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EURO MONEY MARKET STUDY 2006

FEBRUARY 2007

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In 2007 all ECB publications feature a motif taken from the €20 banknote.

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Address
Kaiserstrasse 29
60311 Frankfurt am Main
Germany

Postal address
Postfach 16 03 19
60066 Frankfurt am Main
Germany

Telephone
+49 69 1344 0

Website
http://www.ecb.int

Fax
+49 69 1344 6000

Telex
411 144 ecb d

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EXECUTIVE SUMMARY

This sixth 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 those national central banks that were members of the European System of Central Banks (ESCB)[1] before 1 January 2007. The turnover data collected from banks cover the second quarters of 2005 and 2006, and are compared with data collected in previous surveys. This study differs from previous studies in that turnover data from nine of the ten new Member States that joined the ESCB on 1 May 2004 have also been added. The 2006 study also contains a Box analysing the euro money market in the new Member States (Box 3).

The main findings of the study are as follows. After two years of slow growth, the aggregated turnover of the euro money market expanded strongly in the second quarter of 2006. Activity increased across all money market segments except in cross-currency swaps, which remained fairly stable. The increase in turnover was particularly strong for overnight indexed swaps (EONIA swaps), forward rate agreements, and other interest rate swaps, which recorded over 40% year-on-year growth. This upswing of interest rate derivatives appeared to be linked to market participants' anticipation of increases in key interest rates by the ECB's Governing Council. Whereas the trading volume in the foreign exchange swap market was also robust, the turnover in both short-term securities and unsecured markets only expanded at a moderate pace. By contrast, the secured market continued to expand rapidly owing above all to the increasing need to limit credit risk exposures as well as to face the constraints resulting from capital adequacy requirements. The secured market therefore remains the largest money market segment.

The activity in the unsecured, secured and foreign exchange swap markets continued to be largely concentrated in very short-term maturities. The maturity structure of the overnight indexed swaps closely resembled the one observed in 2003, when market participants were pricing in rate cuts by the ECB's Governing Council. However, compared with last year, the trading in the overnight indexed swaps market showed a greater concentration in shorter maturities, with almost half of the average daily turnover concentrated in maturities of up to one month. On the other hand, the share of activity in longer maturities and especially over two-year maturities increased slightly for both other interest rate swaps and cross-currency swap segments. Therefore, the latter two instruments maintained their status as instruments traded at longer maturities.

The degree of concentration across banks remained relatively high in most market segments. Despite the reduction in concentration observed in some segments since the last survey (foreign exchange swaps, other interest rate swaps and cross-currency swaps), the over-the-counter derivatives market continued to be highly concentrated. The unsecured market remained by far the least concentrated money market segment.

Despite the gradual increase in cross-border trading in recent years, the proportion of transactions carried out between national counterparties in the secured and the short-term securities markets remained comparatively high. This shows that while the integration process of the repo and short-term securities markets across the euro area is continuing, it is still quite slow and complex. The Short-Term European Paper (STEP) Convention, which was signed by the two money market organisations Euribor ACI and Euribor FBE on 9 June 2006, aims at reducing the differences in market standards and practices relating to short-term debt instruments. In this respect, the publication of STEP statistics on yields and volumes and the acceptance of the STEP market as a non-regulated market for collateral purposes by the ECB is expected to contribute

1 The ESCB consists of the ECB and the national central banks of the European Union (EU) Member States.

to the integration of the European short-term securities markets by providing greater market transparency.

With regard to the trading structure, the results of the 2006 ECB euro money market study show that electronic transactions continued to grow in the majority of market segments. However, the share of electronic trading in total turnover remained at or below 25% in all market segments with the exception of the secured market segment. Direct trading continued to be the most important way of carrying out business in the unsecured, forward rate agreements, foreign exchange swaps, other interest rate swaps, cross-currency swaps and short-term securities markets.

I INTRODUCTION

In the second quarter of 2006, the European Central Bank (ECB) and the 25 national central banks (NCBs) of the Member States of the European System of Central Banks (ESCB) conducted, under the auspices of the Market Operations Committee of the ESCB, a quantitative and qualitative survey among banks in 23 EU countries regarding the euro money market.[2] On the basis of that survey, the 2006 ECB euro money market study analyses the euro money market in terms of trends and developments in its integration and efficiency, following on from similar studies conducted in the second quarters of 1999, 2000, 2001, 2002 and 2004.[3] The 2006 study covers the second quarters of 2005 and 2006, and each participating bank reported the daily average turnover in each of the money market segments during these two periods. Each NCB selected a number of banks with a view to obtaining a representative coverage of euro money market activities. Altogether, a total of 157 banks participated in the survey. The country breakdown of the participating banks is reported in the table below:

Table 1 Country breakdown of participating banks in 2006

Austria	6	Hungary	3	Poland	5
Belgium	3	Italy	9	Portugal	15
Cyprus	3	Ireland	9	Slovenia	2
Czech Republic	8	Latvia	4	Slovakia	2
Germany	17	Lithuania	3	Spain	15
Finland	4	Luxembourg	5	Sweden	4
France	10	Malta	4	UK	13
Greece	8	Netherlands	5		

The 157 banks surveyed accounted for approximately 60% of the outstanding volume in ECB open market operations during the second quarter of 2006. The methodological notes contained in the questionnaire can be found in Annex 1.

Compared with previous studies, three changes were made to the 2006 study. For the first time, the study incorporates data collected from nine of the ten Member States which joined the European Union on 1 May 2004. Separate turnover data from these Member States have already been included in the "Euro money market survey 2005", which was published on the ECB website on 20 January 2006. Furthermore, in the qualitative part of the survey, two questions were added concerning the efficiency of the euro interest rate options market and changes in its liquidity.

The purpose of this study is to highlight the main trends affecting the market structure of the euro money market and, for this reason, this study neither assesses the overall size of the different segments of the euro money market, nor does it compare it with other major money markets, such as those of the US or Japan.[4] Results from the qualitative questions are reported, weighted by the turnover data reported by each institution in that market segment.

The number of banks participating in each of the successive annual surveys varies considerably, and also changes from one market segment to another, as not all banks are active in each segment of the money market. Hence two types of samples were used for the analysis, depending on the time frame. The first sample group, which was used to analyse the evolution of the euro money market over the last two years, included 157 banks. The second sample group, which was used for a longer-term analysis since 2000 when

2 There were no banks from Denmark or Estonia included in the survey.

3 This survey of developments in the euro area money markets is conducted and the data is published every year. From 2002 onwards, the ECB decided to publish a detailed report analysing the data from the survey only every two years, in even years. See the following ECB publications: "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); "Money market study 2002" (November 2003); and "Euro money market study 2004" (May 2005). In years where there is no accompanying study (i.e. in odd years), the data from the annual survey are published as a set of charts (see for example "Euro money market survey 2005").

4 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 this survey does not provide a comprehensive information on transaction volumes in the euro money market.

the survey was first conducted, is referred to as "the constant panel of banks". In contrast to the methodology followed in previous years, 29 banks were added to this constant panel from 2002 onwards to make the analysis more complete, thereby extending the panel from 85 banks in 2000 to a total of 114 banks for the period 2002-2006. The composition of the constant panel is the same for all market segments. Finally, the base year in the 2006 ECB euro money market study was changed from 2000 to 2002, given the more representative nature of the enlarged panel. The effect of the changes to the panel of banks used for analysing long-term trends is detailed in Annex 1.

Finally, in addition to the survey, other data sources have been used: the section on the unsecured market (sub-section 2.2) draws upon data from the e-MID platform; the futures and options markets section (sub-section 2.5) relies on data published by Euronext.liffe (short for the Euronext-London International Financial Futures and Options Exchange), while the section on the short-term securities market (sub-section 2.6) also analyses data from both ECB securities issues statistics and the Euroclear database.

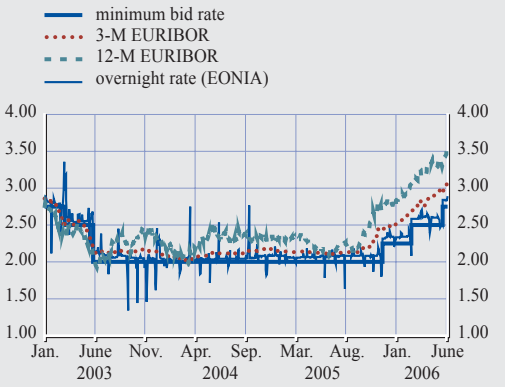
2 THE MONETARY POLICY ENVIRONMENT IN 2005 AND 2006

Euro money market developments in 2005 and 2006 should be analysed in a context of increasing ECB key interest rates from their historically low levels. The ECB's Governing Council kept the minimum bid rate for the main refinancing operation (MRO) unchanged at 2.00% from 6 June 2003 until 6 December 2005. From December 2005 to end-June 2006, the closing date for the survey, the minimum bid rate was raised by 25 basis points at the Governing Council meetings of 1 December 2005, 2 March 2006 and 8 June 2006, thus reaching 2.75% by June 2006.

Regarding money market developments in 2005 (Chart 1), expectations of interest rate

Chart 1 Money market rate developments in the euro area, 2003 to end-June 2006

(percentages)



Source: Bloomberg and ECB calculations.

increases by the ECB dissipated during the second quarter of 2005, and the shape of the euro area interest rate swap curve inverted slightly. At the beginning of March 2005, the one-month-forward EONIA swap curve almost fully priced in a 25 basis points rate increase by the ECB by end-2005. However, generally weaker than expected macroeconomic data and downward revisions to economic growth forecasts for the euro area subsequently led to a reduction in market participants' expectations of an interest rate hike. At the end of the second quarter of 2005, forward rates even assigned some probability of a rate cut by the ECB by year-end. Additionally, government bond yields in the G3 economies resumed the downward trend initiated in mid-2004, with the yield for the ten-year German Bund reaching a historical low of 3.27% on 20 May 2005.[5] In the US, the Federal Open Market Committee (FOMC) pursued its strategy of gradually removing its policy accommodation, and raised the Federal Funds target rate from 2.75 to 3.25% between April and June 2005.

Between June 2005 and June 2006, and especially from October 2005 onwards, expectations of increases in key ECB interest rates steadily increased. By end-June 2006, the

5 A new record low of 3% was subsequently reached on 23 September 2005.

forward EONIA swap curve priced in a slightly over 50% probability that the ECB would increase its MRO rate to 3.50% by December 2006. In the US, the FOMC continued to raise rates up to 5.25% on 29 June 2006. Moreover, the Bank of Japan had already announced the end of its quantitative easing policy back in March 2006.[6] During most of May 2006, investors' attitude towards risk seemed to have turned more cautious, and led to some shifts in their portfolios, which mainly benefited safe-haven assets such as government bonds. The reduction in global risk appetite pushed government bond yields temporarily lower, although evidence of strong economic growth and emerging inflationary pressures resulted in G3 government bond yields resuming a rising trend in mid-June 2006.

Concerning structural policy developments, on 30 May 2005 the ECB made some changes to its operational framework, mainly concerning the implementation of the single list of collateral. Box 1 develops the evolution of the use of collateral in ECB operations since 1999.

6 The Bank of Japan subsequently tightened its key uncollateralised overnight call rate for the first time since 2001 to 0.25% on 14 July 2006.

Box 1

THE USE OF COLLATERAL IN ECB OPERATIONS

Since 2002 the size of the Eurosystem's repo operations has been expanding at around 10% per year, in line with the rapid increase in the demand for euro banknotes and higher reserve requirements. The amount of eligible collateral used for both monetary policy operations and intraday credit has been increasing at approximately the same rate, from €687 billion in 2002 to €941 billion on average during the first three quarters of 2006 (Chart A).

Chart A Use of collateral, by type of asset

(EUR billions)

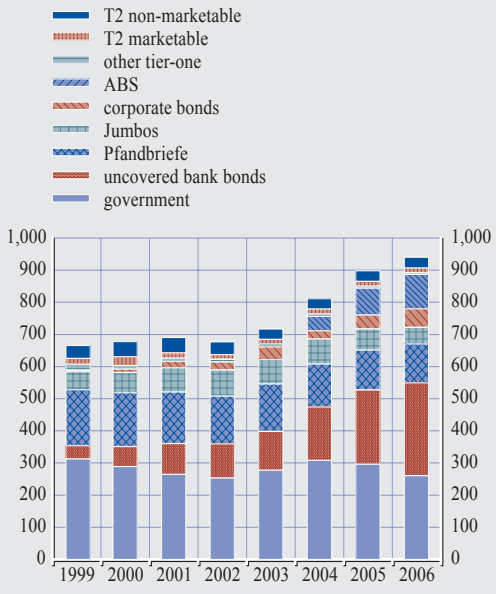
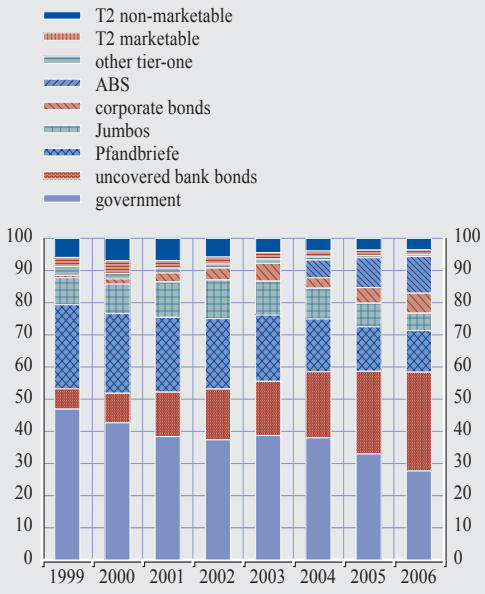


Chart B Shares of asset types in total used collateral

(percentages)



Source: ECB.

It is worth stressing that the €250 billion increase in the size of Eurosystem monetary policy operations has been almost entirely collateralised by a greater use of uncovered bank bonds and asset-backed securities. The amount of government bonds used as collateral has remained rather stable, fluctuating between €250-300 billion, and now accounts for only 28% of all collateral used (Chart B). In order to use collateral more efficiently, the Eurosystem's counterparties have been exploiting the wider range of collateral accepted by the Eurosystem in its policy operations compared with the interbank secured market. The significant increase in the use of asset-backed securities, which now account for 11% of all used collateral, is related to two main factors: first, banks are still the main investors in asset-backed securities, accounting for almost 50% of the market, which makes this an asset class that is amply available on their balance sheets; and second, there is currently no active interbank secured market for these assets. So unlike government bonds, there is a low opportunity cost of using them with the Eurosystem. The case is similar for the large increase in the use of uncovered bank bonds, which now account for 31% of all collateral used, a higher share than that of government bonds. Uncovered bank bonds are often structured products, tailor-made for specific buy-and-hold investors, and therefore have a limited value in the repo market. Banks have traditionally been large investors in these types of securities, in part owing to the favourable risk weights under the current Basel I framework.

From the start of 2007, there will be a significant change in the collateral framework. Credit claims, which are currently eligible as collateral in only four countries (Germany, Spain, France and Austria), will become eligible across the whole euro area. It is expected that the use of credit claims will increase only gradually during the first few years, but in the longer term, credit claims are likely to form a substantial share of all Eurosystem collateral. If this occurs, it will have substantially increased the liquidity of banks' balance sheets, which could have positive external implications not only for the stability of the banking system, but also for the economy in general. The possible liquidity imbalance between the asset and the liability side of banks is one of the incumbent risks of bank intermediation and, more generally, to the soundness of the financial system. Furthermore, by freeing up government bonds from being used in Eurosystem operations, it should also provide banks with new profit opportunities and, by encouraging competition, result in more advantageous conditions for bank customers too.

More information on the use of collateral and the changes to the collateral framework can be found in an article in the May 2006 edition of the ECB Monthly Bulletin (www.ecb.int/pub/pdf/mobu/mb200605en.pdf). Furthermore, the precise eligibility criteria and procedures for handling credit claims have been laid out in detail in the "General Documentation" published on the ECB website (www.ecb.int/pub/pdf/other/gendoc2006en.pdf).

3 THE UNSECURED MARKET

3.1 TURNOVER ANALYSIS

Unsecured money market transaction volumes have steadily increased since the temporary decline in activity which followed the terrorist attacks in the US on 11 September 2001. However, the growth rate is relatively moderate, and slower than that of other money market segments. Activity on the lending side rose by 28% from 2002 to 2006, compared with a 46%

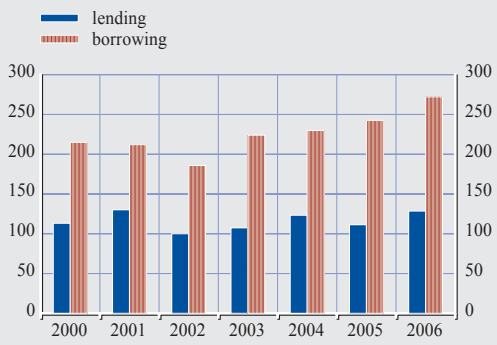
increase on the borrowing side over the same period (Chart 2).

In the unsecured market borrowing by the constant panel of banks has always exceeded lending since the first euro area money market survey was conducted in 2000. Moreover, the gap has increased since 2000, and borrowing was 2.1 times as large as lending in Q2 2006. One reason for this gap might be the relative over-representation of large banks in the constant panel. Indeed, some market participants have confirmed that smaller banks tend to be liquidity providers and lend to larger "cash centre" banks in the unsecured market. This seems to be supported by the data from the new Member States (NMS), which have a higher proportion of small and medium-sized banks than that of the overall survey. These banks have been on average net lenders in the unsecured market, although structural differences in the NMS have also played a role in this regard (Box 3).

The doubling of the liquidity deficit generated by the Eurosystem from €197 billion in June 2002 to €456 billion in June 2006[7], which has led to larger Eurosystem refinancing operations, has also likely contributed to rising trading volumes. Larger European banks tend to recycle part of the funding obtained from Eurosystem refinancing operations to smaller banks, thus contributing to the secured and unsecured market volumes.

Furthermore, it appears that bank Treasurers tend to vary their approach towards funding depending on a number of factors: their strategy, the type of bank (e.g. commercial versus investment), the market eligibility of available collateral, their level of activity, capital cost considerations (Basel II), and the respective prices of alternative sources of funding. Some of these factors may provide an incentive for some Treasurers to be more active in the unsecured market, thus reflecting the growth of unsecured volumes since 2002. On the other hand, other factors such as capital cost considerations or collateral management opportunities may lead to a slowing trend, albeit one that is still rising.

Chart 2 Average daily turnover in unsecured cash borrowing and lending between 2000 and 2006



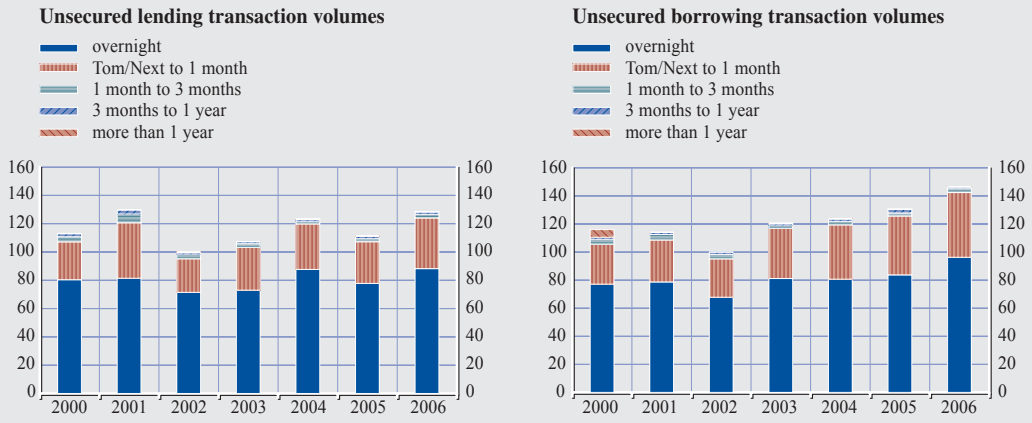
Source: ECB money market survey 2006.
Note: The cash lending volume in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

3.2 MATURITY ANALYSIS

The unsecured market remains mainly an overnight market segment, with roughly 70% of the volumes both in the lending and borrowing activities in the shortest maturity bucket (Chart 3). Furthermore, maturities below one month account for 96% of nominal volumes. General liquidity adjustment needs and the increasing focus on capital consumption tend to favour overnight transactions. Other structural developments, such as electronic trading and straight-through processing (STP), which enable banks to handle an ever higher number of transactions within a given period of time, have also been mentioned as factors supporting the shortening of maturities. Finally, some market participants have also linked the increase in the share of very short-term maturities to the interest rate cycle. While the larger banks mainly use derivatives, and specifically overnight indexed swaps (OIS), to position themselves with respect to expected interest rate developments or to hedge their interest rate risk, smaller banks, which are mostly active in the unsecured market, also hedge their risk using unsecured market instruments.

7 The sum of broad autonomous factors and aggregate reserve requirements.

Chart 3 Maturity breakdown for unsecured lending and borrowing between 2000 and 2006



Source: ECB money market survey 2006.
Note: The cash lending volume in Q2 2002 (left-hand chart) and the cash borrowing volume in Q2 2002 (right-hand chart) are taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

The analysis of *volumes weighted by maturity* complements the volume-based analysis above. Volume weighted by maturity represents an estimate of the average exposure of the panel banks to changes in interest rates, and thus offers an indication of the market risk exposure stemming from banks' unsecured borrowing and lending activities.[8] This analysis (Chart 4) confirms the predominance of short-term maturities, with their relative weight remaining roughly constant from Q2 2004 to Q2 2006. The overnight segment still accounts for 10% of maturity-weighted unsecured turnover (11% in 2004), while the share of the maturity band "tomorrow/next to one month" declined from 40% in 2004 to 29% in 2006. Conversely, maturity-weighted volumes in long-term maturities above one year have grown sharply

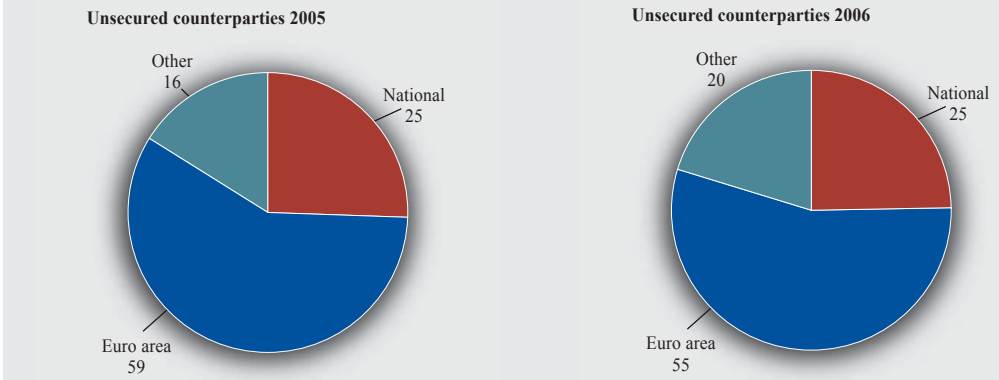
8 Volumes weighted by maturity are also estimates for risk exposures because (1) amounts lent or borrowed may be repaid on several different dates rather than in one go, in which case volumes should be weighted not by maturity, but instead by duration; (2) risk exposure related to amounts lent or borrowed declines progressively until zero as the repayment date nears, which is not taken into account in the estimate; and (3) risk exposure importantly depends on the credit quality of borrowers.

Chart 4 Maturity breakdown for (maturity-weighted) unsecured lending and borrowing in 2005 and 2006

(percentages)

Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

Chart 5 Geographical counterparty breakdown of unsecured transactions



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

at the expense of the six month to 12 month sector, and now represent 18% of weighted volumes (up from 10% in 2004).

3.3 MARKET STRUCTURE

The degree of concentration in the unsecured market remained stable at a similar level to that of Q2 2004. In 2006, the ten largest players accounted for 36% of market activity, which makes the unsecured market the least concentrated money market segment. According to qualitative answers provided by counterparties, this segment is perceived as being very efficient, and therefore it is unsurprising that liquidity is deemed high in short maturities. This finding is similar to the outcome of the set of financial integration indicators that the ECB has published every six months since September 2005 (Box 2).

The geographical counterparty breakdown (Chart 5) is also quite similar to that of 2005. It seems that banks prefer to trade with domestic or at least euro area banks. In some countries liquidity is redistributed by large players to smaller banks, reflecting the domestic domination of "national money centre banks". The 4% growth in the "other" segment is noticeable as it underlines the increasing stake in the euro money market held by banks located in London (Box 9). The process of concentration of Treasury activities in London and in Frankfurt has also modified the way deals are booked, as according to the methodology used in the survey, the place of booking determines the geographical breakdown.

Transactions are mainly conducted via direct trading (56%), while voice brokers and electronic trading account for 27% and 17%, respectively. These figures are in line with what was recorded in Q2 2004.

Box 2

INDICATORS OF FINANCIAL INTEGRATION IN THE EURO AREA

Starting in September 2005, the ECB has begun to publish a set of indicators of financial integration in the euro area.[1] This Box analyses the results of the price-based indicators of financial integration for the money market, and compares these results with the outcome of the 2006 ECB euro money market study. Only the unsecured and secured segments are common to both reports and can thus be compared, whereas indicators for short-term securities are only available up to 2004.

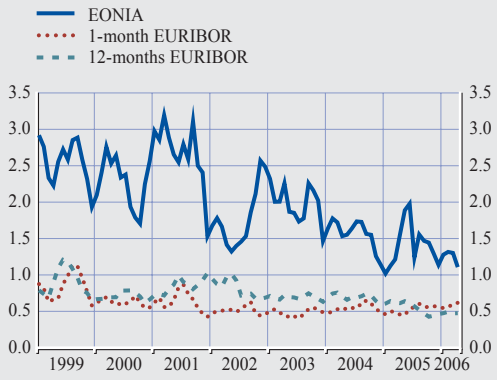
The degree of integration for the unsecured market can be measured by a price-based indicator (Chart A), which measures the cross-country standard deviation of the EONIA and EURIBOR (1 and 12-month) rates. These price-based indicators are calculated on the basis of EONIA, EURIBOR and EUREPO underlying data.

On the basis of the price-based indicators, the unsecured market became highly integrated almost immediately after the introduction of the euro. In 2006 the standard deviation remained close to its historical low for the EONIA, while it rose slightly for both one-month and 12-month EURIBOR. These measures confirm the outcome of the 2006 ECB euro money market study and the responses to the qualitative part of the questionnaire. The volume-weighted average of the 146 replies to the question of whether the euro interbank deposit market is efficient reveals that 75% of banks viewed the unsecured market as being extremely (22%) or significantly (53%) efficient. The concepts of market integration and efficiency are closely linked. It is generally accepted that increasing financial market integration leads to a higher level of competition and efficiency.

1 The indicators are published every six months. The list currently covers the following markets: the money, government and corporate bond, equity and banking markets. Indicators about market infrastructures and synthetic credit risk transfer instruments such as credit default swaps (CDS) and collateralised debt obligations (CDOs) were also added in 2006. For a link to the statistics, see the ECB website: http://www.ecb.int/stats/finint/html/index.en.html

Chart A Cross-country standard deviation of average EONIA and EURIBOR across EU countries

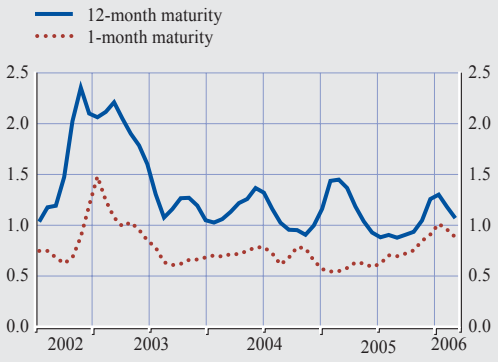
(basis points)



Sources: European Banking Federation and ECB calculations.

Chart B Cross-country standard deviation of average EUREPO across EU countries

(basis points)



Sources: European Banking Federation and ECB calculations.

With regard to the secured segment, Chart B shows that the indicators for one-month and 12-month EUREPO oscillated between 0.5 and 1.5 basis points in 2006, suggesting that the degree of integration remained reasonably high. However, their absolute level was still above that of the indicators of integration of the unsecured market, which suggests that the unsecured market is somewhat more integrated. The cross-country standard deviation of the 12-month rate continued to experience more pronounced deviations, possibly reflecting the fact that much of the trading is concentrated at short maturities. These results are mirrored in the 2006 ECB euro money market study. First, the 113 replies to the question regarding the efficiency of the secured market remained broadly unchanged when compared with the 2004 study, with 66% viewing the secured market as extremely or significantly efficient. Second, 92% of the turnover in the secured market was concentrated in the maturity band of "overnight to up and including one month" both in 2005 and in 2006, while 2% and 1% of the turnover was reported in the maturity band of "six months to one year" in 2005 and 2006, respectively.

The following caveats should be mentioned when evaluating the price-based indicators and comparing them with the results of the 2006 ECB euro money market study:

1) *Different samples:* The price-based indicators are calculated on the basis of the fixings published by The European Banking Federation (FBE). However, the FBE selects the panel banks[2] for these fixings with the intention of including the banks with the highest volume of business. These panel banks are therefore the most active in the euro money market, and their prices presumably among the most competitive. This suggests that the cross-sectional standard deviations of their contributions to the EONIA, EURIBOR and EUREPO can be expected to be significantly lower and possibly also more stable than the standard deviation of money market rates quoted or transacted by a wider set of banks. In contrast, the 2006 ECB euro money market study covers a wide range of banks, including small banks.

2) *Different calculation methods:* whereas the EONIA is computed as the weighted average of all overnight unsecured lending transactions undertaken by the panel banks in the interbank market during that day, the EURIBOR and EUREPO fixings reflect the average of the best cash lending rate (eliminating the highest and lowest 15% of all quotes) that each panel bank would quote to another prime bank at around 11:00 a.m. CET. Therefore, the wider cross-country standard deviation for the EONIA shown in Chart A is partly related to the fact that it reflects average rates traded by the panel banks during the whole day, and thus the intraday volatility of overnight market rates. In contrast, the 2006 ECB euro money market study asks the same qualitative questions about market efficiency for both unsecured and secured market segments.

Notwithstanding the differences in the underlying data, it can be concluded that the price-based indicators of financial market integration and the money market study provide similar results.

2 The EURIBOR panel is also used to calculate the EONIA.

3.4 ELECTRONIC TRADING PLATFORMS IN THE UNSECURED MARKET

The concentration of trading in the overnight segment is also confirmed by e-MID data[9], where the share of overnight transactions in its total turnover rose to 88% in the first ten months of 2006 (or 89% for the whole of 2005), up from 76% in 2000.

According to Chart 6, the contributions of foreign counterparties and large deal sizes, defined as trades above €100 million, have both grown over time. The turnover of large deals increased to €12.9 billion in the first ten months of 2006, up from €2.6 billion in 2000. This trend could also signal a shift in large deals from other countries with voice brokers to the e-MID platform.

Chart 6 Daily trading volumes in overnight contracts on the e-MID market

Source: e-MID and Banca d'Italia calculations.

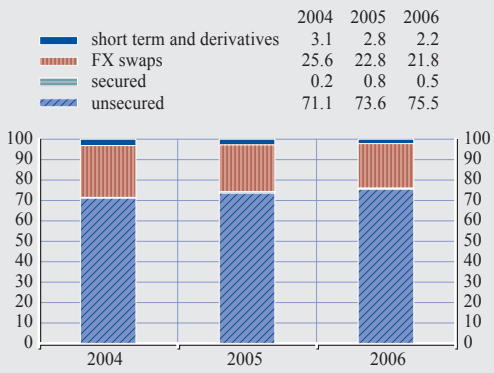
9 e-MID is the most active interbank electronic trading platform for trading on the unsecured market in the euro area. It is run by e-MID S.p.A Milan.

Box 3

EURO MONEY MARKET ACTIVITY IN THE NEW EU MEMBER STATES

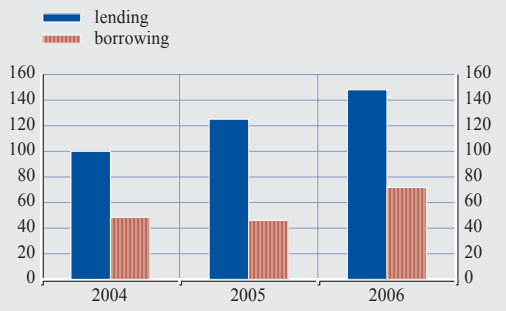
New EU Member States (NMS) activity in the euro money market was included for the first time in the 2005 ECB money market survey. According to the data, NMS money market activity has remained mostly concentrated in unsecured and foreign exchange (FX) swap segments, which together accounted for over 95% of their overall turnover in the last three years (Chart A).

Chart A Market structure



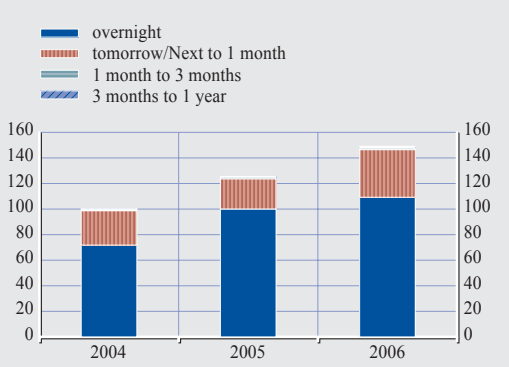
Source: ECB money market survey 2006.
Note: Panel of 33 banks. 100 base for each year.

Chart B The unsecured market



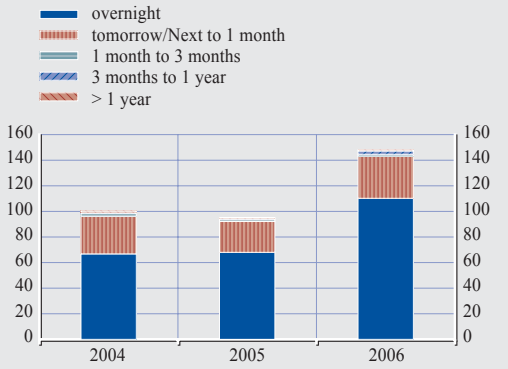
Source: ECB money market survey 2006.
Note: Panel of 33 banks, Q2 2004 as the base = 100.

Chart C Maturity breakdown for unsecured lending



Source: ECB money market survey 2006.
Note: Panel of 33 banks; the base is Q2 2004 = 100.

Chart D Maturity breakdown for unsecured borrowing



Source: ECB money market survey 2006.
Note: Panel of 33 banks; the base is Q2 2004 = 100.

The turnover in the unsecured euro money market in the NMS has been gradually rising over recent years, although at less than 1% it still comprises a very small proportion of the total turnover in the overall sample of the study. Various factors lie behind the rise in unsecured market turnover, including increasing customer transactions involving the euro, which are mostly related to the growing number of foreign trade and foreign currency payments and deposits. Part of the increased turnover might have been caused by the preparations for Slovenia's entry to the euro area in 2007 and the participation of Lithuania, Cyprus, Latvia, Malta and Slovakia in the Exchange Rate Mechanism (ERM II).

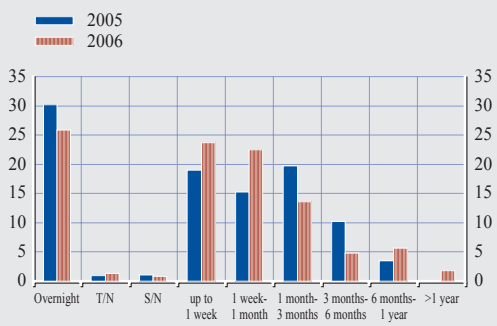
The structure of the turnover in the unsecured market in the NMS is quite different from that of the overall sample. In the NMS the volume of lending transactions is above that of borrowing activity (Chart B), whereas for the overall sample, borrowing activity was twice as high as lending activity. Three main explanations can be advanced for this difference. First, the higher turnover in lending transactions is probably related to NMS banks' transactions with their parent banks, as foreign-owned domestic (NMS) banks transfer foreign currencies to their parent company as overnight lending.[1] Second, some NMS have an obligatory reserve requirement for interbank borrowing from non-residents. Third, the structural liquidity surplus in domestic currencies, which occurs in many NMS, might also have an indirect influence on the unsecured euro money market in these countries, as liquidity in euro may be raised through FX swaps instead of unsecured borrowing.

The turnover in the unsecured market in the NMS is concentrated in the overnight segment, which accounts for 74% of both lending and borrowing activities (Charts C and D). These transactions relate to the liquidity management of commercial banks. While in the overall sample the distribution of *maturity-weighted turnover* shows increasing values along with time to maturity for both lending and borrowing, the term structure of turnover in the NMS is quite different.

1 Domestic banks in the NMS usually remain separate legal entities. The transactions between them and their parent companies have been reported in this survey because these transactions were not classified as in-house deals.

Chart E Maturity-weighted breakdown for unsecured lending in NMS in 2005 and 2006

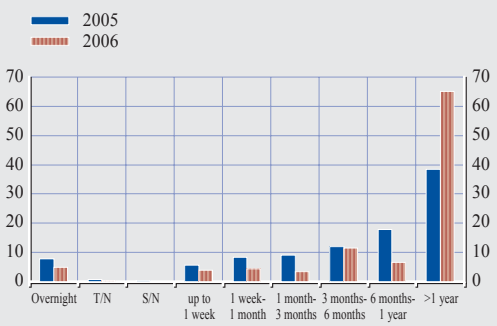
(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 33 banks.

Chart F Maturity-weighted breakdown for unsecured borrowing in NMS in 2005 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 33 banks.

In the NMS, 25% of all maturity-weighted *lending* turnover took place via overnight transactions in 2006 (Chart E), versus 10% in the overall sample. The rest of the lending turnover was mostly executed for maturities between tomorrow/next and three months, which accounted for 62% of the volume.

Conversely, the structure of maturity-weighted turnover in unsecured borrowing was concentrated in the longest maturities in 2006 (Chart F), as transactions longer than one year accounted for 65% of the reported turnover (versus 38% in 2005). This may reflect the fact that many foreign-owned banks borrow from their parent banks for a longer term in order to finance increasing amounts of lending in euro. These longer-term loans are free from the obligatory reserve requirement, and allow currency and term structure to be matched between assets and liabilities.

In the NMS the structure of the over-the-counter (OTC) derivatives market is also rather different from that of the overall sample. FX swap transactions in the NMS comprised 91% of the total OTC derivatives turnover, compared with only 36% in the rest of the survey. Moreover, the turnover of FX swaps increased by 20% in 2006 compared with the previous year, with transactions up to one month comprising 86% of the overall volume. FX swaps are mainly used in the NMS for liquidity management purposes or to finance speculative positions in foreign exchange and securities markets. There is also an increasing volume of transactions with foreign investors that are purchasing securities denominated in local currency. Another reason for the dominance of FX swaps among all segments is the less developed OIS market in the NMS.

4 THE SECURED MARKET

4.1 TURNOVER ANALYSIS

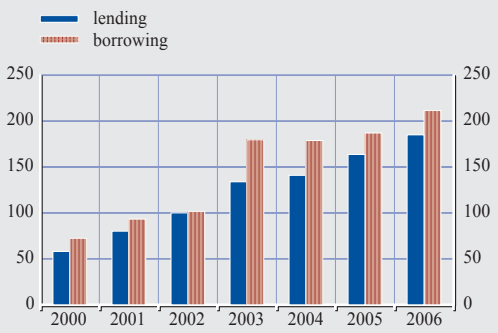
The survey confirms the continuing and impressive expansion in the secured market (Chart 7). Between 2002 and 2006 the overall average daily turnover in the secured market almost doubled, with reverse repos (i.e. cash lending against securities) and repo transactions (i.e. cash borrowing against securities) both increasing by a yearly average of 17%. After a slowdown in 2004, the market has again grown quickly in the last two years, with overall turnover rising by 10% and 13% year on year in 2005 and 2006, respectively.

There are clear structural reasons for the continuous robust growth of the secured market, some of which have been mentioned in previous money market studies. These include:

- the use of repos as a key source of funding for fixed income market makers and primary dealers;
- the ongoing securitisation/disintermediation process;
- the increasing need to limit credit risk exposures and constraints resulting from capital adequacy requirements. It should be noted that the implementation of the Basel II-related EU directives across the EU on 1 January 2007 will change the risk weights for a number of asset classes and thus the regulatory capital that has to be held by individual banks. Banks have reportedly adapted their funding activities in anticipation of these new directives;
- bank Treasurers' growing desire to maximise returns on their securities holdings or, more generally, their return on assets;
- the rapid growth of collateral which is not eligible for Eurosystem open market operations but which banks hold in their balance sheets;
- the need for effective collateral management;
- banks' increasing use of less liquid collateral (such as asset-backed securities, covered bonds or corporate bonds) for the Eurosystem's open market operations. This enables banks to use more liquid types of collateral, such as Eurepo GC (general collateral), in the private secured market;
- a wider use of triparty repos as a means of reducing settlement problems and as an additional channel to secure liquidity. In this vein, triparty repos are more frequently used for pledging collateral which is less liquid, such as equities, corporate securities or credit instruments.

Moreover, the results showed that borrowing activities outweighed lending activities throughout the period for the constant panel of 114 banks (Chart 7), similar to the unsecured market. One of the reasons for the dominant borrowing side is the fact that banks participating in the survey tend to be relatively large, and

Chart 7 Average daily turnover in secured cash lending and borrowing between 2000 and 2006



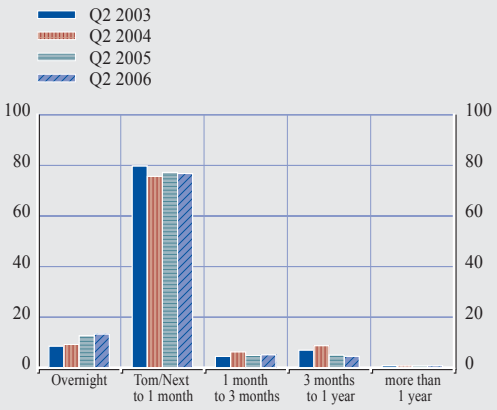
Source: ECB money market survey 2006.
Note: The secured lending volume in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

might be structurally in more need of cash than others.

As a comparison, the semi-annual survey by the European Repo Council (ERC) in June 2006 reflected the continuous growth of the European secured market. The panel of institutions which participated in several ERC surveys reported aggregated turnover growth of around 13% over the year to June 2006, which is almost an identical growth rate to that of this survey's constant panel of 114 banks. However, the whole sample of 157 banks which participated in the 2006 ECB euro money market study reported a lower rate of growth at 11.6% year on year. These different growth rates may be due to the different samples of banks and to the considerable methodological differences (Annex 2).

Chart 8 Maturity breakdown for overall secured lending and borrowing activities from 2003 to 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 114 banks.

4.2 MATURITY ANALYSIS

A breakdown by maturity for the constant panel of 114 banks shows that for both repo and reverse repo transactions, turnover was concentrated in short maturities (Chart 8). In the second quarter of 2006, overnight transactions accounted for 13% of the overall secured market turnover, while transactions in the maturity band "tomorrow/next to one month" amounted to 77%, and maturities over one month to 10%. As in previous studies, the maturity band "tomorrow/next to one month" remained the most traded.

The share of the overnight maturity segment grew to 13% in 2006, compared with 12.7% in 2005 and 9.2% in 2004. The increase in the share of overnight transactions seems to indicate that some technical difficulties, in particular in cross-border settlements, have been overcome, enabling an increasing use of secured transactions with overnight settlement. In particular, trading on Euro GC pooling (Box 4) contributed to this trend owing to its high degree of settlement efficiency. This is also in line with the growing share of trading via electronic platforms as reported in the qualitative part of the 2006 ECB euro money market study.

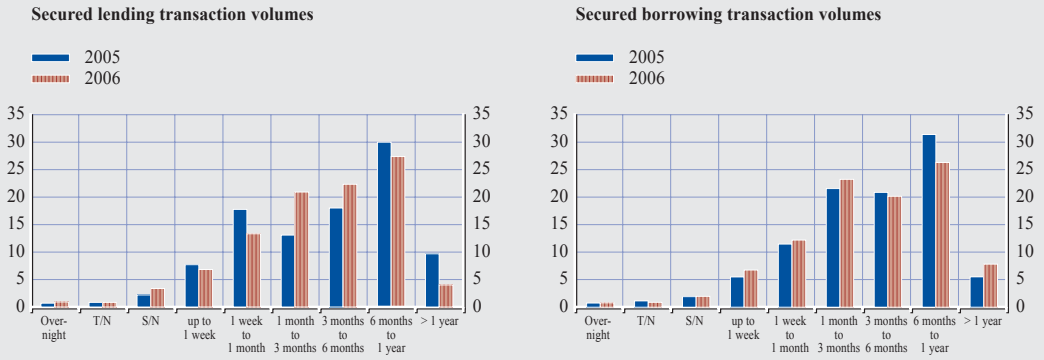
Triparty repos probably also contributed to this evolution, since they are more likely to be used for the shortest and the shorter-term maturities. The share of overnight maturities in the triparty repo segment was 17% in 2006, compared with 11% in 2005. In fact, the turnover for maturities between overnight and one month increased slightly from 85% in 2005 to 86% in 2006, while the share for maturities above three months declined marginally from 5% in 2005 to 4% in 2006.

The comparison of maturity-weighted volumes for reverse repo transactions (cash lending) between 2005 and 2006 reveals a change towards maturities between one month and six months, which grew from 31% in 2005 to 43% in 2006 (Chart 9). However, the fact that only few panel participants contributed means that some large transactions can have a significant impact on maturities from one year to the next.

The changes in the maturity structure for repo transactions showed a similar pattern to the reverse repo transactions with the exception of the maturity band of "more than one year". The share of repo transactions of "more than one year" increased from 6% in 2005 to 8% in 2006,

Chart 9 Maturity breakdown for (maturity-weighted) secured lending and borrowing in 2005 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

whereas it decreased from 10% in 2005 to 4% in 2006 for reverse repo transactions.

A comparison with the maturity structure of the ERC survey shows some discrepancies, most likely stemming from the fact that the ECB survey is based on flows and initial maturities whereas the ERC survey focuses on stocks and residual maturities. The ECB survey observes a larger amount of business with an initial one business day maturity (61% for the overall secured activities in 2006, including "overnight", "tomorrow/next", and "spot/next") whereas the ERC survey only reports a 19% share for the one business day maturity in 2006.

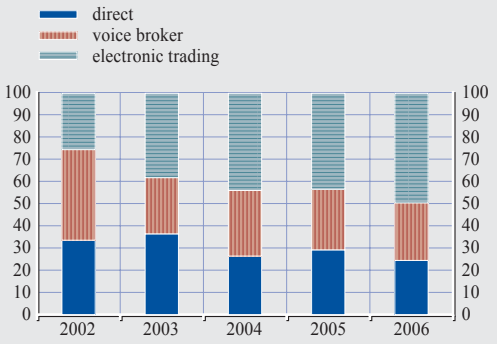
4.3 MARKET STRUCTURE

The feedback from the qualitative part of the survey shows positive developments regarding market efficiency. The majority of market participants (66% volume-weighted) deemed the secured market to be significantly to extremely efficient. In particular, the share of market participants which assessed the repo market as being extremely efficient has risen from 9% in 2004 to 16% in 2006. Moreover, market liquidity was deemed to have improved somewhat in 2006, largely because of electronic trading. When volume-weighted, 38% of the respondents thought that liquidity had either improved significantly (6%) or improved slightly (32%).

With regard to the trading structure in 2006 (Chart 10), the share of transactions in the secured market conducted via electronic trading platforms continued to be the highest among all market segments surveyed with 49% executed via electronic platforms, 26% via voice broker and 25% directly. Compared with 2005, electronic platforms gained market share (+6%) at the expense of voice brokers and direct trades (-2% and -4%, respectively).

Chart 10 Trading structure breakdown between 2002 and 2006

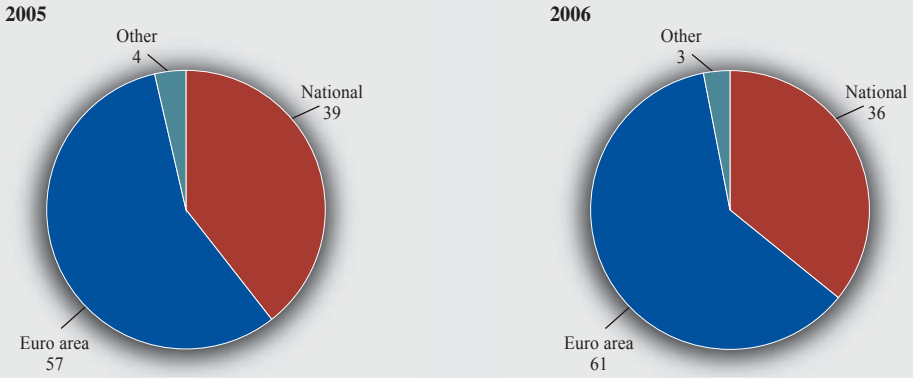
(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 114 banks.

Chart 11 Geographical collateral breakdown in 2005 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

A geographical collateral analysis of overall activity in the secured market reveals a growing share of collateral issued by entities located in the euro area (Chart 11).

The figures indicate that the integration of the repo market across the euro area is continuing. Considerable progress was made via initiatives such as the daytime bridge between Clearstream and Euroclear in 2004 and the introduction of Euro GC Pooling by EurexRepo in 2005. There was also a joint initiative by the European Repo Council, Clearstream and Euroclear to waive the intraday lending fee up to 2 p.m. for cross-border settlement of German government bonds in 2005. However, the diversity of the types of securities in the euro area and the fragmentation of the infrastructure remain important obstacles for further integration.

Counterparty analysis on a geographical basis for secured activities shows that 29% of counterparties were domestic. Moreover, 51% of all deals were performed between counterparties from two different euro area countries, while for 20% of all deals, one party to the transaction was located outside the euro area. In 2006 the share of counterparties outside the euro area did not change.

The concentration of both reverse repos and repos among a limited number of counterparties

Box 4

EURO GC POOLING AND THE POSSIBLE IMPACT OF BASEL II

In March 2005, Eurex Repo, an electronic repo market platform provider, launched a new collateralised money market trading product called *Euro GC Pooling*. It combines an electronic repo trading system and an efficient collateral management service with an automated securities allocation process. The trading, clearing, settlement and collateral processes are fully integrated, with Eurex Clearing AG stepping in as a central counterparty (CCP). As Euro GC Pooling is based on Clearstream Banking Frankfurt's XEMAC collateral management service, participants can use a single pool of securities to collateralise Euro GC Pooling trades as well as Eurosystem refinancing operations via the Deutsche Bundesbank. While four standard maturities are available, i.e. overnight (ON), tomorrow/next (TN), spot/next (SN) and one-week tender

contracts (harmonised with the tender maturity of the Eurosystem's main refinancing operations), almost 90% of all transactions are closed with a one-day maturity (ON/TN/SN). The number of participants has grown from eleven banks in March 2005 to 17 by December 2006, all but one German banks. The outstanding amount of repo transactions has continuously grown, reaching a peak of €14 billion in October 2006.

Euro GC Pooling will be further enhanced from mid-2007. The aim is to enhance automated STP in managing domestic and international securities holdings for Euro GC Pooling transactions. The range of eligible securities will be extended to include, among others, Eurobonds and major European government bonds. It is also planned to link up the international collateral pools of Clearstream Banking Luxembourg (including CmaX triparty pools) with the XEMAC service in Clearstream Banking Frankfurt. This is expected to make trading in Euro GC Pooling more attractive to international customers who use Clearstream Banking Luxembourg as custodian for their securities.

Basel II requirements include new trading book regulations concerning positions held with a CCP and fully collateralised within the CCP system. International banks are directly influenced by these regulations, while domestic banks are influenced indirectly by the implementation of these requirements into EU and national law. The relevant EU directives provide the possibility to include a wider range of financial transactions in the clearing services of a CCP with a zero capital requirement with respect to counterparty risk. This favours repo transactions settled via a CCP, which might benefit from the possibility of zero capital requirement that is provided for in the new capital adequacy directive, if certain conditions are fulfilled. The recast capital adequacy directive is scheduled to be implemented into national law and applicable as from January 2007.

increased slightly in 2006 compared with 2005, but was still significantly lower than in 2004. In the second quarter of 2006, the largest five banks accounted for 37% of the total turnover, which is slightly below the 40% share of 2004. The share of the turnover for the top ten banks remained broadly unchanged at 57% in 2006. The composition of the top ten banks in terms of triparty repo was almost identical to those of bilateral repo.

4.4 ELECTRONIC TRADING PLATFORMS IN THE SECURED MARKET

The use of electronic platforms has been a key factor in the steady growth of the secured market. In 2006 49% of repo transactions were executed via electronic platforms, an increase of 6% from 2005. As already mentioned, the share of transactions conducted via electronic trading platforms continued to be the highest among all market segments surveyed. This is because General Collateral (GC) repos are a standardised product that can easily be traded electronically. The trading of baskets of securities as collateral, rather than individual securities, is becoming widespread, which also explains why the secured market segment is most suitable for electronic trading. The leading platforms in Europe are BrokerTec (for government bonds), Eurex Repo (for covered bonds/jumbos) and MTS (which has a dominant position in the Italian bond market).

Electronic trading is also gaining momentum through system and interface improvements. The market is evolving towards fully integrated platforms which include post-trade activities such as trade matching, confirmation and settlement as well as allocation of collateral. In particular, transactions on electronic platforms with a CCP are increasing. When a CCP is

involved, banks benefit from risk reduction and netting options. Finally, as mentioned earlier, Basel II also supports authorised CCPs because it imposes zero capital requirements on banks.

In terms of maturities, electronic platforms in the secured market are mostly used for short-term repos, including maturities up to one week. Voice brokers dominate in the less liquid longer maturities because they can actively bring together two counterparties, but for maturities of less than one week, it is hard for them to compete with electronic platforms in terms of price-setting.

With regard to the organisation of banks, there is a trend to concentrate all funding activities (cash and collateralised funding) and liquidity management in one organisational unit. Furthermore, banks are seeking to integrate collateral management across asset classes. These factors also support the wider use of electronic platforms.

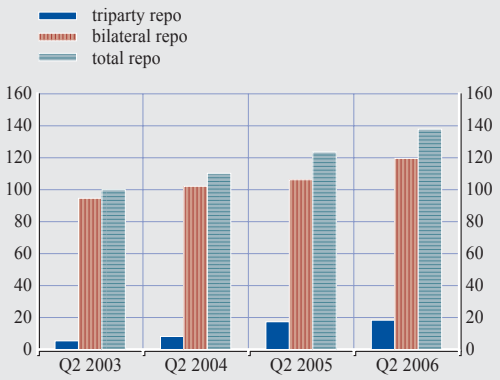
4.5 TRIPARTY REPOS

Since 2003, the survey has investigated triparty repos as part of secured business.[10]

In Q2 2006 the reported overall triparty repo business (reverse repo and repo transactions) grew by 5.5% compared with Q2 2005 for the overall sample of 157 banks. The breakdown between repo and reverse repo transactions shows very divergent trends: while the volume of triparty repo transactions grew sharply by 32% in 2006, it decreased significantly by 43% for reverse repos in 2006 compared with 2005. The share of triparty repos in the secured market decreased slightly to 13.3% in 2006 from 14.0% in 2005. For the constant panel of 114 banks, the trend was similar (Chart 12). It should however be noted that only a limited number of banks are active in the triparty repo market, with only 26 out of 157 banks reporting turnover in this segment. Nevertheless, notwithstanding the still limited number of participants, the number of banks reporting activity in triparty repos has grown very strongly vis-à-vis 2004, when only five banks

10 A triparty repo is a repo that involves a third party, usually a custodian bank or an international central securities depository (ICSD) acting as an agent for both the collateral taker and the collateral provider. These two parties outsource their back office and middle office functions to the triparty agent which handles the settlement as well as collateral management during the life of the trade.

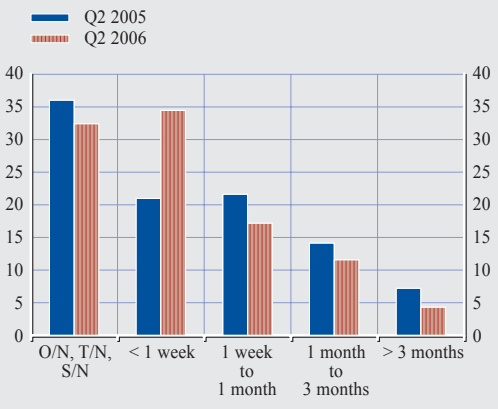
Chart 12 Average daily turnover in triparty, bilateral and total repos from 2003 to 2006



Source: ECB money market survey 2006.
Note: The total repo volume in Q2 2003 is taken as the base = 100. The panel comprised 114 banks.

Chart 13 Maturity breakdown for triparty repo transactions in 2005 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

Table 2 Concentration of triparty repo activity in Q2 2006

(percentages)

	Reverse repo	Repo
Top 5 banks	58.3	88.2
Top 10 banks	85.2	97.1
Top 20 banks	99.7	99.8

Source: ECB money market survey 2006.

reported such activity. In any case, the share of active banks in triparty repos is significantly below that of the US, where the share of triparty repo activity is estimated at around 50% of the total US repo market (Box 5).

The latest ERC survey reveals quite similar results, with 11% of the total outstanding business settled through triparty repo arrangements.

Table 2 shows the concentration levels for triparty repos, indicating that the top ten banks hold a very high share:

Triparty repos were mainly conducted in the "overnight up to one week" maturity band (Chart 13). The chart shows that for 2006, the longer the maturity, the less the reported turnover. This is mostly explained by the increased efficiency of STP and the easier use of cross-border collateral. The ERC survey is broadly in line with this result: there were more triparty repos than bilateral repos in the segment of one month or less.

The main reasons for the wider use of triparty repos are as follows:

- an increased need of financial institutions to refinance assets other than government bonds such as corporate bonds, asset-backed securities or structured bonds;
- the growing ability of triparty repo agents to overcome technical settlement problems;
- the introduction of some innovations which optimise the use of collateral, such as the service for the reuse of collateral recently introduced by Clearstream, or better collateral optimisation algorithms.

Box 5

COMPARISON BETWEEN THE USE OF TRIPARTY REPOS IN THE EURO AREA AND IN THE US

Even though this survey shows that the share of triparty repos has increased to 13% of the total volume in the secured market, this share is significantly below that of the US, where it is estimated to reach around 50% of the total US repo market. The main differences between the two models are summarised in the table.

Triparty repos are used as a standard instrument in the US money market. They were initially developed as a response to legal and regulatory problems linked to the hold-in custody repo. The collateral used in US triparty repos is rather homogeneous, as it mostly consists of US Treasuries and agency debt. Conversely, triparty repos are often used in the euro money market as a tool for pledging collateral which would be difficult to use in bilateral repos, or for financing positions with high trading frequency or small size.

Main differences between the triparty repo market in the euro area and the US

	Euro area	US
Electronic trading	Electronic triparty GC basket trading is currently prepared by existing electronic platforms (BrokerTec and Eurex Repo).	It has been possible to conclude triparty repos on an electronic platform (TradeWeb) since June 2005.
Clearing/ Settlement	Fragmented domestic settlement systems.	Only one domestic settlement system per asset class.
Concentration	ICSD Clearstream and Euroclear each have a market share of around 30% of the triparty market in the euro area. Global custodians JP Morgan Chase and the Bank of New York each have a market share of around 20% of the European triparty market.	Global custodians JP Morgan Chase and the Bank of New York are the two main operators of US triparty repos. They both operate from New York and act as market makers quoting two-way rates.
Securities involved	In Europe, various types of securities, including asset-backed securities, high-yield bonds and equities, are actively traded in triparty repos. Foreign issuers in foreign currencies are also accepted.	US Treasury securities and agencies are mostly used (80%) in triparty repos. Equities and lower-rated bonds are not so actively traded in triparty repos as in Europe. Collateral is mainly denominated in USD.
Turnover	A relatively new market with a market share of 10-15% of the total repo market.	A longer established mature market representing roughly half of the total repo market.

Two recent developments might widen the use of triparty repos in the euro money market:

1. The introduction of collateral re-use. Clearstream, one of the main triparty agents, introduced the possibility for the party receiving collateral (the cash provider, which lends cash against securities) to reallocate collateral received from the triparty collateral provider (cash taker) towards another triparty collateral receiver. At least one of the other main triparty agents, Euroclear, has announced plans to introduce this new feature by early 2007. There is indeed anecdotal evidence that the non-reusability of collateral pledged might be one of the reasons for the limited use of triparty repos in the interbank market.

2. Better collateral allocation optimisation algorithms. Improvements are mainly to be found in risk management and technology, both of which enable triparty agents to improve their service. As a result, they can create individualised collateral baskets to reflect the risk profiles of various collateral takers on the one hand, as well as offer more efficient optimisation algorithms which are able to select the lowest opportunity cost collateral to minimise collateral providers' financing costs on the other.

5 THE OTC DERIVATIVES MARKET

5.1 TURNOVER ANALYSIS

This section includes turnover data on the following euro-denominated OTC derivatives market segments: the interest rate swap (IRS) market, comprising OIS (also referred to as EONIA swaps) and other IRS[11]; forward rate agreements (FRAs); and derivatives instruments linked to the foreign exchange market, comprising FX swaps and cross-currency swaps (Xccy swaps).

The analysis of the evolution of turnover in OTC derivatives from 2001 to 2006 for the constant panel of 114 banks (Chart 14) shows that in 2006 volumes recovered from the temporarily lower levels recorded in 2004 and 2005. Measured by volume, the OIS and FX swap markets remained by far the most important OTC derivatives market segments, followed by other IRS. Turnover in the FRA and especially the cross-currency swap markets remained relatively modest.

11 Interest rate swaps excluding overnight indexed swaps.

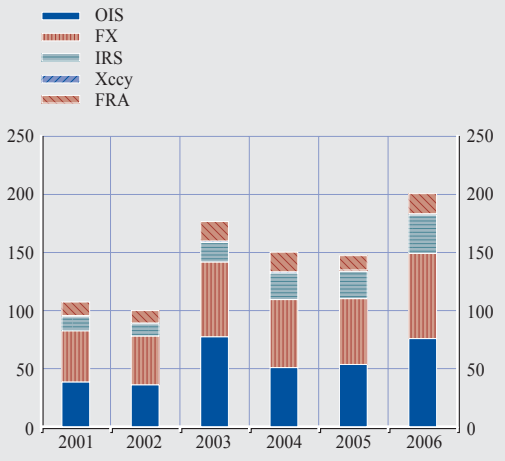
Given that the OIS market is the main trading instrument for speculating on and hedging against interest rate movements, it is hardly surprising that there was a fall in turnover during the second quarters of 2004 and 2005, when no policy rate changes took place (Box 6). Trading activity in the OIS market rebounded in 2006, however, when the ECB changed its policy rates several times. In the second quarter of 2006, the daily average turnover of EONIA swaps rose by 42% for the constant panel compared with the same period in 2005, and the turnover is now twice as large as in 2002. The introduction of EONIA futures[12] on Eurex and Euronext.liffe at the beginning of 2003 did not affect the popularity of EONIA swaps as the main tool for hedging or speculating on future monetary policy decisions. The very tight bid-offer spreads recorded in EONIA swaps (0.5 basis points between market makers) and the fact that very large transaction sizes (up to €20 billion) can be executed smoothly are key factors for their success.

The EONIA swap index was launched on 21 June 2005 by the Euribor ACI and sponsored by the FBE. The introduction of this fixing adds to the indices already used in the unsecured (EONIA and EURIBOR) and secured market (EUREPO). The index is used by market participants as a valuation tool for calculating the marked-to-market value of their portfolios. So far, futures have not been referenced to this index, although agreement on the terms of the International Swaps and Derivatives Association (ISDA) Master Agreement in 2007 might lead to this development.

Growth in other IRS slowed down in 2005 after steadily expanding in 2003 and 2004, but resumed again in 2006. These instruments are used for swapping fixed rate payments against floating rate ones or vice versa.

Turnover in FRAs returned in 2006 to the levels that prevailed in 2003 and 2004, after a dip in 2005. FRAs are mainly used for managing and covering short-term interest rate risks. Even though they can also be used for speculating and arbitraging between financial assets and liabilities, banks reported that interest in this product as a speculative or trading tool has been declining in recent years.

Chart 14 Developments in the market shares of the various OTC derivatives markets



Source: ECB money market survey 2006.
Note: The volume for OTC derivatives in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2001 and 114 banks thereafter.

Volume in the FX swap market followed a similar pattern to the OIS market, increasing sharply in 2003, then decreasing in 2004 and 2005, before gathering steam once more in 2006. Some of the reasons mentioned for the higher levels of activity were the more frequent use of this product as one of the liquidity management instruments, and internal reorganisation of some money market desks to include FX swaps as one of the available instruments for funding. Furthermore, interest and exchange rate risks are partly hedged through FX swaps and forwards. The divergent expectations of policy rate changes in the euro area and in the US particularly contributed to the growth of FX swaps in 2006.

The overall turnover in the cross-currency swap segment remained very modest, as it is a rather specific and more complex market (cross-currency swaps are a mixture of foreign exchange

12 See section 6 "The short-term interest rate futures and options market".

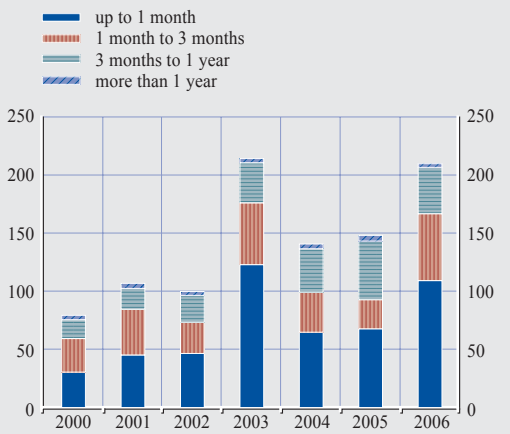
and interest rate product). Turnover in this segment decreased steadily in 2004 and 2005, but recovered slightly in 2006. However, the volume in cross-currency swaps in 2006 remained 34% below that of 2003. This evolution was probably linked to the issuance activity in the euro bond market, which peaked in Q2 2003.[13]

5.2 MATURITY ANALYSIS

As mentioned above, OIS volumes rose in 2006 back to the levels recorded in 2003. The strongest growth took place in the "one week to one month" maturity band, i.e. within the reserve maintenance period. The analysis of the unweighted maturity evolution of OIS transactions shows that half of the activity in the EONIA swap market took place in contracts expiring in one month or less (Chart 15). In relative terms, transactions in the maturities between one month and three months rose even more strongly.

The analysis of the maturity-weighted distribution of OIS turnover between 2005 and 2006 shows a shift into shorter maturities in 2006. The maturities between "one month to three months" and "one week to one month" benefited the most, essentially at the expense of the maturity band "six months to one year". Two-thirds of the maturity-weighted OIS turnover concerned maturities below six months. The maturity structure of OIS turnover in 2006 was very similar to that of 2003, showing that banks use the one-month to three-month maturity bucket more actively in order to express their view on the likelihood of monetary policy decisions in periods when policy changes are expected.

Chart 15 Developments in the OIS segment between 2000 and 2006



Source: ECB money market survey 2006.
Note: The volume for OIS in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks from 2002 to 2006.

13 See BIS Quarterly Reviews for the period 2002-2006.

Box 6

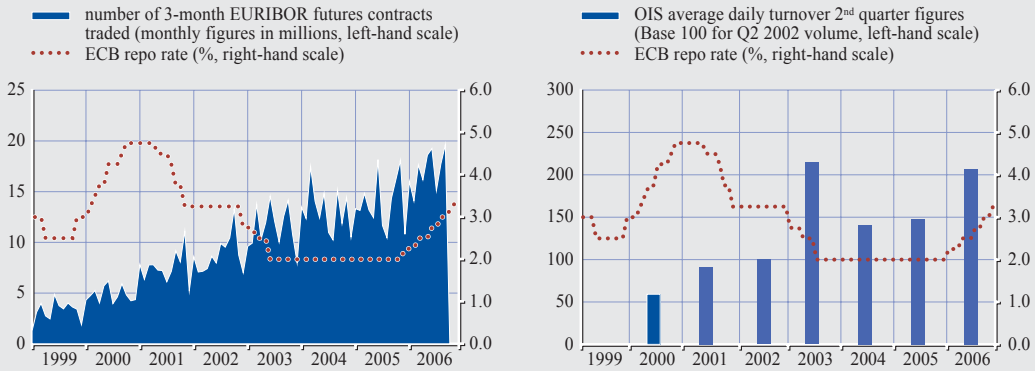
USE OF MONEY MARKET DERIVATIVES WITHIN THE MONETARY POLICY CYCLE

Changes in market participants' expectations regarding the monetary policy stance of the central banks are considered to be an important driver of activity in the interest rate derivatives markets. In general, central banks' decisions rely on a specific short-term interest rate; however, their actions have an impact on the whole maturity spectrum of the yield curve, creating a demand for financial instruments that could be used to hedge and take positions on monetary policy decisions.

The turnover in interest rate derivatives appears to be influenced by changes in expectations of future interest rates.[1] In fact, if a central bank is transparent in terms of its communication

1 See K. Kuttner (2000): "Monetary policy surprises and interest rates: Evidence from the Fed Funds futures market", February.

Chart A Use of OIS and EURIBOR futures, and the ECB repo rate



Sources: Euronext.liffe and ECB euro money market study 2006 (no data for OIS in Q2 1999; a constant panel of 114 banks).

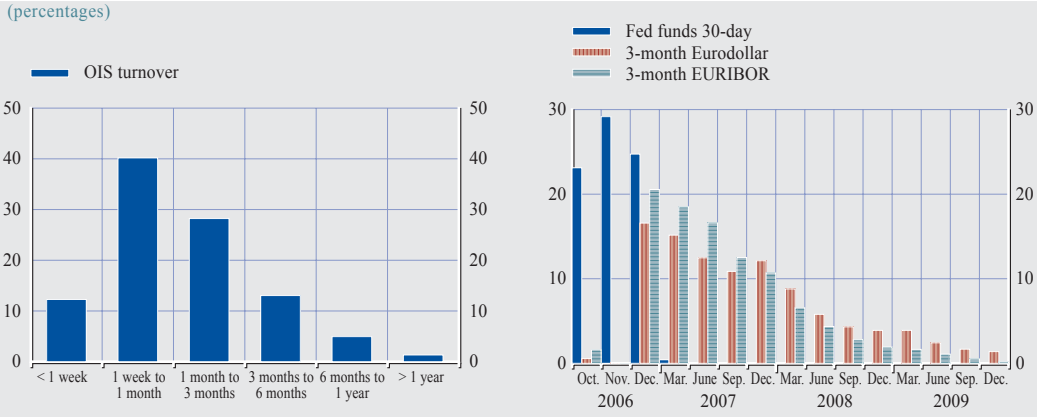
policy, the central bank's decisions on interest rates are largely anticipated by market participants and do not generate major changes after their announcement. On the other hand, economic data releases and speeches from central bank officials can provide new information to the market, inducing price adjustments and consequently increasing activity in derivatives. Findings on the econometric relationship between the turnover in derivatives and changes in traders' expectations of future interest rates tend to support this view, at least for some contracts. In particular, a positive and statistically significant relationship is found for Eurodollar futures and options, Fed Funds futures and EURIBOR options, while this relationship is not found to be statistically significant for EURIBOR and Euroyen futures. In the case of Euroyen futures, this was probably because interest rates were close to zero over the period of analysis.[2]

When we look back, trading in three-month EURIBOR futures contracts increased in early 2000 in anticipation of increases in key ECB interest rates. At the beginning of 2003, turnover in both

2 See BIS Quarterly Review, September 2006.

Chart B Maturity structure

(percentages)



Sources: Bloomberg and ECB euro money market study 2006.
Note: Futures: percentage of total open interest by expiry month on 6 October 2006. OIS: percentage of the average daily turnover by maturity in the second quarter of 2006.

three-month EURIBOR futures and OIS accelerated as market participants started to price in rate cuts by the ECB. After the boost in 2003 and until 2005, OIS activity contracted significantly. This evolution was mainly due to market expectations of unchanged ECB official interest rates for the most part of that period. The change in market participants' outlook regarding the ECB's official rates followed by the first interest rate change in two years in late 2005 led again to a rebound in trading volumes in three-month EURIBOR futures and OIS in 2006 (Chart A).

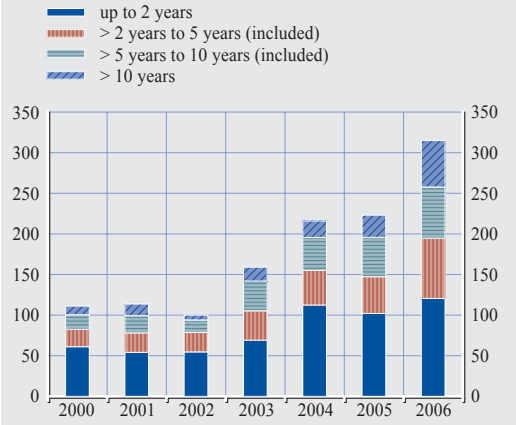
OIS and three-month EURIBOR futures are the main instruments used by market participants to manage interest rate risk in the euro area. OIS are mostly used for hedging short-term funding risk, for taking speculative positions on immediate central bank decisions and for managing liquidity within the reserve maintenance period. Contracts on three-month EURIBOR futures are used to trade interest rate risk more generally.

The analysis of the maturity structure (Chart B) shows that three-month EURIBOR futures are more liquid in longer maturities than OIS contracts. The bulk of OIS turnover is in at maturities up to three months, while trading in three-month EURIBOR futures remains relevant for longer maturities. Thus, changes in expectations regarding policy rates several months ahead have a stronger effect on turnover on EURIBOR futures than on OIS. These results are similar to those obtained for the Fed Funds and the Eurodollar futures contracts. The comparison between three-month Eurodollar and EURIBOR futures also suggests that the US money market futures are more actively traded in longer maturities. One of the reasons might be that in the euro area the interest rate swap curve is a benchmark curve, and many non-government bonds have their coupons linked to these swap rates. Therefore, long-term interest rate exposures are largely managed through the interest rate swap market, and not via futures. Conversely, in the US market participants actively use the Eurodollar futures market for hedging purposes, as US non-government bonds are usually priced against the US Treasury yield curve. Other reasons for the relatively higher use of three-month interest rate futures in the US than in the euro area as pointed out by market participants include: the US interest rate futures market is in general much larger; the activity in US interest rate swaps and mortgage markets is more dynamic, leading to a greater use of Eurodollar contracts as hedging mechanism; the US two-year Treasury Note future (bond future) is not as widely used as the two-year German Government Bond future (the "Schatz"). Therefore, the liquidity that in Europe is mainly transacted through two-year bond futures might partly go to Eurodollar futures in US.

Growth in the other IRS segment resumed in 2006 after having first gradually risen between 2002 and 2003, but then paused in 2005. In relative terms, the maturity bracket of more than ten years recorded the strongest growth (Chart 16), underlining the increasing use and liquidity of this market segment.

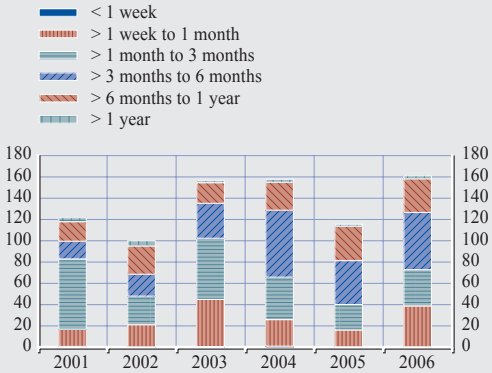
The maturity-weighted turnover of the other IRS segment confirms the high market share of the longest IRS, which gained further in importance in 2006. The "more than ten years" maturity band represented about half of the total volume of other IRS in 2005 and 2006 in maturity-weighted terms (without Chart). The growth in this maturity band is related to the use of this instrument by pension funds to hedge the duration mismatch between their assets and liabilities to comply with new regulations (e.g. the Financial Assessment Framework which will be implemented for Dutch pension funds and insurers on January 2007).

Chart 16 Developments in the other IRS segment between 2000 and 2006



Source: ECB money market survey 2006.
Note: The IRS volume Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks from 2002 to 2006.

Chart 17 Developments in the FRA segment between 2001 and 2006



Source: ECB money market survey 2006.
Note: The FRA volume in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2001 and 114 banks thereafter.

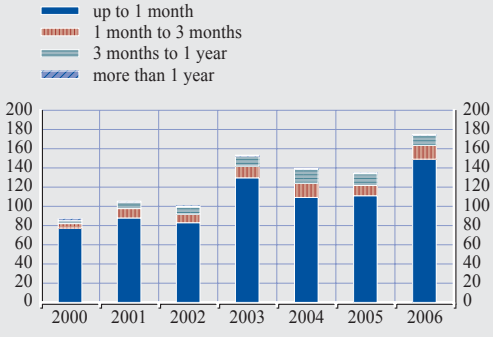
FRA activity seems to have stabilised at the level reached in 2003 after a temporary blip in 2005 (Chart 17), with no major shifts between maturity bands.

The maturity-weighted data show some shift towards shorter maturities at the expense of volume in the "six months to one year" maturity band in 2006, although more than 35% of the activity was still concentrated in this maturity band.

FX swaps grew considerably in 2006 with the increase mainly in the shortest maturities, similar to OIS. The maturity breakdown (Chart 18) indicates a clear shift towards shorter maturities (in the maturity bands "up to one month" and "between one month and three months") in 2006, with the first of these maturity bands accounting for 85% of the reported volume. Some market participants suggested that the shortening of the average maturity could be related to the increasing use of FX swaps as a daily liquidity management tool.

With regard to the unweighted maturity structure of cross-currency swaps, the share of the maturity band "up to two years" fell to 32% in 2006 after its peak in Q2 2003 at 51% of the overall turnover of cross-currency swaps. In maturity-weighted terms, only the longest maturity band of "more than ten years" rose between 2005 and 2006, implying a shift towards the longest maturities.

Chart 18 Maturity breakdown for the FX swap segment between 2000 and 2006



Source: ECB money market survey 2006.
Note: The FX swap volume in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

5.3 MARKET STRUCTURE

Concerning the efficiency of the various OTC derivatives market segments, participating banks continue to regard the OIS, the other IRS and FX swap markets as the most efficient, and FRAs and cross-currency swaps as the least efficient market segments. Hence the 2006 ECB euro money market study confirms the findings of its predecessors. With regard to cross-currency swaps, the fact that efficiency is not rated as highly as that of the other derivatives surveyed can potentially be explained by the very limited number of market makers and the complexity of the product.

Between 30-35% of the participating banks (measured in volume-weighted terms) felt that the liquidity of the main OTC derivatives market segments had improved compared with 2005 for OIS, other IRS and FX swaps, and 25% for cross-currency swaps. By contrast, 22% replied that liquidity had decreased in FRAs over the same time period.

A minority of participants (12% in volume-weighted terms), including some large market makers, felt however that the liquidity in OIS had slightly worsened. This is somewhat surprising, as OIS turnover surged in 2006. One of the explanations provided was that more activity took place on specific, tailor-made dates (e.g. on the last week of the minimum reserve maintenance period, or on ECB Governing Council meeting dates). The increased turnover in OIS was also mostly absorbed by a few large market makers, which had to carry larger positions and take more risk. However, the general pick-up in activity for OIS and other IRS may have contributed to the overall perception of improved liquidity.

Participants which argued that liquidity in the FX swap market had improved felt this was due to the increasing use of interbank trading platforms. Regarding FRAs, some respondents argued that FRA liquidity had suffered somewhat from a shift of turnover towards OIS, given the depth and efficiency offered by this instrument. Interestingly, some other respondents mentioned that FRAs had to some extent also been replaced by futures.

The results of the geographical counterparty analysis show that around 50% of the OTC derivatives market volume is conducted with euro area counterparties, around 20% with "domestic counterparties", and 30% with "other counterparties".

As for the trading structure, FRAs (53%), cross-currency swap transactions (67%) and other IRS (49%) are mainly conducted directly with counterparties, while OIS (50%) transactions are more often traded through voice brokers. FX swaps and forwards are roughly evenly distributed between dealt directly (36%), dealt via voice brokers (36%) and dealt via electronic brokers (27%).

In terms of concentration (Table 3), the data show that the activity in euro OTC derivatives remains quite concentrated, particularly in the smallest segments, namely FRAs and cross-currency swaps.

Table 3 Concentration for OTC derivatives in Q2 2006

	OIS	Other IRS	FRAs	FX swaps	Xccy
Top 5 banks	43.4	51.8	62.7	52.6	51.2
Top 10 banks	67.8	71.8	82.9	66.8	70.3
Top 20 banks	87.8	86.5	93.9	84.3	89.4

Source: ECB money market survey 2006.

5.4 ELECTRONIC TRADING PLATFORMS IN OTC DERIVATIVES

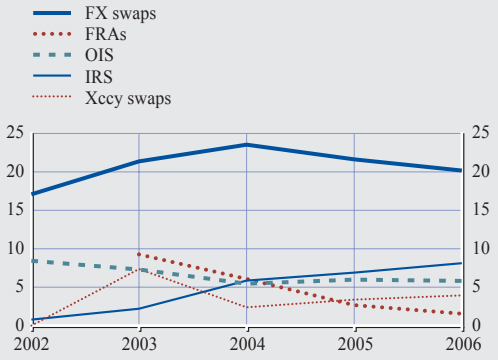
Unlike in secured markets, FX swaps are the only OTC derivatives segment (Chart 19) traded via electronic platforms to a notable degree (20% for the constant panel). This is probably due to the fact that a major share of FX spot trading is nowadays conducted via electronic platforms, which have been developed to cover increasingly FX swaps as well. More than 90% of all interbank transactions in other OTC derivatives are traded directly or through voice brokers.[14] Market participants attribute the low share of electronic trading in these segments to the more individual and specific requirements of customers, e.g. in terms of broken dates or assets to be replicated, which is difficult to achieve in a cost-efficient manner in electronic trading systems. Furthermore, dealers prefer to trade large sizes in OIS directly in order to avoid an early disclosure of their positions. Finally, some of these segments, such as cross-currency swaps, are too specific to be actively traded on platforms. In general, electronic trading is more successful with commoditised products and in segments which deal with a large number of small-size tickets, as is the case for FX swaps. The main electronic platforms for OTC derivatives are e-MIDer (from e-MID) for OIS; TradeWeb (from Thompson) for OIS and other IRS; FRA-cross (from ICAP) and Blackbird (from Derivatives Net) for FRAs; and some proprietary single-dealer platforms which include EURIBOR and EONIA swaps. There are diverging developments among these vendors:

– In 2006 e-MIDer accounted for half of the turnover in electronic trading for interbank transactions in OIS, although its market share has decreased sharply when compared with 2005.

– Some systems such as ICAP are semi-automatic and more frequently used for price discovery, meaning that the actual transaction might not take place via the application, but instead directly.

Chart 19 Evolution of the share of electronic trading in OTC derivatives between 2002 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: No data on the trading structure of FRAs were available in 2002. The panel comprised 114 banks.

– TradeWeb IRS has continued to expand both in terms of OIS and IRS. One of the competitive advantages of this platform is that it automatically generates ISDA documentation (even for non-vanilla swaps) in a segment where legal documentation is a major concern, as one-third of these transactions are still not confirmed two days after their conclusion.[15]

In the light of these findings, it is fair to say that despite some expectations that electronic trading might gradually take over all market segments, this development has not taken place, and does not seems to be advancing rapidly for the time being.

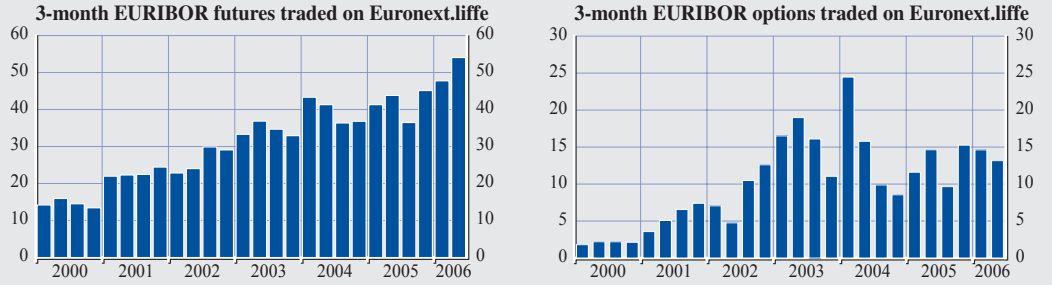
6 THE SHORT-TERM INTEREST RATE FUTURES AND OPTIONS MARKETS

Activity in the euro short-term interest rate futures and options markets has continued to be buoyant since the last survey. After the sharp increase registered in 2003, when the growth in EURIBOR futures and options trading was fuelled by expectations of ECB rate cuts,

14 The share of electronic trading platforms for transactions in FRAs when one of the counterparties is a customer (i.e. outside the scope of the survey) is reportedly higher.
15 See ISDA, "ISDA 2006 Operations Benchmarking Survey".

Chart 20 Developments in EURIBOR short-term interest rate futures and options between 2000 and 2006 – Number of contracts traded in each quarter

(in millions)



Source: Euronext.liffe.

turnover then slowed down in 2004-2005, primarily due to market expectations of unchanged ECB official interest rates. However, the first ECB rate hike in two years in late 2005, coupled with changes in market participants' perceptions about the future path of euro rates, propelled trading volumes in euro short-term interest rate futures and options markets to new record highs. This pattern was similar to the other IRS (see Section 5).

The most traded of the exchange-traded derivatives instruments on euro-denominated short-term interest rates is Euronext.liffe's three-month EURIBOR interest rate contract. In general, Euronext.liffe captures the majority of the overall activity in the euro-denominated short-term interest rate exchange-traded derivatives[16], and only a marginal amount is traded on the Eurex derivatives exchange.

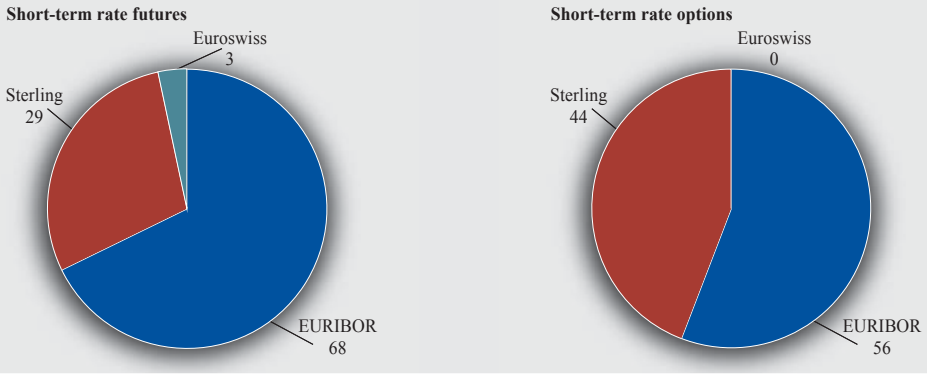
An analysis of Euronext.liffe data shows that in the second quarter of 2006, the number of traded contracts on three-month EURIBOR futures and options rose by 15% year on year, after a more moderate rise of around 2% in the two previous years (Chart 20). In June 2005 Euronext.liffe extended the opening hours of its EURIBOR futures contract for an additional three hours to facilitate both the growing interest for the contract during non-European trading hours, and to support the contract's status as an international benchmark product. This change enabled market participants to trade the benchmark euro futures contract between opening in Europe (07:00 London time) and closing in Chicago (21:00 London time). In recent months, trading activity during these extended hours has accounted for more than 2% of the overall EURIBOR futures volume. The extension of trading hours has also increased the number of market participants, in particular the number of international investors. The qualitative part of the survey confirms that a clear majority of the banks interviewed consider the EURIBOR futures market to be either very (27%) or extremely (65%) efficient. Moreover, about 30% felt that liquidity has improved. However, the number of traded EURIBOR interest rate option contracts declined for the third year in a row. Nevertheless, despite this decline, most of the banks surveyed perceived the EURIBOR options market as being either very (45%) or extremely (22%) efficient. In terms of market liquidity, the majority of the respondents (69%) reported unchanged liquidity, while 22% said that liquidity had slightly improved in 2006 vis-à-vis 2005.

Compared to other European short-term interest rate futures contracts traded in Euronext.liffe contracts, EURIBOR futures contracts continued to dominate futures trading in Europe, although

16 The Three Month Euro (EURIBOR) Interest Rate contract suite, which is the flagship product of Euronext.liffe's STIR portfolio, comprises not only a futures contract, but also an option on the futures contract and a one-year mid-curve option on the futures contract.

Chart 21 Breakdown by volume of short-term interest rate futures and options in Q2 2006

(percentages)



Source: Euronext.liffe.

they have lost some ground in recent years (Chart 21). After reaching a peak of 76% in 2003, the share of EURIBOR futures trading has since declined, standing at 68% in the second quarter of 2006. The reduction mainly benefited the more volatile Short Sterling futures, where activity has picked up considerably over the past two years. As for the short-term Euroswiss futures, they continued to play only a marginal role, accounting for around 3% of the overall activity in the Euronext.liffe's short-term interest rate futures activity.

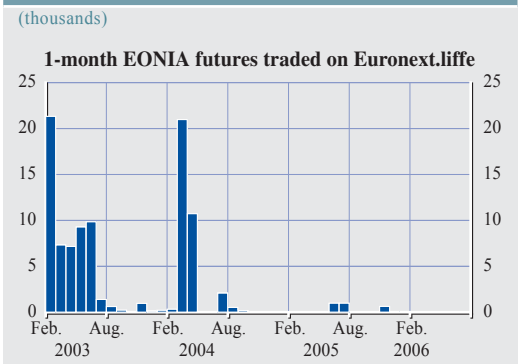
Whereas trading volumes of the longer-dated EURIBOR mid-curve options[17] have grown over the last few years, the strong decrease in turnover in standard EURIBOR options has led to a decrease in the share of the total EURIBOR options trading in Euronext.liffe. Indeed, from the end of 2002 to the second quarter of 2006, the share of EURIBOR options activity in the total Euronext.liffe short-term options turnover fell from 89% to 56%, again to the benefit of Short Sterling options. The decrease in the trading volume of EURIBOR options was in part due to less interest rate volatility in the euro area during most of that period.

Trading on EONIA futures, which were introduced in Euronext.liffe in February 2003, remains negligible (Chart 22). Moreover, since EONIA futures were launched, traded volumes have showed a clear downward trend. This evolution reinforces the role of the EONIA swap market as the main instrument used by market participants in the euro area to manage short-term interest rate risk exposure. Indeed, the significant increase in the turnover of EONIA swaps confirms this trend.

According to market participants, several reasons have contributed to the lack of success of the EONIA futures contract. Some pointed out that the contract was introduced too late, when banks had already made the necessary investment to provide prices in EONIA swaps. This contrasts with the situation in the US, where the existence of Fed Funds futures seems to dissuade banks from making the necessary investments to trade OIS actively. Finally, the fact that the EONIA swaps is an OTC market with very tight bid-offer spreads which processes large transactions efficiently seems to have prevented the development of the exchange-traded product.

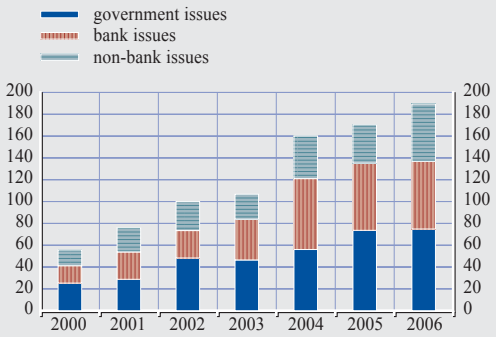
17 Standard options provide for the delivery of underlying futures with the same maturity as the options, whereas mid-curve options provide for the delivery of positions in longer-dated futures. Such options enable market participants to manage long-term exposures and to benefit from a wider range of plays on market volatility.

Chart 22 Monthly volume of EONIA futures (number of contracts traded)



Source: Euronext.liffe.

Chart 23 Developments in outright transactions between 2000 and 2006



Source: ECB money market survey 2006.
Note: The volume for outright transactions in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

7 THE SHORT-TERM SECURITIES MARKET

7.1 TURNOVER ANALYSIS IN THE SECONDARY MARKET

In 2006 the turnover in the secondary market of short-term securities increased significantly, compared with more moderate growth in 2005 (Chart 23). The share of the turnover of securities issued by governments declined slightly from 42% in 2005 to 41% in 2006, although the market maintained its leading position in terms of turnover, followed by bank issues, which also decreased in the same time period from 37% to 32%. Non-bank issues, on the other hand, jumped to 27%, up from 21% in 2005. This increase can be linked to market sentiment favouring riskier assets as a way of earning higher yield (so-called carry trades), which may have encouraged dealing in lower-rated issuers. In future, the creation of STEP paper could have a positive effect on both volumes and efficiency (Box 7).

Box 7

THE STEP INITIATIVE

The market for euro short-term securities is very fragmented compared to other segments of the euro area money market, mainly because of differences in market standards and practices relating to short-term debt instruments. Whether based on a specific legal system or regulated by general rules of law, domestic markets do not yet facilitate cross-border trading and, as a result, lack both depth and liquidity.

The STEP Initiative, led by The Financial Markets Association (ACI) and the FBE, aims at overcoming these barriers.

Euribor ACI and Euribor FBE have formed the STEP Market Committee and the STEP Secretariat. The former monitors market developments and establishes and reviews the market standards on which the STEP label is based, while the latter manages the STEP label which will be granted to those issuance programmes that are compliant with the standards of the STEP

Market Convention, subject to the respective application of the issuer. The purpose of granting a "label" to instruments that comply with the set of requirements is to facilitate comparisons and cross-border trading, making such financial instruments more attractive to investors.

The STEP Market Convention[1] was signed by Euribor ACI and Euribor FBE on 9 June 2006. The Convention sets out criteria and requirements for information disclosure, documentation, settlement, and the provision of data to the ESCB for the production of statistics.

The ECB has supported the STEP initiative since its inception in 2001. The Eurosystem's current contribution to STEP focuses on two main activities. First, the ECB and nine NCBs will provide until June 2008 technical assistance to the STEP Secretariat in relation to the STEP labelling process. The ultimate responsibility for granting and withdrawing the STEP label, however, fully rests with the STEP Secretariat. Second, the ECB regularly produces statistics on yields and volumes in the STEP market and publishes them on its website.[2]

In November 2006 the outstanding amount of euro-denominated STEP securities was €84.4 billion for 16 STEP-compliant programmes. The table below shows that issuance in other currencies accounts for a minor proportion.

STEP monthly outstanding amounts July-November 2006

(EUR thousands)

Currency	July	August	September	October	November
EUR	69,642,926	75,755,224	77,928,441	82,244,318	84,423,410
USD	170,048	444,790	2,436,335	2,984,641	2,896,250
GBP	86,219	57,855	458,167	642,483	970,708
JPY				48,800	47,622
CHF	287,978	344,105	200,239	213,697	290,588
Other			658,736	629,431	761,335
TOTAL	70,187,171	76,601,974	81,681,918	86,763,369	89,389,913

Source: ECB securities issues statistics.

The STEP statistics are expected to play an important role in fostering the integration of the European short-term securities markets by ensuring greater market transparency. The ECB follows a progressive approach in this regard, publishing monthly outstanding amounts of STEP paper, and working towards publishing daily STEP statistics on volumes and yields as of 2008. Finally, on 14 September 2006 the ECB's Governing Council decided that the STEP market will be accepted as a non-regulated market for collateral purposes in Eurosystem credit operations, as soon as the STEP statistics on yields are published on the ECB website. To be eligible as collateral for Eurosystem operations, securities issued under STEP-compliant programmes will have to comply with the Eurosystem's eligibility criteria.

1 Information on STEP can be obtained from the STEP market website (http://www.stepmarket.org).
2 http://www.ecb.int/stats/money/step/html/index.en.html

7.2 OUTSTANDING AMOUNTS AND ISSUANCE

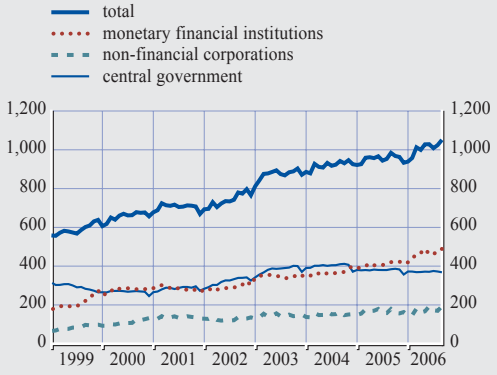
According to the ECB monthly securities database, the outstanding nominal amounts of euro-denominated short-term securities issued globally increased from €966 billion in June 2005 to €1,026 billion in June 2006 (Chart 24).

This growth reflects continuously increasing activity on the part of monetary financial institutions (MFIs), which by June 2006 had issued 45% of the total stock outstanding (up from 42% in June 2005). Since 1999, the nominal value of outstanding short-term MFI securities has been multiplied by 2.6 times, going from an initial share of 32% in 1999 to assume a prominent role in the total stock outstanding in euro-denominated short-term securities. Outstanding securities of the non-financial corporation (NFC) sector rose by €10 billion year on year in June 2006, almost fully compensating for the decline in the outstanding amounts of central government issues. A noticeable development in the last seven years has been the steady decline in the share of outstanding central government short-term securities, which currently stands at 36%, its lowest level since 1999 (when it stood at 56%). The outstanding amount of central government short-term securities has nevertheless remained broadly stable at around EUR 370 billion over the last three years, and in nominal terms has increased slightly since January 1999, when it stood at €313 billion.

The gross issuance of euro-denominated short-term securities (Chart 25) stood at €687 billion in June 2006 (down from €721 billion in June 2005). The total cumulative amount of short-term debt securities issued between July 2005 and June 2006 was €8,473 billion – an increase of €1,237 billion, or 17% from the July 2004 – June 2005 period. The gross issuance activity is dominated by the MFI sector, which accounts for 74% of all new issues of euro-denominated short-term securities. This proportion has been fairly constant since June 2004, while the share of central government issues has remained steady at around 9%, with the NFC sector at 17%. Similar to the reduction in the share of government short-term securities in the overall outstanding amounts of euro-denominated short-term paper, the share of government gross issuance has declined from the levels of 1999, when it stood at 22% on average. The latter mostly reflects the increase in the outstanding amounts of both MFIs' and NFCs' euro-denominated short-term securities, where the MFI sector predominates.

Chart 24 Outstanding amounts of euro-denominated short-term securities by issuing sector since January 1999

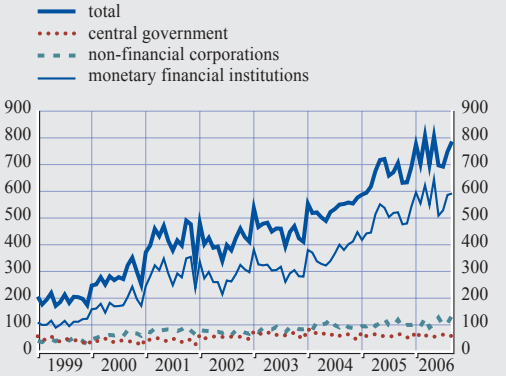
(EUR billions)



Source: ECB securities issues statistics.

Chart 25 Gross issuance of euro-denominated short-term securities by issuing sector since January 1999

(EUR billions)



Source: ECB securities issues statistics.

7.3 MARKET STRUCTURE

According to the qualitative answers to the questionnaire, the short-term securities market has still room to increase its overall efficiency. The vast majority of those interviewed (92%) deemed the market to be no more than sufficiently efficient; while as high as 8% considered it to be only limitedly efficient. This value is the second highest percentage for limited efficiency among the different segments surveyed (the highest was FRAs with 9% volume-weighted). This relative inefficiency is, among other factors, highlighted by the small size of transactions in non-bank issues (i.e. paper issued by corporates).

Concerning the geographical distribution of transactions, domestic turnover gained more ground, totalling 37% in 2006, against 28% in 2004. The volume traded with the rest of the euro area has decreased to 44%, down from 57% in 2004.

Electronic trading continues to increase, amounting to 19% of the total turnover in 2006. The wider use of electronic platforms may lead to greater integration and efficiency by incorporating all relevant information into the price formation process when the securities are quoted in open and accessible electronic markets. Finally, the degree of concentration has declined slightly over the last year, with the share of the top ten market players in the trading of euro-denominated short-term securities in the secondary market decreasing from 75% in 2005 to 73% in 2006. Similarly, the share in issuance of euro-denominated short-term paper for the top ten players declined to 90% in 2006, down from 93% in 2005.

Box 8

A COMPARISON BETWEEN EUROPEAN AND US COMMERCIAL PAPER[1]

In identifying the necessary features to grant the STEP label, the STEP Task Force has taken the US commercial paper (USCP) market as a benchmark.[2] The domestic European markets lag considerably behind the US market in terms of depth and liquidity.

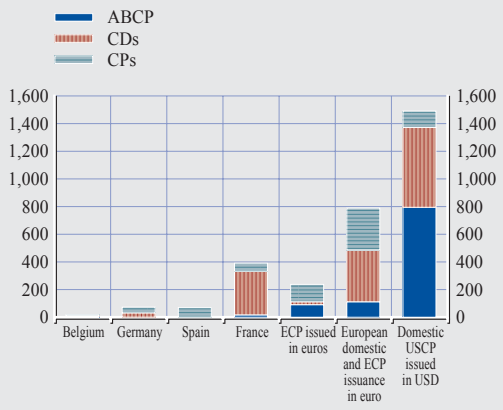
The French *Titres de créances négociables* market, which encompasses both the commercial paper (CP) market and the certificates of deposit (CD) market, is by far the largest euro-denominated domestic CP and CD market, with an outstanding amount of €373 billion by end-October 2006. Other domestic European short-term paper markets, such as the Spanish *pagarés de empresa* market or the German market, are smaller, with outstanding amounts of €69.6 billion and €72.9 billion at end-October 2006, respectively.

The ECP (Euro commercial paper) market has emerged to become the only euro-denominated short-term paper traded on a cross-border basis. ECP is an offshore market and thus not subject to domestic regulations. The outstanding amount of ECP as at end-October 2006, estimated at €489.5 billion equivalent, is still larger than the sum of the outstanding volume of domestic CP in euro area countries. However, as at end-December 2005, euro-denominated ECP only represented 44.5% of total ECP outstanding, while 29.1% is USD-denominated and 18.1% GBP-denominated.

1 The data used in this box comes from different sources, which might not use the same statistical definitions and methods. The sources were: AIAF and the bulletin of public debt for CP; Banque de France for French CP and CD data; Banque Nationale de Belgique for Belgian CP; the Deutsche Bundesbank for German CD and CP (estimated) data; Euroclear for ECP; the Federal Reserve of New York for USCP and Societé Générale for ABCP.
2 See Bank of Italy's Quarterly Bulletin 2-2006, "Financial integration and the market for short-term paper".

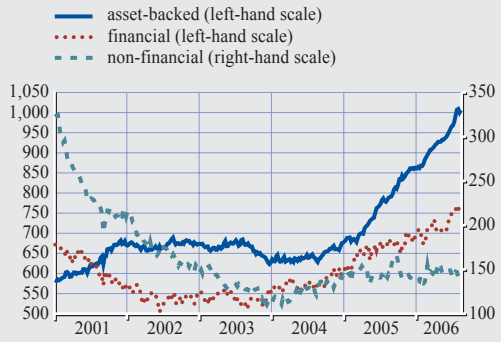
Chart A Outstanding amouts end October 2006

(EUR billions)



Source: See footnote 1.

Chart B Outstanding amount of US commercial paper between 2001 and 2006 – weekly data



Source: US Board of Governors of the Federal Reserve System.

As highlighted in the Chart A, USCP outstanding amounts were equivalent to €1,500 billion at end-October 2006 versus less than €800 billion for the outstanding amounts of both the sum of domestic European short-term CP, CD and ABCP and euro-denominated ECP.

Following the 2001 economic downturn, USCP outstanding amounts have increased, rising particularly sharply since early 2004. Much of the rise is attributable to growth in the asset-backed commercial paper (ABCP) segment, which accounts for more than 60% of total USCP, amounting to €798 billion equivalent. Indeed, the outstanding amount of ABCP has increased by 54% since its lowest level in early 2004. By way of comparison, the outstanding amount of euro-denominated ABCP was €85 billion. Therefore, analysts generally view the European ABCP as a market segment with a major growth potential in the coming years.

With regard to the maturity structure, a large proportion of USCP is issued with an overnight maturity, whereas euro-denominated paper is mostly issued for one to three months. Liquidity is deemed to be rather poor for longer maturities because of marked-to-market valuation methods that apply for maturities above three months.

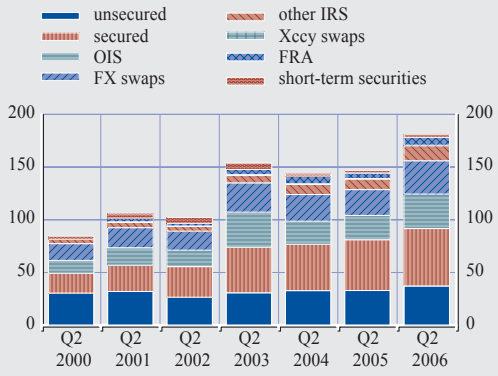
8 CROSS-MARKET SEGMENT ANALYSIS

This section provides a cross-market comparison of all euro money market segments. The turnover data is rescaled taking the 2002 overall volume as the base (i.e. overall turnover 2002 = 100) to enable the comparative importance of each money market segment to be analysed in terms of turnover. Furthermore, the section summarises how the most topical themes in the period, such as interest rate hike expectations, impacted the different markets, with the aim of improving the reader's understanding of the way the different segments are used for position-taking and hedging, and the differences in their maturity structures.

8.1 TURNOVER ANALYSIS

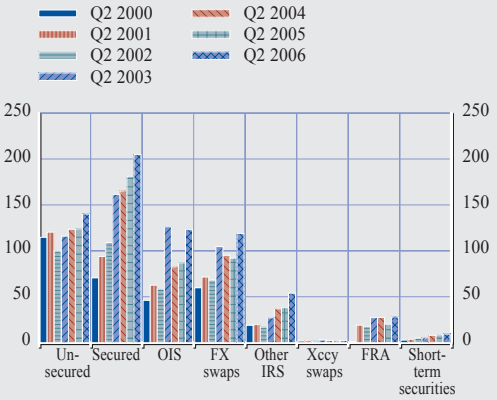
After two years of slow growth, the aggregated turnover of all euro money market segments expanded strongly in the second quarter of 2006, recording a 25% year-on-year increase. This upswing in money market activity appeared to be

Chart 26 Aggregated turnover of the euro money market between 2000 and 2006



Source: ECB money market survey 2006.
Note: The volume for aggregated euro money market transactions in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

Chart 27 Average daily turnover in each money market segment between 2000 and 2006



Source: ECB money market survey 2006.
Note: The volume for unsecured transactions in Q2 2002 is taken as the base = 100. The panel comprised 85 banks in 2000 and 2001 and 114 banks thereafter.

partly triggered by market participants' changing expectations about the future path of ECB official interest rates. This is similar to what had happened in 2003, when expectations of rate cuts by the ECB led to a sharp spike in euro money market activity. However, other factors may also have played a role, such as the disintermediation process (which resulted in higher issuance by corporations), financial innovation (which led to a surge in investment products such as money market funds), or strategies pursued by financial market players to enhance yields in the prevailing low interest rate, low implied volatility environment.

The increase in turnover was particularly strong in interest rate products, with activity in OIS, FRA and other IRS growing by 52%, 34% and 34% respectively in 2006 (Chart 26). Trading volume in the FX swap market was also remarkably robust, whereas turnover expanded at a more moderate pace in both short-term securities and unsecured markets. Finally, secured market activity grew by 13%, while turnover in the cross-currency swaps segment remained fairly stable.

Despite the strengthening of the position of the OTC derivatives market, the secured segment maintained its leading position, accounting for 27.6% of the total turnover in the second quarter of 2006 (Chart 27). It is worth noting that the secured market, along with the "other IRS" markets, are the only segments in which turnover has continuously increased since the second quarter of 2001. This confirms the earlier findings of a trend towards limiting credit risk exposure together with the constraints that result from capital adequacy requirements. The share of the unsecured market nevertheless remained significant at 18.4%, although it moved to the fourth place in terms of overall activity in the euro money market in 2006, compared to the second place in 2005.

The share of OIS in total turnover rose to 20.4% in 2006, up from 16.9% in 2005, making OIS the second most traded instrument in the euro money market in 2006. The FX swap segment maintained its third place with 19.6% of overall activity. The turnover of the other IRS segment has also expanded rapidly in each of the last three years, increasing at an annual rate of 25% since 2003. Its share of the total turnover of the

euro money market remained unchanged at roughly 7% in 2006. The share of FRAs remained broadly unchanged in 2006 at 4.4%.

The shares of the short-term securities segment and cross-currency swaps remain extremely limited, the former accounting for 2.5% (combining trading and issuance) of the total turnover and the latter for 0.2%, making them by far the smallest market segments. As mentioned in section 5, cross-currency swaps remain a niche instrument traded by a very restricted number of institutions.

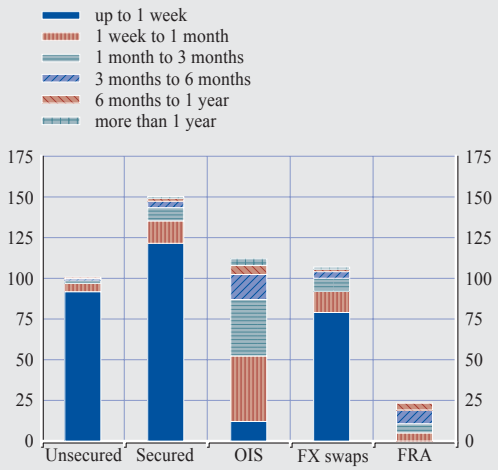
8.2 MATURITY ANALYSIS

Overall, the maturity structure of the different euro money market segments does not show any significant changes in the last few years (Chart 28). Activity in unsecured, secured and FX swap markets continued to be largely concentrated in very short-term maturities in the second quarter of 2006, showing an even further declining average maturity. In the unsecured market, transactions remained concentrated in the overnight maturity category, which accounted for 67% of total turnover. In the secured segment, there was also a slight increase in overnight activity, but the bulk of transactions was still made in the maturity band "tomorrow/next to up to one month", which represented 78% of the business. In the FX swap market, the share of turnover in the shortest maturities up to one week has also increased since the last survey, rising from 69% in 2004 to 75% in the second quarter of 2006.

Trading in the OIS market showed a greater concentration in shorter maturities compared with the last two years, with almost half of the average daily turnover concentrated in maturities of up to one month. It is interesting to note that the maturity structure of the OIS segment was very similar to the situation in 2003, when market participants anticipated rate cuts by the ECB's Governing Council.

In the last ECB euro money market study, market participants reported that they mainly use OIS to express their views on interest rate movements, and cash market segments are generally used only for funding purposes. All these above-mentioned segments have shown a consistent trend towards liquidity concentration on very short maturities, which has been made possible by technological developments, e.g. via increased electronic trading and an increasing use of automated collateral management and STP.

Chart 28 Total unsecured, secured, OIS, FX swaps and FRA turnover for the different maturity bands in 2006



Source: ECB money market survey 2006.
Note: The Q2 2006 unsecured volume is taken as the base. The panel comprised 157 banks.

The maturity structures of the other IRS and cross-currency swap segments closely resembled each other in the second quarter of 2006, with the bulk of transactions having maturities over two years. The share of activity in maturities over two years in the other IRS segment stood at 61% in the second quarter of 2006, compared with 55% in 2005 and 49% in 2004. In contrast, the breakdown by maturity in the cross-currency swap segment showed an increase in the weight of activity for maturities below two years to 31% in 2006, after temporarily falling to 23% in 2005 from 33% in 2004.

8.3 MARKET STRUCTURE

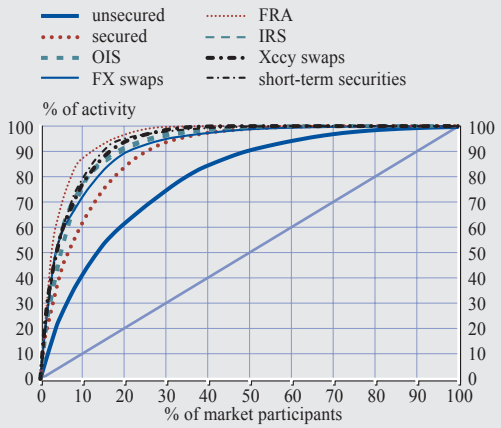
Apart from the unsecured market, developments during the last few years show that the degree of concentration in the different market segments continues to be relatively high, as illustrated by the Lorenz curve (Chart 29). Since the inception of this survey in 2000, the unsecured market has remained by far the least concentrated money market segment, followed by the secured and the OIS segments. The key feature in recent years has been the significant decrease in the degree of concentration in the FX swap market since 2003, which by Q2 2006 had decreased its concentration to a level close to that of the OIS and secured market segments.

Despite this reduction of concentration observed in some segments (FX swaps, other IRS, cross-currency swaps) since the last survey, the degree of concentration in the OTC derivatives market has remained high. In terms of turnover, the ten most active institutions in the FRA, other IRS and cross-currency swap markets continued to hold market shares above or close to 70% in each segment. In the FRA segment the degree of concentration for the ten largest institutions strengthened to 83% in the second quarter of 2006, which might also have been caused by the decreased use and liquidity of this market segment.

Analysis by type of counterparty (Chart 30) does not reveal any significant changes over the last few years. The bulk of business in 2006 continued to be carried out with euro area counterparties. The most relevant change in terms of the geographical counterparty structure was the reduced predominance of transactions with national counterparties in the shorter-term securities segment, which registered a share of 37% in 2006, down considerably from 51% in 2005.

Despite the gradual increase in cross-border trading in recent years at the expense of domestic trading, the proportion of business carried out with national counterparties in the secured and short-term securities markets remained comparatively high. This feature reveals that, despite the considerable progress registered in the last few years, the integration process of repo and short-term securities markets across the euro area continues to be slow and complex. The share of cross-border trading in the secured market increased to 70% in the second quarter of 2006, up from 63% in

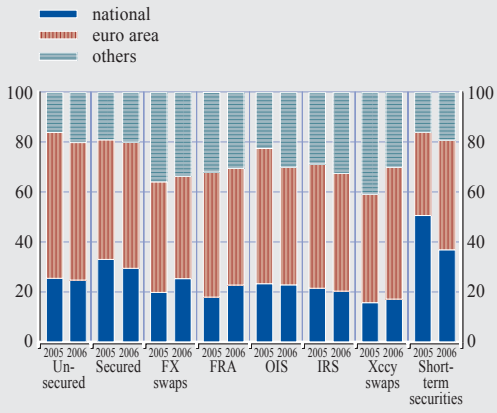
Chart 29 Lorenz curves showing the concentration of activity in the different market segments in 2006



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

Chart 30 Geographical counterparty structure of the different market segments in 2005 and 2006

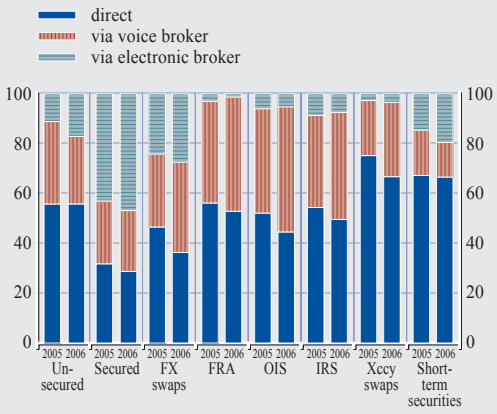
(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

Chart 31 Trading structure of the different market segments in 2005 and 2006

(percentages)



Source: ECB money market survey 2006.
Note: The panel comprised 157 banks.

2003, while in the short-term securities segment it increased from 45 to 63% within the same period (see also Box 8 for a geographical analysis of European CP).

As for the trading structure (Chart 31), the results of the 2006 study showed that the number of electronic trading transactions continued to grow in the majority of market segments, albeit only moderately. The share of electronic trading remained at or below 20% with the exception of the secured market, where it grew considerably, reaching 49% in the second quarter of 2006 compared with 43% in 2005. In the OTC derivatives segments, where trading is mainly conducted on a bilateral basis with the exception of FX swaps, electronic trading still accounts for a residual share in overall activity, accounting for less than 10% of all transactions for all these segments.

Direct trading continued to be the most important way of carrying out business in the unsecured, FRA, FX swap, other IRS, cross-currency swap and short-term securities markets. In the OIS and FRA markets, nearly half of the turnover was traded through voice brokers, which regained some ground in 2006 to levels close to those observed in 2004 and 2003.

Box 9

THE EURO MONEY MARKET IN THE UK: EVIDENCE FROM THE 2006 SURVEY

The 2006 euro money market study confirms the significant role played by London in the euro money market.

As shown by Table 1, banks located in the UK (all of them based in London) accounted for more than 25% of the total volume reported by all surveyed banks in the second quarter of 2006 in all but one of the market segments covered by the survey. The exception was unsecured lending, where the share of the UK was much smaller, at 7% of the total sample. Both local UK banks and non-UK banks' European branches in London look for euro liquidity on a regular

Table 1 Comparison between UK banks and the 2006 euro money market sample

(%)

	Unsecured		Secured		OIS	FX swaps	FRAs	Other IRS	Cross currency swaps	Short-term securities
	Lending	Borrowing	Lending	Borrowing						
Total	100	205	213	244	338	324	72	115	3	19
UK	7	45	61	84	92	177	38	30	1	7
Share of UK banks	7%	22%	28%	35%	27%	55%	53%	26%	27%	38%

Source: ECB money market survey 2006.
Note: Sample of 157 banks for the total, and 14 banks for the UK. Base = 100 for 2006 unsecured lending.

basis, thereby contributing to increased trading volumes. Some banks indeed play a key role in the distribution of liquidity between EU countries and the UK.

For the common panel of banks (114 since 2002 for the whole survey, of which 11 are UK banks), volumes reported by UK banks have doubled since 2002 in the secured and short-term securities segments (Table 2). This growth rate compares to 92% and 84% for secured lending and borrowing for the common panel excluding UK banks, and 68% for short-term securities. The comparatively larger increase in euro-denominated borrowing of the UK panel when compared to the overall panel can be attributed to three possible reasons: (i) London-based banks in the survey are generally large and have seen their funding needs rise comparatively more in the past few years (see the unsecured market section); (ii) London-based banks can also use euro collateral in the Bank of England's open market operations; and (iii) all EU banks have branches in London, and some conduct certain types of activity purely from there (e.g. derivatives). Those banks that do not participate in ECB operations would tend to borrow comparatively more from the private secured and unsecured markets.

Table 2 Growth in the euro money market: Q2 2002-Q2 2006

(percentages)

	Unsecured		Secured		OIS	FX swaps	FRAs	Other IRS	Cross currency swaps	Short-term securities
	Lending	Borrowing	Lending	Borrowing						
Total whole constant panel	29	47	85	90	110	75	61	215	30	89
Constant panel excl. UK	30	39	79	80	122	86	51	315	33	68
UK constant panel only	1	95	109	172	60	61	75	68	20	137

Source: ECB money market survey 2006.
Note: Constant panel of 114 banks for the overall EU, and 11 banks for the UK.

The increasing share of London banks in some segments (unsecured, secured, FRAs and short-term securities) since 2002 is mainly due to some European banks' decision to move their Treasury desks to London. This centralisation process may reflect the comparative advantages of London as a financial centre, such as the availability of various services, a fair and competitive regulatory environment, and the availability of skilled human resources, as well as banks' drive to streamline their operations and cut costs.

ANNEX I

TECHNICAL ANNEX

SCOPE OF THE STUDY

In this sixth ECB euro money market study, banks were invited to provide data about their interbank activity during the second quarters of 2005 and 2006, covering the main segments of the euro money market. 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 2006 study.

Banks reported interbank activity if this activity is booked in their own entity. Intra-group flows derived from intra-group operations are excluded from the 2006 study. Any interbank activity by 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 derivatives transactions. In addition, transactions related to the rollover of previous positions were taken into consideration. The turnover for each maturity band was the "average" daily turnover over the relevant quarter. This average is calculated by dividing the total amount of transactions executed during the reporting period by the number of business days in the reporting period. The reporting banks were asked to specify the number of business days considered for this calculation.

The turnover was allocated to each maturity band 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 period has been taken as the maturity.

In addition, banks were asked to fill in a qualitative survey providing information about efficiency, changes in liquidity and the 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. Finally, the 2006 survey also collected information about the efficiency of the options market and changes in its liquidity.

Regarding the location of the counterparties with which reporting banks have conducted transactions during the second quarter of 2006, these were broken down in the qualitative survey in terms of the 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. Compared to previous studies, turnover data were added from nine of the ten new Member States which joined the ESCB on 1 May 2004 .

SECURED AND UNSECURED SEGMENTS

For the secured and unsecured segments of the money market, the activity tables are divided according to the terms of the lending and borrowing activity. For the secured segment, "cash lending" refers to buy/sell-back transactions and reverse repos, while "cash borrowing" refers to sell/buy-back transactions and repos. Information about the origin of collateral has been provided as a percentage of the average daily transactions in secured markets. For the country of issuance of the security used as collateral, the same geographical approach as for the location of counterparties is used: national, euro area, and others. The split between bilateral and triparty repos in the secured markets has only been reported since 2004 (with figures for 2003 as well).

SWAP SEGMENTS

The 2006 study covers different kinds of swap transactions.

– Overnight indexed swaps (OIS) are financial operations calculated on the basis of an exchange of a fixed rate agreed at the onset of the swap, and a floating-rate leg linked to a daily overnight rate reference during the period of the swap. At the maturity of the swap, the two parties exchange a net payment based on the difference between the interest accrued at the agreed fixed rate and the interest accrued at the compounded floating rate (geometric average), multiplied by the notional amount. In the euro money market the most widely recognised overnight index is the EONIA (Euro OverNight Index Average). Banks were also asked to provide the percentage of their average daily OIS turnover not indexed to the 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. FX swaps are only reported if one of the two currencies exchanged involved the euro. Furthermore, and to avoid double-counting, only the leg in euro was 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 in 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 average of daily outright transactions. Outright transactions are defined as a sale or purchase of short-term securities on the interbank secondary market. Short-term securities are broadly defined as all securities with an initial maturity of up to 12 months, including Treasury bills, commercial paper, euro commercial paper, asset-backed commercial paper, certificates of deposit, etc. The primary market or issuance activity has not been included, but there is a separate item for the issuance by the panel bank.

REVISION OF THE COMPOSITION OF THE PANEL

To compare the findings with those of previous studies and to analyse long-term trends in the euro money market, a constant panel of banks for each segment was used for all previous money market studies dating back to 2002. In the 2006 study, however, 29 banks were added to this panel with the aim of improving the representative nature of the sample (for the statistical impact of these panel changes, see Table 4 below).

In order to smooth out the impact of the inclusion of new banks in the panel and to enable a comparison of long-term trends, the turnover of the extended panel in 2002 was re-indexed to the turnover reported in 2002 from the initial constant panel (using the chain-linking approach).

Table 4 Effect of the changes to the composition of the constant panel[1)]

(percentages)

		2000	2001	2002	2003	2004	2005	2006
Unsecured	Missing data	9	6	6	5	0	0	0
	Added banks	0	0	152	137	96	116	130
	Total change	*9*	*6*	*158*	*142*	*96*	*116*	*130*
Secured	Missing data	24	26	24	39	0	0	0
	Added banks	0	0	71	112	118	106	91
	Total change	*24*	*26*	*95*	*151*	*118*	*106*	*91*
OIS	Added banks			94	75	61	42	65
FX	Added banks			144	133	105	77	65
FRA	Added banks			58	102	87	57	65
IRS	Added banks			47	100	68	39	50
XCCY	Added banks			64	61	49	56	44
ST	Added banks			48	46	23	24	29

1) Calculation of the daily turnover added to the initial constant panel for the previous ECB euro money market studies.

The number of panel banks is the same for all money market segments, even if some of these banks only started operating in a particular market segment after 2000. This is a change compared to previous studies, where banks that were not active in a segment from the time the survey had been first conducted were removed from that segment's constant panel. The change in the criteria for selecting the composition of the panel aims to reflect the dynamic nature of financial markets and the strategic decisions of banks to direct resources/marketing efforts towards any particular segment. The concentration analysis, which shows that the composition of the largest/most active banks has evolved significantly over the seven years since the first ECB euro money market study, also supports the latter approach.

The base year for the 2006 study has also been changed to 2002. The impact of the change in the base year should only affect the comparison between segments, or between lending and borrowing, and not the overall trend for any particular segment.

Finally, the turnover of four banks in the constant panel for the previous years of the survey had been inadvertently omitted between 2000 and 2003 in the unsecured and secured segments, and instead added to the constant panel figures. This correction adds between 5 and 9% of the reported turnover in the constant panel for the unsecured market, and between 24 and 39% for the secured market.

REVISIONS TO 2005 DATA

As in previous years, some revisions were made to the values collected and published in the 2005 euro money market study. The following table briefly describes the net changes by segment:

Table 5 Number of revisions and net changes

	Nr. of revisions	Net change
Unsecured		
Lending	34	-3%
Borrowing	28	-4%
Secured		
Bilateral lending	17	-1%
Bilateral borrowing	13	-5%
Triparty lending	6	-5%
Triparty borrowing	6	28%
Derivatives		
OIS	11	7%
FX	30	-1%
FRA	9	0%
IRS	26	1%
XCCY	16	-4%
Short term papers		
Trading	64	-8%
Issuance	45	7%

ANNEX 2

A COMPARISON OF THE EUROPEAN REPO COUNCIL SURVEY AND THE ECB SURVEY ON EURO INTERBANK MONEY MARKET ACTIVITY

A comparison of the European Repo Council survey and the ECB survey on euro interbank money market activity

	ERC survey	ECB survey
Measure	Outstanding amount (i.e. stock) at the end of June/December.	Turnover (i.e. flow); specifically, daily average turnover for the second quarter of the year.
Periodicity	Semi-annual.	Yearly.
Location of respondents	All European countries.	23 EU countries (those EU countries before 1 January 2007, except DK and EE).
Type of institution	All financial institutions (e.g. including 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 and central banks).
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: overnight; tomorrow/next; spot/next.
	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.	
	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: government; other. "Other" German collateral is broken down into: Pfandbrief; other.	The total figure is broken down into: domestic ("national"); euro area; other.
Counterparties	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.	The total figure is broken down into: domestic; euro area; other.
		The total figure is broken down into: direct; via voice broker; via ATS ("electronic broker").

A comparison of the European Repo Council survey and the ECB survey on euro interbank money market activity (continued)

	ERC survey	ECB survey
Type of transaction	All types of repo, classic and sell/buy-backs. Securities lending against any type of collateral which is conducted from repo desks is measured separately.	All types of repo and securities lending against cash collateral.
	The total figure is broken down into: classic repo; documented sell/buy-backs; undocumented sell/buy-backs.	
	Each sub-category is broken down into repo and reverse repo.	Each sub-category is broken down into repo and reverse repo, except for analysis of: location of counterparty; type of counterparty.
	The total figure is broken down into: fixed rate; floating rate; open.	Each maturity band is further broken down into: floating rate ("indexed"); other (fixed rate and open). There are therefore 9 maturity/rate sub-categories.
	The total figure is broken down into: triparty repo; other (delivery & hold-in-custody). Triparty repo is further broken down into: fixed-term; open.	The total figure is broken down into: bilateral repo; triparty repo.

ANNEX 3

GLOSSARY

Automated trading system (ATS): a system that offers additional means of trading compared with established exchanges. These systems operate electronically (lowering transaction costs), and focus on services that established exchanges do not always provide (e.g. a central limit order book, after-hours trading or direct access for institutional investors).

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

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

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

Central counterparty (CCP): a legal entity that acts as an intermediary between the parties to a securities trade and which interposes itself as the buyer to every seller and as the seller to every buyer.

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.

Clearstream: Clearstream Banking Frankfurt is the German central securities depository (CSD). Clearstream Banking Luxembourg (CBL) is an international central securities depository (ICSD) based in Luxembourg. Both are owned by Deutsche Börse.

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 in 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.

Cross-currency swap: a contract that commits 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.

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.

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.

Efficient market: a market where the price is the unbiased estimate of the true value of the investment, based on existing information.

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

e-MID: an electronic broker market for interbank deposits, run by e-MID S.p.A Milan.

Eurepo: the benchmark rate of the large euro repo market that has emerged since the introduction of the euro in 1999. Eurepo is the successor rate to the BBA euro repo benchmark. It is the rate at which one prime bank offers funds in euro to another prime bank, if the former receives from the latter in exchange Eurepo General Collateral (GC) as collateral. Eurepo is supported by the European Banking Federation (FBE) and the European Repo Council (ERC).

Eurex: the German/Swiss futures and options market.

Eurex Repo: a major electronic repo market platform provider. It offers among others a cash-driven repo market trading product called Euro GC Pooling.

EURIBOR: the euro area interbank offered rate for the euro, sponsored by the European Banking Federation (FBE) and the Association Cambiste Internationale (ACI). It is an index price source covering dealings from 48 prime banks.

Euroclear: the world's largest settlement system for domestic and international securities transactions. It is an International Central Securities Depositary (ICSD), and also acts as the Central Securities Depository (CSD) for Belgian, Dutch, French, Irish and British securities.

Euro GC Pooling: cash-driven general collateral segment of the electronic trading platform Eurex Repo offering short term collateralized funding possibilities and efficient collateral management.

Euro overnight index average (EONIA): the overnight rate computed as the euro 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 48 prime banks.

Euronext: the company born out of the merger of the Amsterdam, Brussels and Paris exchanges on 22 September 2000. Planned merger with New York stock exchange (NYSE).

Euronext.liffe: short for the Euronext-London International Financial Futures and Options Exchange. Euronext took over Liffe in October 2001.

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 exchange swap (FX swap): the simultaneous spot purchase/sale and forward sale/purchase of one currency against another. Banks were asked to report FX swaps only if one of the two currencies exchanged is the euro and in this case the euro amount of the short leg.

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

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

Future: an 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 (GC): collateral which, owing to its homogeneous features, is widely accepted.

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

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

Key ECB interest rates: the interest rates set by the ECB's Governing Council, which reflect the ECB's monetary policy stance. They are the minimum bid rate on the main refinancing operations, the interest rate on the marginal lending facility, and the interest rate on the deposit facility.

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

Lorenz curves: these 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 charts). For convenience of interpretation, the Lorenz curves presented in the 2006 ECB euro money market study have been plotted above the equality line, instead of below it (which is the more standard mode of presentation), since market players were sorted by descending order of their activity share.

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 any participant which provides quotes).

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

Monetary financial institutions (MFIs): these are the financial institutions that comprise 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.

Money market: the market in which short-term funds are raised, invested and traded using instruments which generally have an original maturity of less than one year.

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

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

Overnight interest rate swap (OIS): a financial operation involving an exchange of cash flows on a specified date. It involves paying or receiving a fixed cash flow on the one hand, and paying or receiving a variable rate cash flow on the other.

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).

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

Reserve maintenance period: period over which compliance with the reserve requirements is calculated. Maintenance periods begin on the settlement day of the first main refinancing operation following the meeting of the ECB's Governing Council, at which the monthly assessment of the monetary policy stance is pre-scheduled. They normally end on the day preceding the similar settlement day in the following month.

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

Reverse repo: a contract with a counterparty to buy and subsequently resell securities at a specified date and price. A reverse repo is thus the mirror image of a repo.

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.

Swap: an agreement to exchange 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. As of 1 January 2007, it consists of 17 national RTGS systems plus the ECB payment mechanism, which are interlinked to provide a uniform platform for the processing of cross-border payments.

Tomorrow/next (day): this expression is used in relation to the practice among foreign exchange traders of swapping currencies for short periods to maximise the holders' return on their money.

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

Triparty repo: a repo that involves a third party, commonly a custodian bank or an ICSD acting as an agent to exchange cash and collateral for one or both of the counterparties.

ANNEX 4

BANKS PARTICIPATING IN THE 2006 EURO MONEY MARKET SURVEY

AT	Allgemeine Sparkasse Oberösterreich Bank AG
AT	Bank Austria-Creditanstalt AG
AT	Erste Bank der oesterr. Sparkassen AG
AT	Oberbank AG
AT	Österreichische Volksbanken-AG
AT	Raiffeisen Zentralbank Oesterreich AG
BE	Dexia Banque Belgique
BE	Fortis Banque
BE	KBC Bank NV
CY	Bank of Cyprus Public Company Ltd
CY	Hellenic Bank Public Company Ltd
CY	The Cyprus Popular Bank Ltd
CZ	ABN AMRO Bank N. V.
CZ	Česká spořitelna, a. s.
CZ	Československá obchodní banka, a. s.
CZ	Citibank a. s.
CZ	HSBC Bank plc - pobočka Praha
CZ	HVB Bank Czech Republic a. s.
CZ	ING Bank N. V.
CZ	Komerční banka, a. s.
DE	Landesbank Berlin AG
DE	Bayerische Hypo- und Vereinsbank AG
DE	BayernLB
DE	Commerzbank AG
DE	Deutsche Bank AG
DE	Deutsche Postbank AG
DE	Dresdner Bank AG
DE	DZ Bank AG
DE	HSH Nordbank AG
DE	Landesbank Baden-Württemberg
DE	Landesbank Hessen-Thüringen Girozentrale
DE	Landesbank Sachsen Girozentrale
DE	Landwirtschaftliche Rentenbank
DE	Norddeutsche Landesbank Girozentrale
DE	SEB AG
DE	WestLB AG
DE	WGZ BANK AG
ES	Banco de Sabadell, S.A.
ES	Banco Cooperativo Español, S.A.
ES	Banco de Crédito Local de España, S.A.
ES	Banco Pastor, S.A.
ES	Banco Popular Español, S.A.
ES	Bankinter, S.A.
ES	Barclays Bank, S.A.
ES	Banco Bilbao Vizcaya Argentaria, S.A.
ES	Caixa d' Estalvis de Catalunya
ES	Caja de Ahorros del Mediterráneo
ES	Caja de Ahorros de Galicia
ES	Caja de Ahorros y Monte de Piedad de Madrid
ES	Caja de Ahorros y Pensiones de Barcelona
ES	Confederación Española de Cajas de Ahorros
ES	Banco Santander Central Hispano, S.A.
FI	OKO Pankki Oyj
FI	Sampo Pankki Oyj
FI	Skandinaviska Enskilda Banken, Helsinki Branch
FI	Nordea Bank Finland Abp
FR	BNP Paribas
FR	BRED
FR	Calyon
FR	Crédit Industriel et Commercial - Cic
FR	Crédit Agricole S.a.
FR	Deutsche bank ag
FR	HSBC France
FR	Ixis corporate & investment bank
FR	Natexis Banques Populaires
FR	Société Générale
GB	Abbey National Treasury Services plc
GB	ABN Amro Bank NV
GB	Barclays Bank plc
GB	BNP Paribas
GB	Citibank NA
GB	Credit Suisse
GB	Deutsche Bank AG
GB	Goldman Sachs International Bank
GB	HBOS Treasury Services plc
GB	HSBC Bank plc
GB	JP Morgan Securities Limited
GB	Lloyds TSB Bank plc
GB	Royal Bank of Scotland
GR	Agricultural Bank of Greece, S.A.
GR	Alpha Bank, S.A.
GR	BNP Paribas
GR	EFG Eurobank Ergasias, S.A.
GR	Emporiki Bank of Greece SA.
GR	HSBC Bank plc
GR	National Bank of Greece, S.A.
GR	Piraeus Bank, S.A.
HU	HVB Bank Hungary Zártkörûen Mûködõ Rt.
HU	ING Bank (Magyarország) Rt.
HU	K&H Bank Nyrt.
IE	Allied Irish Banks plc

IE	Anglo Irish Bank Corporation plc
IE	Bank of Ireland
IE	DEPFA Bank plc
IE	Irish Life and Permanent Group Treasury
IE	Rabobank Ireland plc
IE	Royal Bank of Scotland (Ireland) Limited
IE	Ulster Bank Ireland Limited
IE	UniCredito Italiano Bank (Ireland) plc
IT	Capitalia Spa
IT	Banca IMI
IT	Banca Monte dei Paschi di Siena Spa
IT	Banca Nazionale del Lavoro Spa
IT	BNP Paribas SA
IT	Dexia Crediop Spa
IT	Banca Intesa Spa
IT	Sanpaolo Imi Spa
IT	Unicredit Banca Spa
LT	AB Bankas „Hansabankas”
LT	AB bankas „Snoras”
LT	SEB Vilniaus bankas
LU	Banque et Caisse d’Epargne de l’Etat
LU	Fortis Banque Luxembourg
LU	Dexia Banque Internationale à Luxembourg
LU	HVB Banque Luxembourg S.A.
LU	Kredietbank S.A. Luxembourgeoise
LV	HANSABANKA
LV	SEB Latvijas Unibanka
LV	Parex banka
LV	Rietumu Banka
MT	Bank of Valletta plc
MT	BAWAG Malta Bank Ltd
MT	HSBC Bank Malta plc
MT	Volksbank Malta Ltd
NL	ABN AMRO Bank N.V.
NL	ING Bank N.V.
NL	Bank Nederlandse Gemeenten N.V.
NL	Rabobank International Utrecht
NL	F. van Lanschot Bankiers N.V.
PL	Bank BPH S.A.
PL	Bank Zachodni WBK SA
PL	Bank Handlowy w Warszawie SA
PL	Deutsche Bank Polska SA
PL	Kredyt Bank SA
PT	Banco Bilbao Vizcaya Argentaria (Portugal), SA
PT	Banco Comercial Português, SA
PT	Banco do Brasil, SA
PT	Banco Espírito Santo, SA
PT	Banco Finantia, SA
PT	Banco Internacional do Funchal, SA
PT	Banco Itaú Europa, SA
PT	Banco Santander Totta, SA
PT	Barclays Bank, plc
PT	Banco Português de Investimento, SA
PT	BPN - Banco Português de Negócios, SA
PT	Caixa Central de Crédito Agrícola Mútuo, CRL
PT	Caixa Económica Montepio Geral
PT	Caixa Geral de Depósitos, SA
PT	Deutsche Bank (Portugal), SA
SE	Nordea Bank AB
SE	Skandinaviska Enskilda Banken AB
SE	Svenska Handelsbanken AB
SE	Swedbank AB
SI	Bank Austria Creditanstalt d.d. Ljubljana
SI	Nova Ljubljanska Banka d.d., Ljubljana
SK	Slovenská sporiteľňa, a.s.
SK	Všeobecná úverová banka, a.s.

ANNEX 5

COORDINATION OF THE 2006 ECB EURO MONEY MARKET STUDY

The 2006 ECB euro money market study was conducted by a working group comprising staff members from the ECB and NCBs, which reported to the ESCB's Market Operations Committee.

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