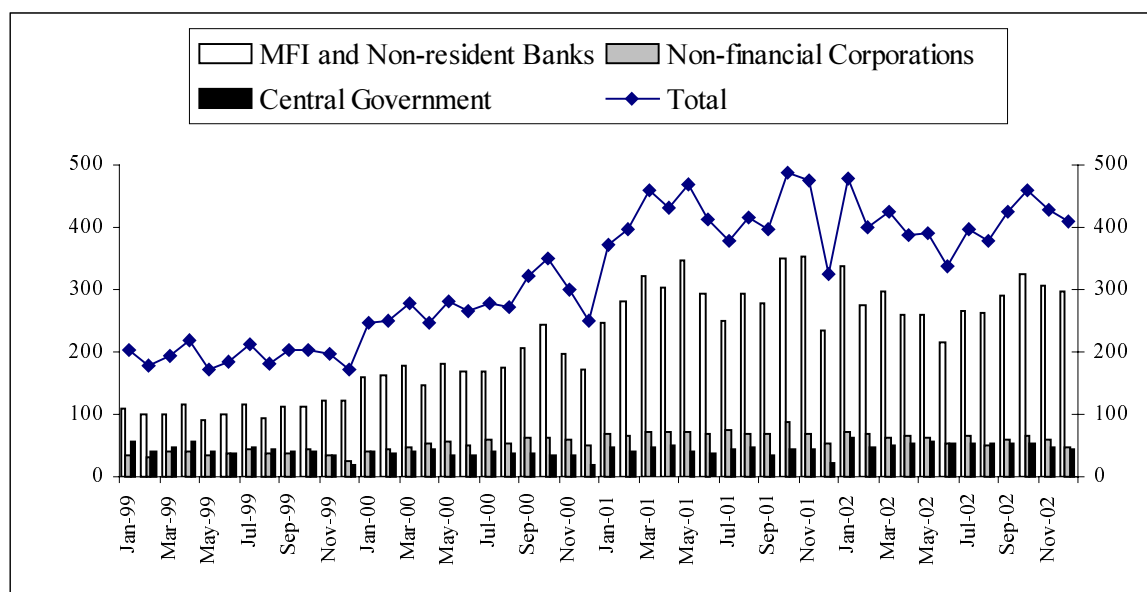
The gross issuance of short-term securities amounted to EUR 411 billion in December 2002, compared with EUR 325 billion in December 2001 and EUR 251 billion the year before (source: ECB securities database).

Following considerable growth of 50% in 2001, issuance activity in 2002 contracted, decreasing by 2% with the total amount of gross issuance for the whole year standing at EUR 4,919 billion. The reverse in the trend can primarily be attributed to non-financial corporations and banks. The gross issuance of the former declined by 12% and of the latter by 5%. On the other hand, central government stepped up its pace of issuance activity, which grew by 26%. As a consequence, the share of banks and financial corporations fell from 73% in 2001 to 72% in 2002, while that of the central government rose from 10% to 13% in the same period.

The contrast in issuance activity between the public and private sectors reflects differences in the financing needs of these sectors at a time of weak economic growth. Within the private sector, the decline in issuance activity of banks may reflect, among other factors, continued strong inflows of deposits. For non-financial corporations, weak issuance activity could be triggered by the rise in rating downgrades and deterioration of corporate financing conditions. In

this context, issuers may also have decided to lengthen their maturity profile and limit their dependence on CPs.

Chart 28
Gross issuance of euro-denominated short-term securities (in billion euro) by issuer sector since January 1999



Source: ECB securities database

The euro-denominated TCN (Titres de Créances Négociables) market in the euro area reached an outstanding amount of 245 blns euros at the end of 2002. Since the end of the 90's, this market has grown steadily thanks to the size of the investor base (money market funds) and has attracted very large and active non-resident issuers. The outstanding amount of euro-denominated assets on this market reached in May 2003, 279 billion euros. The euro-denominated papers represent more than 95% of the outstanding of the TCN market¹⁵.

Another large market is the Euro commercial paper market (ECP), which has grown steadily over the years, benefiting from its international character in terms of issuers, investors and

¹⁵ The monthly issuance in December 2002 reached 346 billion and reached an historical peak in May 2003 with more than 400 billion issued.

currencies. The role of the euro on this market has become more prominent with the outstanding amount of euro-denominated ECP, which totalled EUR 121 billion in December 2002. This represents growth of 71% since December 2000 and 39% since December 2001. Since then, it has again increased, to reach a historical high of EUR 149 billion in April 2003.

The sum of the euro and US dollar-denominated ECP represents about 77% of the ECP market size. While the euro-denominated share has increased significantly, the US dollar has exhibited a declining trend, the former increasing to 44% in December 2002 while the latter decreased to 33%. In September 2002, for the first time the euro-denominated share exceeded that of the US dollar.

2.6.3 Market structure

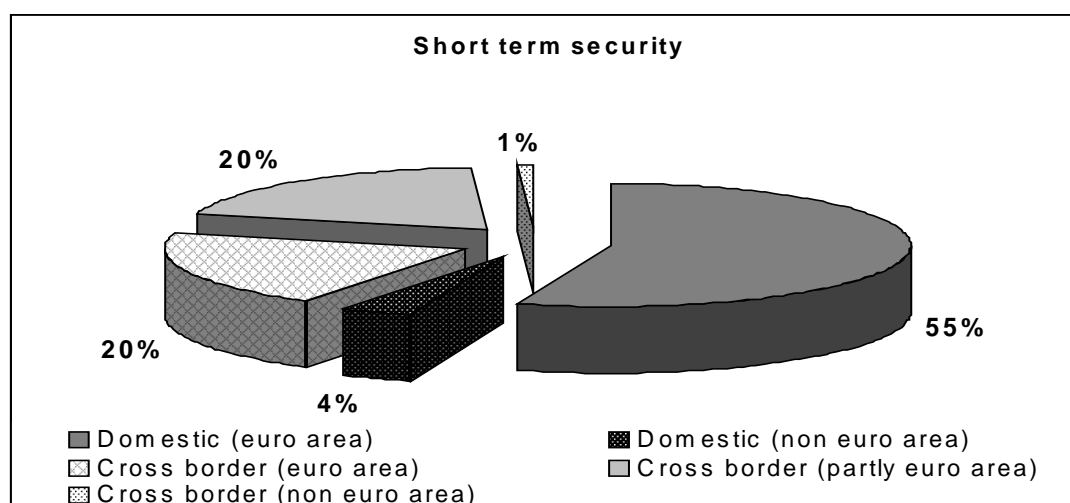
According to the replies in the qualitative part of the questionnaire, the vast majority of participants (79%) deem the market sufficiently or significantly efficient. Nonetheless, a considerable number, accounting for 15% of the credit institutions surveyed, considers the efficiency of this market segment to be limited. Regarding market liquidity, participants reported no significant changes in 2002.

A geographical analysis of the data shows that more than half of the turnover (55%) is executed domestically in each euro area country. In addition, counterparties within the euro area account for 20%. So altogether, 75 % of all transactions are performed exclusively in the euro area. This high concentration is probably due to the fact that this market is still not fully integrated. Indeed, a previous study on the topic has already mentioned that the euro area short-term securities market still has a national character. There are various reasons for this: the differences of legal systems across the euro area, the lack of integrated securities settlement infrastructure, the lack of homogeneity of the features and the terms and conditions for these securities and a limited investor demand. It is worth noting that although initiatives¹⁶ towards the creation of a pan-European market have already been taken, further expansion of the short-term debt securities market is currently hindered by these aspects shortcomings.

¹⁶ See ECB: "Euro Money Market Study 2001", December 2002 p.35-38

Chart 29

Geographical counterparty structure in 2002



Panel of 54 banks

As regards the trading structure, the largest part of business (55%) is carried out via direct trading, while voice and electronic brokers are used in 24% and 7% of the cases, respectively.

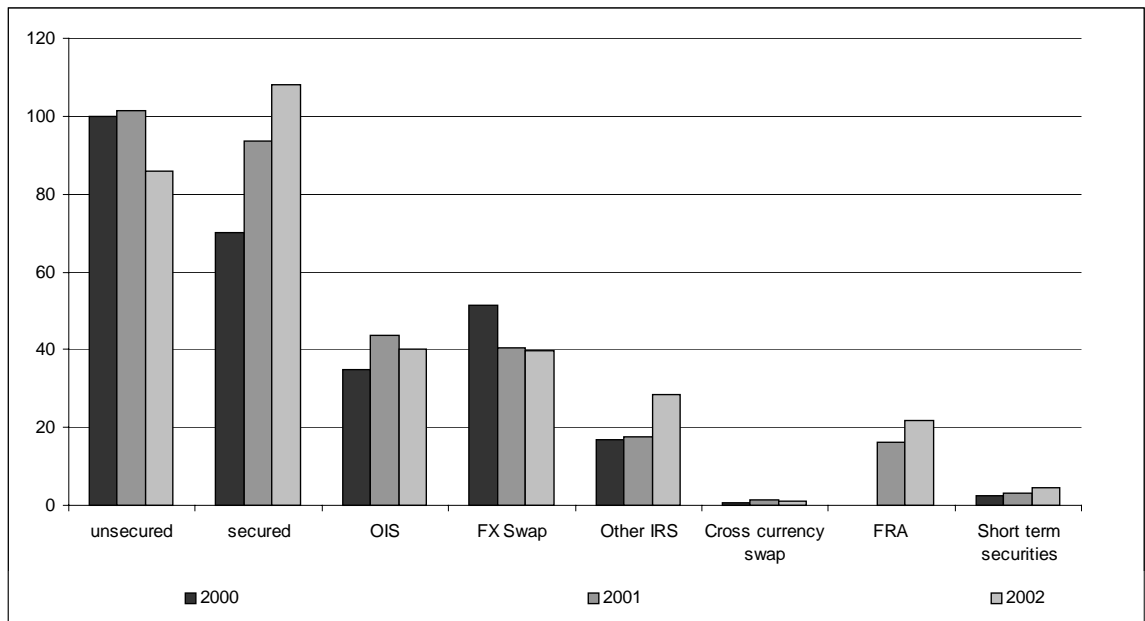
2.7 Cross market segment analysis

2.7.1 Turnover analysis

In 2002, the repo market became, for the first time, the most important market segment. The decline in unsecured money market transactions between the second quarters of 2001 and 2002 was fully compensated for by an increase in the turnover of the secured market. The preference towards limiting credit risk exposure might have led to a shift from unsecured activity towards the repo market. Two other market segments also recorded important growth in 2002, other IRS (62%) and short-term securities (54%).

Chart 30

Daily turnover traded in each money market segment for 2000, 2001 and 2002¹⁷



Q2 2000 volume of deposit as base value 100

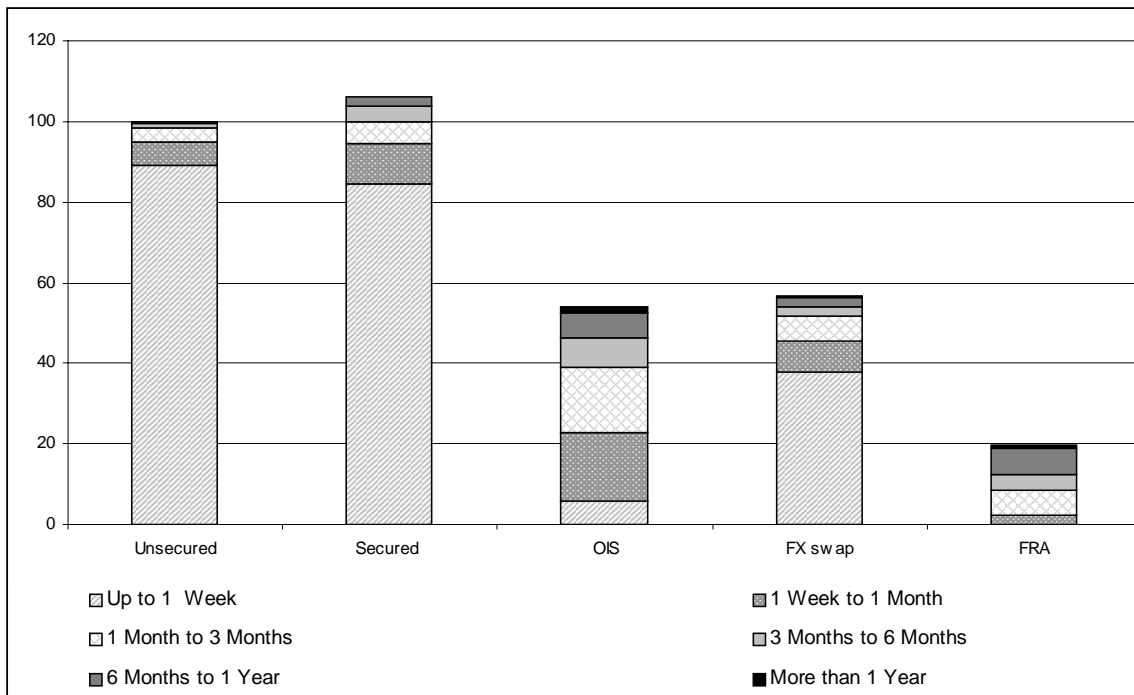
2.7.2 Maturity analysis

The breakdown by maturity shows that the unsecured, secured and FX swap markets are very much concentrated on very short-term maturities (up to 1 week) of the money market curve. Indeed, transactions of up to one-week maturity represent 88%, 79% and 67% of the turnover of the unsecured, secured and FX swap markets respectively. OIS and FRA are more medium-term instruments, with the bulk of their turnover in maturities between 1 month and 1 year.

¹⁷ Data on FRAs are only available for 2001 and 2002.

Chart 31

Total deposit, repo, OIS, FX swap and FRA turnover for the different maturity baskets in 2002.

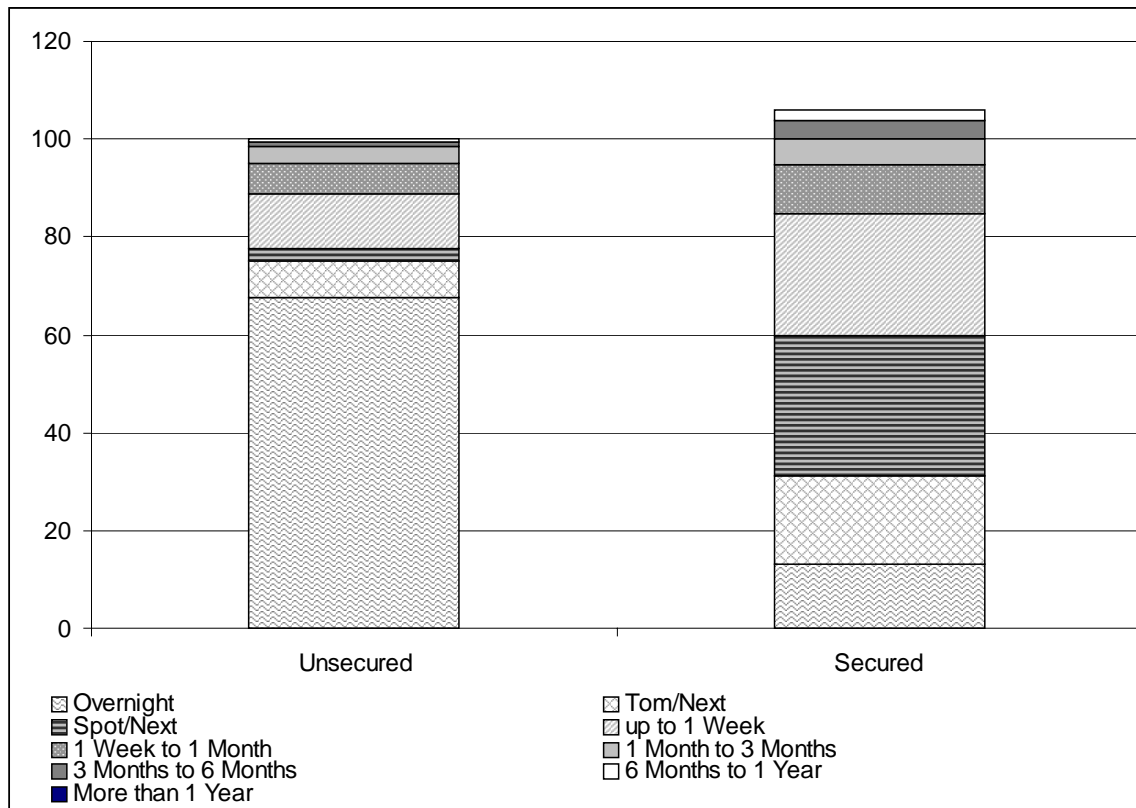


Q2 2002 Deposit = 100

When analysing further the maturity breakdown for the unsecured and secured segments, 67% of the transactions in the unsecured markets were performed in the overnight for only 12% in the secured market. The bulk of the transactions in the secured market were in the “up to 1 week” maturity class, excluding overnight. This predominance of overnight transactions in the unsecured market compared with the secured market, at a time when banks are seeking to limit their credit risk exposure, can be explained by problems arising with collateral settlement.

Chart 32

Total deposit and repo turnover for the different maturity baskets in 2002



Q2 2002 Deposit = 100

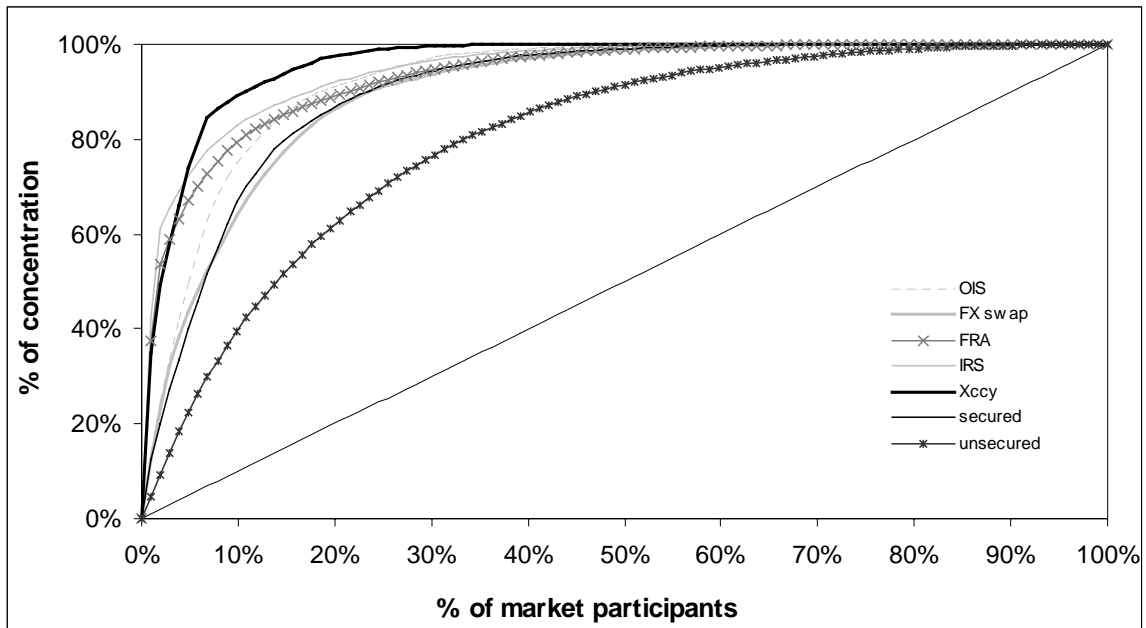
Based on the volumes reported by a sample of banks that reported data for Q2 2002

2.7.3 Market structure

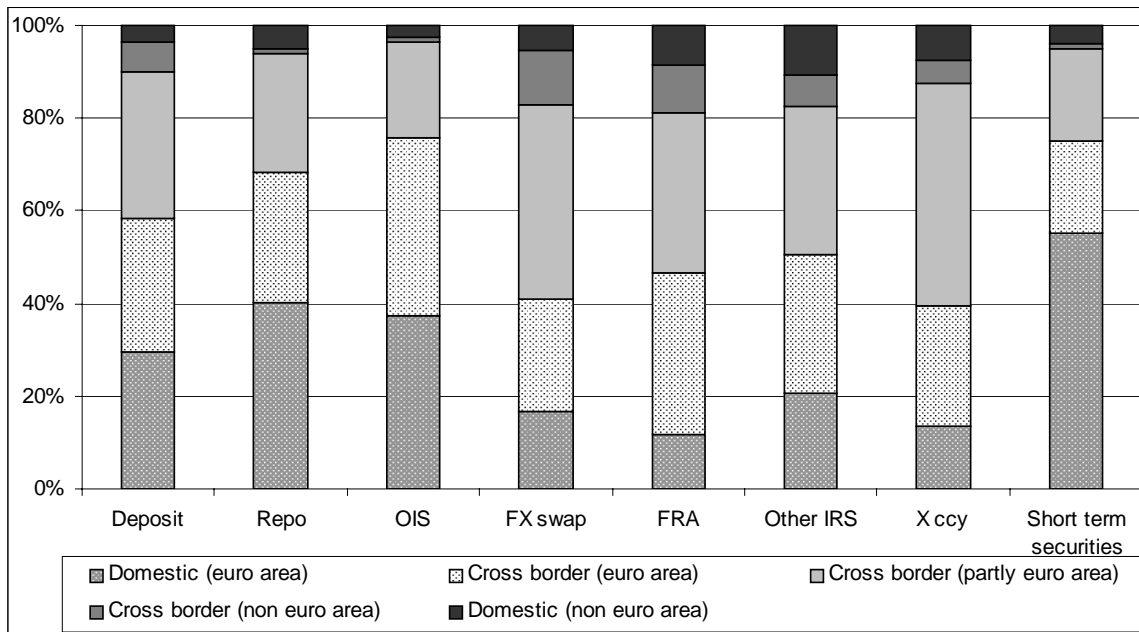
In terms of concentration, the deposit market is by far the least concentrated, followed by the repo and the FX swap markets. Except for the FX swap market, the survey continued to show that the market segments showing the highest concentration remained the euro OTC derivatives markets, although compared with previous years this concentration is declining. The market share of the 20 largest players in the repo market is now close to reaching the level of concentration of the derivatives market segments.

Chart 33

Lorenz curves – concentration of activity in the different market segments



An analysis of the geographical counterparty breakdown for the different market segments shows that the transactions in the unsecured, secured, OIS and short-term securities markets are mainly (i.e. more than 50%) conducted “exclusively inside the euro area”. FX-related derivatives products such as FX swaps and cross-currency swaps are conversely mainly transacted, at least for one part of the deal, outside the euro area.

Chart 34**Geographical counterparty structure of the different market segments**

Regarding the split between transactions conducted domestically or across the euro area, it is interesting to note that the secured, OIS and short-term securities markets are primarily traded domestically inside the euro area. This has been extensively explained in the previous section as regards short-term paper and the repo market. The geographical concentration of OIS trading in some euro area countries is however more striking. There could be historical reasons for this, as similar products had already been developed in some euro area countries prior to the introduction of the euro.

Annexes

Annex I: Technical annex

Scope of the study

In this fourth money market survey, banks were invited to provide data about their interbank activity during the second quarters of 2001 and 2002, covering the main segments of the euro money markets. Non-interbank or customer transactions (i.e. transactions with corporate customers, central banks or supranational institutions) are not reported as they do not fall within the scope of the study.

Banks reported interbank activity if this activity is booked in their own entity. Intragroup flows derived from intragroup operations are excluded from this study. Any interbank activity from another subsidiary/branch of the group is reported by the relevant entity of the group in a separate questionnaire. The data reported are nominal amounts for cash transactions and notional amounts for derivative transactions. In addition, transactions related to the rollover of previous positions were taken into consideration. The turnover for each maturity bucket was the "average" daily turnover over the relevant quarter. The "average" daily turnover is calculated on the basis of the total amount of transactions executed during the reporting period divided by the number of business days in the reporting period. The banks answering the survey were asked to specify the number of business days considered for this calculation. The "average" daily number of transactions is calculated on the basis of the total number of transactions executed during the reporting period, divided by the number of business days in the reporting period.

The turnover was posted in each maturity bucket according to the initial maturity of the transactions (including forward transactions, regardless of the settlement date). In the case of transactions redeemable at notice, the length of the notice has been reported as the maturity. The daily average number of transactions over the second quarter of 2002 was provided for each of the following transaction size brackets in euro nominal amounts: up to 100 million, from 101 to 1,000 million and above 1,000 million.

As concerns the number of counterparties with which reporting banks have transacted during the second quarter of 2002, these were broken down in terms of geographical location of the counterparty: national, euro area, and others. "National" refers to counterparties located in the same country as the reporting bank. If the reporting bank is not located in the euro area, "euro area" refers to counterparties located in the 12 euro area countries; if the reporting bank is

located in the euro area, "euro area" refers to counterparties located in the other 11 euro area countries. "Others" refers to counterparties located in all non-euro area countries.

In addition, banks were asked to fill in a qualitative survey, providing information about efficiency, changes in liquidity and breakdown of transaction amounts by both location of counterparty and trading system for each money market segment. Trading systems were broken down into direct trading, trading via broker, and trading via electronic devices.

Secured and unsecured markets

For the secured and unsecured segments of the money market, the activity tables are divided into terms of lending and borrowing activity. For the secured market, "Cash lending" refers to buy/sell-back transactions and reverse repos, while "Cash borrowing" refers to sell/buy-back transactions and repos. The share of variable repos as opposed to fixed rate repos has also been reported as a percentage of the average daily transactions in secured markets. Information about the origin of collateral has been provided as a percentage of the average daily transactions in secured markets. The country of issuance of the security used as collateral follows the same geographical approach as for the location of counterparties: national, euro area, and others.

Swap markets

This study covers different kinds of swap transactions.

- Overnight index swaps (OIS) are financial operations involving an exchange of cash flows on a specified date. On one hand, they involve paying or receiving a fixed cash flow, and on the other, paying or receiving a variable rate cash flow. In the euro money markets the most widely recognised overnight index is the EONIA. Banks were asked to provide the percentage of the average daily turnover of OIS transactions that are not indexed to EONIA.
- Foreign exchange swaps are transactions which involve the actual exchange of two currencies (principal amount only) on a specific date at a rate agreed at the time of conclusion of the contract (the short leg), and a reverse exchange of the same two currencies at a future date at a rate (generally different from the one applied to the short leg) agreed at the time of the contract (the long leg). Both spot/forward and forward/forward swaps fall into this category. Banks have reported FX swaps only if one of the two currencies exchanged is the euro and if the leg in euro for FX swaps should be reported.

- Interest rate swaps (IRS) are agreements to exchange periodic payments related to interest rates in one currency, here the euro; they can be fixed for floating or floating for floating, based on different indices.
- Cross-currency swaps are contracts that commit two counterparties to exchange streams of interest payments in different currencies for an agreed period of time and to exchange principal amounts in different currencies at a pre-agreed exchange rate at maturity. Banks were asked to consider cross-currency swaps only if one of the currencies involved is the euro.

Short-term securities

The information on the turnover in outright transactions on euro-denominated short-term securities is divided into three categories: Government Issues (e.g. T-bills), Bank Issues (i.e. paper issued by euro area credit institutions) and Non-bank Issues (i.e. paper issued by corporations). Banks report the daily outright transactions average. Outright transactions are defined as a sale or purchase of short-term securities on the interbank secondary market. The primary market or issuance activity has not been included. Short-term securities are defined in a broad way as all securities with an initial maturity of up to 12 months, including T-bills, CPs, ECPs, ABCPs, CDs, etc.

Annex 2: A comparison of the ISMA European repo survey and the ECB survey on euro interbank money market activity

| | ISMA survey | ECB survey |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric | Outstanding (i. e. stock) | Turnover (i.e. flow); specifically, daily average turnover |
| Periodicity | Semi-annual | Yearly |
| Location of respondents | All European countries | All 15 EU countries |
| Type of institution | All financial institutions (e.g. includes national debt and other public agencies) | Credit institutions only |
| | Transactions with all counterparties except central banks | Interbank transactions only (i.e. excludes transactions with customers) |
| Currencies | The total figure is broken down into: EUR GBP USD SEK, DKK JPY Other | EUR only |
| | The total figure is broken down into: cross-currency other (same currency) | |
| Maturities | Measures remaining term to maturity | Measures original term to maturity |
| | Aggregates one-day transactions | One-day transactions are broken down into: O/N T/N S/N |
| | Other transactions are broken down into: (1) 2-7 days 1 week to 1 month 1 month to 3 months 3 months to 6 months over 6 months forward-forwards | Other transactions are broken down into: (1) 2-7 days 1 week to 1 month 1 month to 3 months 3 months to 6 months 6 months to 1 year over 1 year (no forward-forward category) |
| | | For each maturity band, a weighted average maturity is calculated |
| Collateral | The total figure is broken down into: fixed income equities | |

| | | |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Fixed income is broken down into 15 EU countries and the US; in the case of collateral issued in other countries, it is analysed by OECD membership or region. Each EU country is further broken down into:</p> <p>Government Other. “Other” German collateral is sub-analysed into: Pfandbrief other.</p> | <p>The total figure is broken down into: domestic (“national”) euro area other</p> |
| Counterparties | <p>The total figure is broken down into: Direct via voice broker via ATS. Each category is further broken down into: Domestic cross-border eurozone cross-border non-eurozone ATS is also further broken down into: anonymous via a CCP. There are therefore 10 counterparty-type/location sub-categories.</p> | <p>The total figure is broken down into: domestic euro area other</p> |
| | | <p>The total figure is separately broken down into: direct via voice broker via ATS (“electronic broker”)</p> |
| Type of transaction | <p>All types of repo, classic and sell/buybacks. Securities lending against any type of collateral which is conducted from repo desks is measured separately.</p> | <p>All types of repo and securities lending against cash collateral</p> |
| | <p>The total figure is broken down into: classic repo documented sell/buy-backs undocumented sell/buy-backs</p> | |
| | <p>Each sub-category is broken down into repo and reverse repo</p> | <p>Each sub-category is broken down into repo and reverse repo, except for analysis as: location of counterparty type of counterparty</p> |
| | <p>The total figure is broken down into: fixed rate floating rate open</p> | <p>Each maturity band is further broken down into: floating rate (“indexed”) other (fixed rate and open). There are therefore 9 maturity/rate sub-categories.</p> |
| | <p>Total figure is broken down into: triparty repo other (delivery & HIC). Tri-party is further broken down into: fixed-term open.</p> | |

Annex 3: Glossary

Automated trading systems (ATSs): systems that offer additional means of trading compared with 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).

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

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

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

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

BIS: Bank for International Settlements.

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

Bubill: German Treasury bill.

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

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 only exist as electronic records). In addition to safekeeping, a central securities depository may also 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.

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.

Counterparty: the opposite party to a financial transaction.

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

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

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

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 three basic building blocks: forward contracts, options or combinations thereof.

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

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 banks.¹⁸

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 banks.¹⁹

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

European Master Agreement: legal contract sponsored by the European Banking and the European Savings Association, which aims at consolidating 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 those EU Member States that have adopted the euro.

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

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

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

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.

¹⁸ Number of panel banks as of August 2002.

¹⁹ Ibid.

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

Investment Services Directive (ISD): this refers to the Council Directive 93/22/EEC of 10 May 1993 on the 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 members or to have access to regulated markets of another Member State, either with a presence in that country or by remote membership.

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

LIFFE: London International Financial Futures and Options Exchange.

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

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

Market maker: a dealer that is 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: the ability of market participants to observe (pre-trade) quotes, (post-trade) prices and volumes in a timely fashion.

Monetary financial institutions (MFIs): financial institutions which form the money-issuing sector of the euro area. This includes the Eurosystem, resident credit institutions as defined in Community law and all other resident financial institutions whose business is to receive deposits and/or close substitutes for deposits from entities other than MFIs and, for their own account (at least in economic terms), to grant credit and/or invest in securities. The latter group consists predominantly of money market funds.

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: the total number of contracts in a commodity or options market that are still open; i.e. have not been exercised, closed out, or allowed to expire.

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

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

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

Primary market: the market for new issues of securities.

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: a 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/buy-backs and securities lending). All forms of repos entail a change in ownership.

Reserve maintenance period: period over which compliance with reserve requirements is calculated. This is one month for the Eurosystem, starting on the 24th calendar day of each month, and ending on the 23rd calendar day of the following month.

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

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 their original issuance, which took place on the primary market.

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

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

Special collateral: collateral other than general collateral.

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

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.

Annex 4: Co-ordination of the study

The study of the Market Operations Committee of the ESCB was conducted by a working group involving representatives from the ECB and NCBs.