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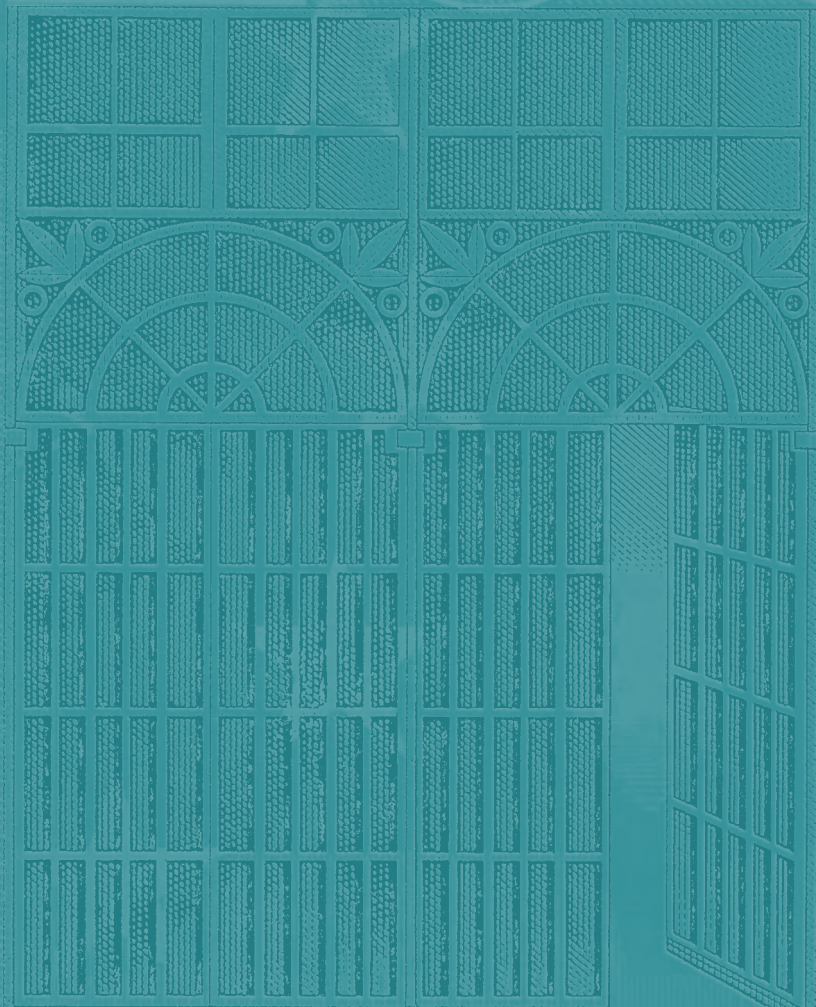
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EURO MONEY MARKET STUDY 2008

FEBRUARY 2009

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FEBRUARY 2009

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EXECUTIVE SUMMARY

This seventh study on the structure and functioning of the euro money market is the result of a survey conducted by the European Central Bank (ECB) and the national central banks that are members of the European System of Central Banks (ESCB).¹ The survey asked panel banks (listed in Annex 5) to indicate their average daily turnover in various money market instruments during the second quarter of 2008 and to answer a number of qualitative questions. In this study two changes were introduced compared to previous ones: the coverage of the survey was extended from 23 to 26 countries and additional procedures were put in place to enhance the quality of the data and to better assess the impact of the financial market turbulence that started in 2007 on the euro money market.

The main findings of the study indicate that the euro money market was not spared from the financial market turbulence, whose repercussions could be observed in various euro money market segments.

Overall turnover in the euro money market decreased in the second quarter of 2008, for the first time since 2004, by around 5% year-on-year, after the strong year-on-year growth recorded in 2006 and the slight increase observed in 2007. The most notable decrease in activity took place in secured deposits (also referred to as “repos” in this study) (-16%), unsecured deposits (-13%) and overnight index swaps (-32%). The fall in the activity in the secured and unsecured deposit segments resulted from tight and volatile market conditions that fuelled counterparty credit concerns on one hand and, on the other hand, put pressure on banks to reduce their credit, market and liquidity risk exposures. Despite this decline in overall turnover, the secured market segment remained the largest segment of the euro money market, accounting for one-third of the overall euro money market activity.

The largest decline in activity took place in the overnight index swaps (OIS) segment. In

contrast, turnover in forward rate agreements (FRA) and interest rate swaps other than OIS (“other IRS”) increased. Indeed, OIS turnover decreased by 32% between the second quarter of 2007 and the second quarter of 2008, while FRA turnover and the other IRS turnover increased by 105% and 43% respectively. The shift from OIS to FRA and other IRS reportedly occurred because of changes in hedging and positioning activity of the respondent banks against the background of financial market turbulence. Transaction volumes on the foreign exchange (FX) swap and short-term securities markets remained broadly unchanged between the second quarter of 2007 and the second quarter of 2008. Turnover in the cross-currency swap segment rose by 51%, yet this remained by far the smallest segment of the euro money market, accounting for less than 1% of overall activity.

Apart from a few changes in some segments (see below), which might prove to be a temporary phenomenon related to the financial market turbulence, there were no significant structural changes in maturity distribution in most money market segments. Activity in the unsecured, secured and FX swap markets continued to be largely concentrated in very short-term maturities. In the same vein, turnover in maturities above one year decreased substantially both in the unsecured segment (-21%) and, even more so, in the secured segment (-61%). A shift to shorter maturities was also recorded in other IRS and cross-currency swaps, which are typically instruments traded at longer maturities. Although the bulk of activity in these segments remained in maturities above two years, the share of shorter maturities increased from 35% to 40% in other IRS and from 19% to 37% in cross-currency swaps.

In contrast, the above-mentioned substantial reduction in OIS turnover had a bigger impact on shorter maturities. The share of OIS turnover at maturities up to one month declined from

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

64% in 2007 to 48% in 2008, while the share of transactions at longer maturities increased.

The degree of concentration in most market segments remained rather high and even increased further, especially in unsecured deposits, OIS, other IRS, FRA and short-term securities, which may suggest that adverse market conditions contributed to a reduction in a number of players in these market segments. In the over-the-counter derivatives market segment, concentration remained high, notwithstanding the reduction observed in some segments since the last survey (FX and cross-currency swaps). Similar to previous years, the unsecured deposit market has remained by far the least concentrated segment in the euro money market, followed by the secured deposit market segment.

The structure of turnover in the various segments of the euro money market did not change significantly in terms of geographical distribution of counterparties, and the bulk of business has continued to be carried out with counterparties from the euro area. However, the survey reveals that, in the second quarter of 2008, volumes traded with counterparties outside the euro area contracted in all market segments, apart from the unsecured and secured deposits market. This could suggest that the financial market turbulence dampened flows of money market instruments between the euro area and the rest of the world. In addition, some segments recorded some “repatriation” of activity as the share of business conducted within national borders increased. This phenomenon was most pronounced in unsecured deposits (from 28% in the second quarter of 2007 to 33% in the second quarter of 2008) involving mainly small banks that had greater access to national than euro area funding sources.

The financial market turbulence appears to have also had an impact on the way respondent banks executed transactions with counterparties. The proportion of electronic trading decreased and the proportion of voice broker deals increased in almost every market segment, reversing the

trend observed in these two modes of trading until the second quarter of 2007, pointing to some reluctance to use non-anonymous means of trading.

Finally, the qualitative part of the survey reveals that the financial market turbulence also adversely affected market liquidity and efficiency in various segments of the euro money market. The deterioration in market liquidity conditions was perceived to be greatest in the unsecured deposits, secured deposits and OIS segments. These three segments were also those in which the biggest efficiency losses were reported.

I INTRODUCTION

In the second quarter of 2008 the European Central Bank (ECB) and the 27 national central banks (NCBs) in the European System of Central Banks (ESCB) conducted, under the auspices of the Market Operations Committee of the ESCB and in co-operation with the Money Market Contact Group of the ECB, a quantitative and qualitative survey among banks in 25 EU countries and one non-EU country regarding the euro money market.² On the basis of that survey, the 2008 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, 2004 and 2006.³ The 2008 study covers the second quarters of 2007 and 2008, 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 164 banks participated in the survey. The country breakdown of the participating banks is shown in Table 1.

The 164 banks surveyed accounted for approximately 58% of the outstanding volume in ECB open market operations during the second quarter of 2008. The methodological notes contained in the questionnaire can be found in Annex 1.

Table 1 Country breakdown of participating banks in 2008

Austria	6	Hungary	3	Portugal	15
Belgium	3	Ireland	7	Romania	3
Bulgaria	4	Italy	7	Slovenia	3
Cyprus	3	Latvia	5	Slovakia	2
Czech Republic	8	Lithuania	3	Spain	16
Germany	17	Luxembourg	3	Sweden	4
Finland	2	Malta	4	Switzerland	1
France	9	Netherlands	5	UK	17
Greece	8	Poland	6	Total	164

Compared with previous studies, two changes were made in the 2008 study. First, four Bulgarian banks, three Romanian banks and one Swiss bank were included in the study, thus extending the total number of represented countries from 23 to 26. Second, for the first time participating banks were asked to immediately give qualitative comments if reported turnovers did not comply with the validation rules used in the data reporting forms, in an attempt both to enhance the quality of the collected data and to better assess developments in euro money market turnover.

The purpose of this study is to highlight the main trends affecting the market structure of the euro money market. This study neither assesses the overall size of the different segments of the euro money market, nor compares it with other major money markets, such as those of the United States or Japan.⁴ Results reported from the qualitative questions are 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 sample were used for the analysis, depending on the time frame. The first sample group, which was used to analyse the evolution

2 There were no banks from Denmark or Estonia included in the survey. One panel bank is from Switzerland.

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); "Euro money market study 2004" (May 2005) and "Euro money market study 2006" (February 2007). In years where there is no accompanying study (in odd years), the data from the annual survey are published as a set of charts (see for example "Euro money market survey 2007").

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 comprehensive information on transaction volumes in the euro money market.

of the euro money market over the last two years, included all reporting banks (i.e. 164 banks). The second sample group, which was used for a longer-term analysis since 2000, when the survey was first conducted, is referred to as “the constant panel of banks”. In the euro money market study of 2006, 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 114 banks for the period 2002-2006. This year a few modifications were made to the constant panel: it was reduced from 114 to 109 banks, as seven banks which had not taken part in the survey since 2006 were removed, and two other banks were added.⁵ The composition of the constant panel is the same for all market segments. As in 2006, the base year for the Euro money market study is 2002, given the more representative nature of the enlarged panel. The effects of the changes in the constant panel of banks are detailed in Annex 1.

Finally, in addition to the results of the survey, other data sources have been used. The section on the unsecured market (section 3) draws on data from the e-MID platform; the secured market section elaborates on data provided by the Eurex Repo electronic platform; the futures and options markets section (section 6) relies on data published by Euronext.liffe (short for Euronext-London International Financial

Futures and Options Exchange); and the section on the short-term securities market (section 7) also analyses data from ECB securities issues statistics.

2 THE MONETARY POLICY ENVIRONMENT IN 2007 AND 2008

The developments in the euro money market in 2007 and 2008 must be analysed against the background of an increase in key monetary policy rates by the ECB in the first half of 2007. At the end of 2006 the minimum bid rate for the main refinancing operation (MRO) stood at 3.50%. The key interest rates were raised twice by 25 basis points at the Governing Council meetings on 8 March 2007 and 6 June 2007, with the MRO minimum bid rate thus reaching 4.00%. The ECB Governing Council subsequently kept the MRO minimum bid rate unchanged at that level from June 2007 to June 2008, the closing date of the survey.

The evolution of monetary policy during 2007 and 2008 can be divided in two periods: before and after the start of the financial market turmoil (see box 1).

5 For all new additions to the constant panel, including most recent amendments to the constant panel, all data series start in 2000.

Box 1

THE FINANCIAL MARKET TURMOIL

In the first week of August 2007 the environment of extreme nervousness among market participants, which had prevailed for several weeks against the background of concerns related to the US sub-prime mortgage market, started to have an impact on the global money markets and particularly on the euro money market. The markets for longer-dated unsecured deposits and non-government repo transactions increasingly dried up. These frictions spilled over to the very short-term money markets and escalated on 9 August 2007, when markets came near to a standstill, leading the ECB and other central banks to inject additional liquidity to avoid complete gridlock in liquidity circulation. Commercial paper maturity at issuance and outstanding amounts started to decline sharply, in particular in the asset-backed commercial paper (ABCP) market in various currencies.

During August 2007 the ECB took various actions in order to improve the liquidity conditions in the euro money market: it carried out large overnight liquidity-providing fine-tuning operations, the first of which was conducted as a fixed rate tender with full allotment; it started a “frontloading” liquidity management policy, providing liquidity much above the benchmark amount¹ in the main refinancing operations so that banks could fulfil their reserve requirement earlier and draining it progressively towards the end of each reserve maintenance period; and it announced a supplementary three month longer-term refinancing operation to help alleviate the banking system’s needs for longer-term funding.

Although all these actions contributed to some stability in the euro money market, various indicators showed that tensions were continuing: i) the spreads between unsecured deposit rates and OIS rates or between unsecured deposit rates and repo rates increased sharply, reflecting concerns about liquidity, market and credit risk exposures and ii) the increasing marginal and weighted average rates in the Eurosystem tender operations signalled significant funding concerns.

The spread² between the three-month Euribor and the three-month Eonia Swap Index, which compares the cost of an unsecured interbank loan for the next three months with the Eonia swap rate for the same period (which has little credit risk), widened from levels of around 10 basis points before the turbulence to levels above 60 basis points by the end of August 2007 (Chart A). Thereafter, the spread between both rates remained at elevated levels with peaks at each of the more severe episodes in the turbulence, including around the end of 2007 and around the time when Bear Stearns was rescued.

After August 2007 the ECB continued to apply its “frontloading” liquidity management policy in order to alleviate tensions in the euro money market. Before the end of 2007 the special two-week tender, which was carried out as a fixed rate tender with full allotment, had a significant market impact as it contributed to reducing market participants’ concerns about

- 1 The benchmark amount is the amount that reflects the liquidity needs of the euro area banking system in normal market conditions, reflecting in particular the ECB’s minimum reserve requirements.
- 2 Similar pattern can be observed for 1-month, 6-month and 1-year maturity.

Chart A 3-month Euribor – Eonia Swap Index spreads

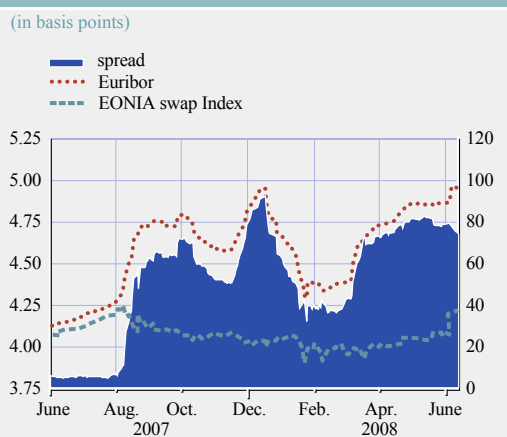
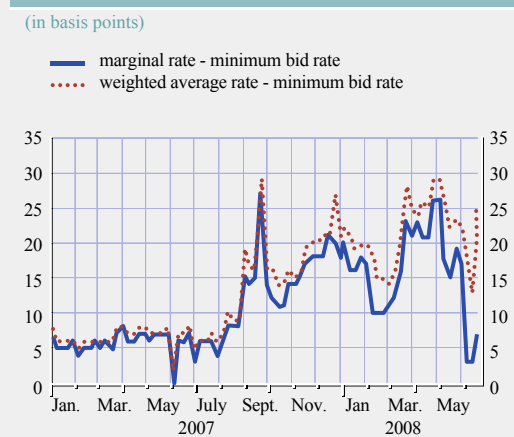


Chart B Spread between the relevant rates of the Eurosystem main refinancing operations



funding over the end of the year. In addition, the ECB carried out further supplementary longer-term refinancing operations with maturities up to six months.

However, as mentioned above, these actions only partially offset the continuing tensions in the money market. The increasing premium that euro area banks were willing to pay in order to obtain liquidity through ECB operations was reflected in the higher marginal and weighted average rates compared to the minimum bid rate in the main refinancing operations of the ECB (Chart B).

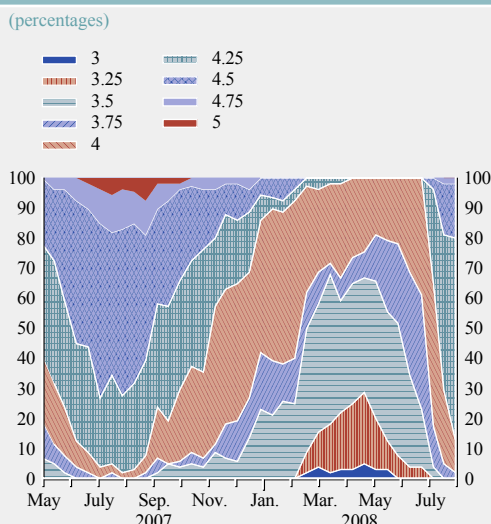
Further analysis of the development of the financial market turbulence during this and the subsequent period can be found in various ECB publications, including the ECB Financial Stability Review. See in particular Box 7 in the ECB Financial Stability Review released in December 2007 and section 3 in the ECB Financial Stability Review released in December 2008.

After the Governing Council of the ECB raised the ECB's key interest rates on 6 June 2007, Eonia swap rates priced in further increases in the ECB's key interest rates. At the beginning of July 2007 the Eonia swap curve was fully pricing in a 50 basis point rate increase by end-2007 and there were expectations of possible further interest rate hikes in 2008. However, market expectations changed dramatically in August 2007. Between August 2007 and May 2008 financial market indicators for monetary policy expectations were rather volatile

reacting to the various episodes of the financial market turbulence. After the intensification of the turbulence in February 2008 and the rescue of Bear Stearns in March 2008, the Eonia swap curve was fully pricing in up to three 25 basis point interest rate cuts by the end of 2008. Similar results were shown by the regular Reuters polls on ECB official interest rates (Chart 1).

A slight improvement in financial market conditions in the second quarter of 2008, together with increasing upside inflation risks in the euro area, led the markets to price in interest rate increases again, especially after the ECB Governing Council meeting of 5 June 2008.

Chart 1 ECB interest rates expectations for end of 2008 according to Reuters poll



Source: Reuters.

In the United States, the Federal Open Market Committee (FOMC), which had left the Federal Funds target rate unchanged at 5.25% since June 2006, started a series of rate cuts in September 2007. During 2007 the FOMC cut rates three times by a total of 100 basis points, bringing the Federal Funds target rate down to 4.25%. On 22 January 2008 the FOMC announced an inter-meeting rate cut (the first since September 2001) of 75 basis points, reducing the Federal Funds target rate to 3.50%. At subsequent meetings the FOMC continued reducing the Federal Funds target rate by 50, 75 and 25 basis points respectively, bringing it down to 2% by the end of April 2008, and it remained at this level throughout the second quarter of 2008.

At the Bank of Japan, which in March 2006 had announced the end of its quantitative easing policy, interest rates developed more smoothly. In March 2007 the Bank of Japan raised the uncollateralised overnight call rate to 0.5% against a background of continued moderate expansion and small increases in consumer prices. For the rest of the period the Bank

of Japan kept interest rates unchanged, even though in 2007, before the start of the turmoil, there were expectations of further interest rate hikes.

Box 2 takes a non-exhaustive look at various reference rates which are currently in use in the euro money market.

Box 2

EURO MONEY MARKET REFERENCE RATES

At present there are several reference interest rates that play an important role in facilitating the functioning of a uniform and integrated euro money market and serve as the basis for the settlement of interest rate contracts, both exchange-traded and OTC. The main characteristics of the euro money market benchmarks are summarised in Annex 2.

In the unsecured segment of the euro money market the main benchmarks, according to market participants, are the euro overnight index average (*Eonia*), the euro interbank offered rate (*Euribor*) and the euro London interbank offered rate (*euro Libor*). These reference rates were established at the introduction of the euro in 1999. *Eonia* and *Euribor* are sponsored by the European Banking Federation (EBF) and the Financial Markets Association (ACI), while *euro Libor* is published by the British Bankers' Association (BBA).

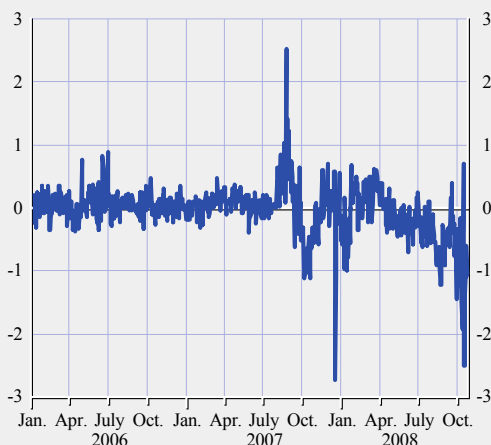
Apart from the different maturities covered for these rates, the main difference between *Eonia*, on one hand, and *euro Libor* and *Euribor*, on the other, stems from the fact that, whereas *Euribor* and *euro Libor* are both based on interest rates quoted by the panel members at a reference time and do not necessarily reflect the level at which real transactions are executed, *Eonia* is an effective rate, which means that it is calculated on the basis of the actual lending transactions carried out by the panel members in a given day.

In addition to the obvious differences in the *Euribor* and *euro Libor* benchmarks (see Annex 2), such as the different reference times and number and location of panel members, there is also a more subtle distinction in the definition of the transactions to be reported. *Libor* contributors are asked to contribute the rate at which they believe they could borrow funds, should they propose to do so. *Euribor* contributors, in turn, are asked to quote rates at which, to the best of their knowledge, euro interbank term deposits are being offered within the euro area by one (merely hypothetical) prime bank to another at 11 a.m. CET ("the best price between the best banks"). In addition, the calculation mechanism of *Libor* eliminates 50% (the highest and lowest 25%) of the quotes from the arithmetical averaging when calculating the benchmark rate, while *Euribor* takes into account 70% of all contributions. Moreover, the panel of banks is much larger for *Euribor* than for *Libor*.

Notwithstanding these differences, the spread between *euro Libor* and *Euribor* was usually negligible in the past, with only a few temporary and short-lived exceptions. However, the spread

Chart A 3-month euro Libor – Euribor spread

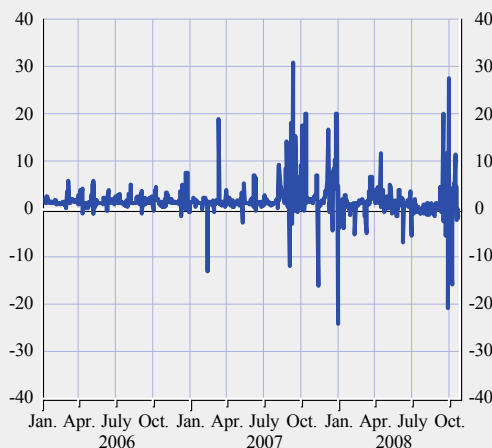
(in basis points)



Sources: EBF and Bloomberg

Chart B Overnight euro Libor – Eonia spread

(in basis points)



Sources: EBF and Bloomberg

has become more volatile since the start of the financial market turbulence in August 2007 (see Chart A for the 3-month maturity). In contrast, Chart B illustrates that the discrepancies between overnight euro Libor and Eonia are much larger. The actual lending by the Eonia panel banks is usually conducted at lower rates on average than the overnight euro Libor (i.e. the spread was mostly positive in the past). Since August 2007 the volatility of the spread has increased substantially with occasional outliers of up to 20 basis points.

Since March 2002 the EBF has also provided a reference interest rate for the secured segment of the euro money market, called *Eurepo*. This refers to the rate, at which loans collateralised with securities from a pre-specified *Eurepo* general collateral (GC) list of securities are granted. The calculation mechanism is identical to that of the other EBF benchmarks, but the panel comprises the banks with high credit rating which are active in the *Eurepo* GC market.

Finally, in June 2005, the EBF introduced a new reference rate for the euro derivatives market, in particular for the Eonia swap market, with the intention to further facilitate the overnight indexed swap market. The *Eonia Swap Index* serves as a basis for the Eonia swap forward rate agreements (FRAs), which are traded over-the-counter (OTC), and Eonia Swap Index futures, which since June 2008 have been traded on Euronext.liffe.

Since the outbreak of the financial market turbulence, which resulted in dislocation in various segments of the money markets, market participants have raised some concerns about the integrity of money market reference interest rates, in particular for unsecured lending, claiming that they may understate actual borrowing costs in the interbank market. Although these concerns were mainly focused on US dollar reference interest rates, there was also occasional criticism of the quality of euro reference interest rates for unsecured lending, including Euribor and euro Libor. In response to those concerns, on 13 June 2008, the Euribor Steering Committee issued a statement announcing that “Euribor is an entirely satisfactory and reliable benchmark”. Similarly, the consultation and survey of the quality of the Libor conducted by the BBA in June also concluded that BBA LIBOR is a fundamentally robust and accurate benchmark.

While these concerns about the quality of the reference interest rates may be substantiated in some cases, the persisting dislocation in the money markets itself may be the source of these concerns.

Indeed, anecdotal evidence, as well as some more systematic evidence, such as that coming from the Euro Money Market Survey, suggests that the money markets in general, and specifically the euro money market, have become more “tiered” since the start of the financial market turbulence, so the interest rates at which unsecured transactions are conducted now depend more strongly than before on the perceived credit standing of the borrower. Unsecured euro money market interest rates are based mainly on contributions by banks with the best credit ratings (prime banks), hence it should not be surprising that not all institutions will be able to access funds at the levels indicated by these reference rates.

Therefore, it could be tentatively concluded that the above-mentioned concerns about the integrity of the money market reference rates are likely to be more a reflection of the constrained funding environment rather than of problems in the mechanism by which reference rates are set. At the same time, however, it is welcomed that work is constantly underway in the market place to maintain and enhance existing reference interest rates or to develop new reference interest rates.

3 THE UNSECURED MARKET

3.1 TURNOVER ANALYSIS

After five years of continuous growth, activity in the unsecured segment of the euro money market decreased by 12% in the second quarter of 2008 compared with the second quarter of 2007. The reduction took place mainly on the borrowing side (-18% compared to previous year, Chart 2), whereas the lending side remained broadly stable. As a result, the gap between the lending and the borrowing sides, which appears to be mainly caused by the over-representation of large banks in the constant panel, was reduced somewhat.

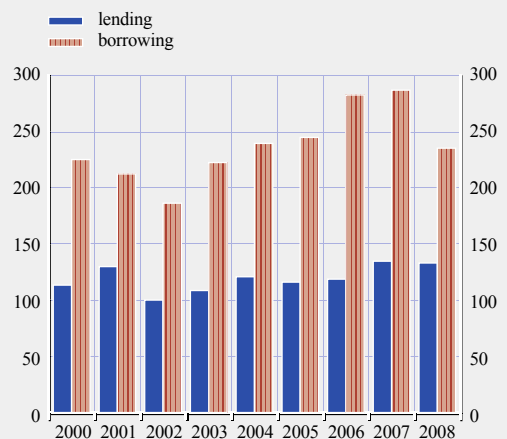
The unsecured market suffered a significant reduction in activity despite the frontloading liquidity management policy of the ECB (see section 2). Not only general market liquidity risk but also credit risk and funding risk concerns play an important role in explaining the decline in unsecured market activity. On one hand, many banks reduced and sometimes withdrew credit lines they had had with counterparties for unsecured transactions due to rising credit risk concerns. On the other hand, the funding

risk that some institutions faced in the event that they did not have access to liquidity in the market led them to hoard additional liquidity on their balance sheets.

All these aspects translated into increasing funding costs, which also contributed to raising

Chart 2 Average daily turnover in unsecured cash lending and borrowing

(index: cash lending volume in 2002 = 100)



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

some reputational concerns. Some banks, including those with greater incentive not to disclose their cost of funding, looked for alternative funding sources. In some cases, these banks resorted to intragroup funding,⁶ whereby some specialised entities within a banking group reduced their lending to external counterparties in various market segments in order to become liquidity providers to the group treasury function.

Moreover, in a shallower and less liquid market environment, treasurers were urged, as a precaution, to increase their funding at longer maturities. Funding sources were therefore switched from very short-term borrowing, where the bulk of the overall unsecured activity takes place, to secured longer-term instruments that, according to the surveyed banks, suffered from a less severe liquidity strain than the unsecured interbank deposit segment.

3.2 MATURITY ANALYSIS

The unsecured market remained mainly an overnight market (Chart 3). In every year

since the inception of the survey most of the transactions in the unsecured market took place with an overnight maturity. In the second quarter of 2008 overnight operations represented around 70% of the total lending and borrowing activity in the unsecured market. There is an inverse relationship between turnover in the unsecured segment and the length of the operations: 96% of unsecured transactions took place at maturities of less than one month in 2008, which is similar to what has been observed since the start of the survey.

Electronic trading, opportunities for straight-through processing (STP) and straightforward settlement processes make the unsecured segment the most attractive segment for transactions with short maturities. In addition, the credit risk associated with unsecured operations typically leads banks to strictly limit their unsecured transactions in longer maturities.

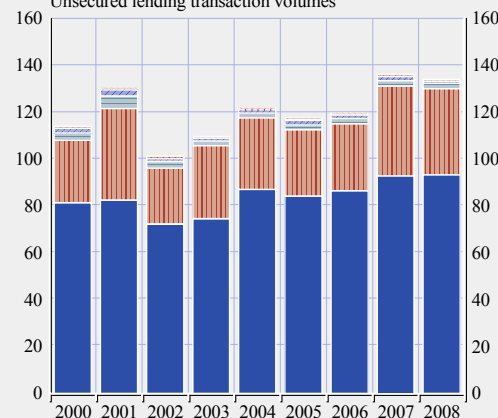
⁶ Intragroup transactions are not part of the survey, therefore an increase in these transactions it is not reflected in the charts.

Chart 3 Maturity breakdown for average daily turnover in unsecured lending and borrowing

(index: cash lending volume in 2002 = 100)

- overnight (O/N)
- tom/next to 1 month (T/N-1m)
- 1 month to 3 months (1m-3m)
- 3 months to 1 year (3m-1y)
- more than 1 year (>1y)

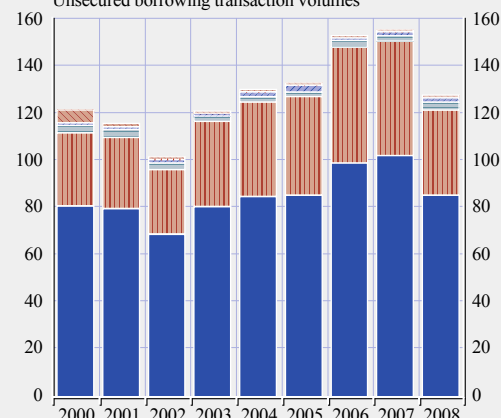
Unsecured lending transaction volumes



(index: cash borrowing volume in 2002 = 100)

- overnight (O/N)
- tom/next to 1 month (T/N-1m)
- 1 month to 3 months (1m-3m)
- 3 months to 1 year (3m-1y)
- more than 1 year (>1y)

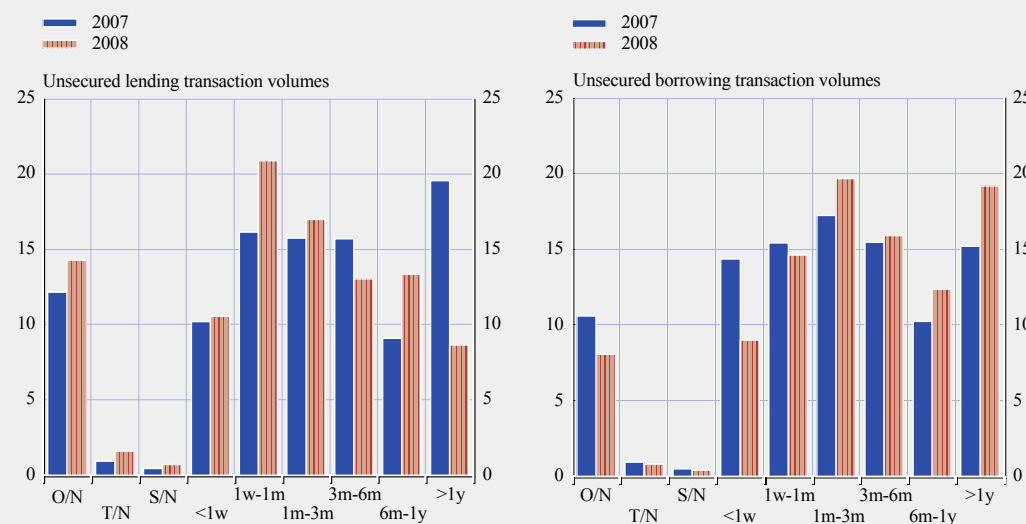
Unsecured borrowing transaction volumes



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 4 Maturity-weighted breakdown for average daily turnover in unsecured lending and borrowing

(percentages of total)



Note: The panel comprised 164 credit institutions.

It is worth mentioning that, although there was a general decline in unsecured transaction volumes, there was an increase of 31% in borrowing transactions for maturities longer than one month, possibly reflecting the increased need for some banks to procure long-term funding. However, the amounts at maturities longer than one month still remained relatively small when compared to the total volume of unsecured transactions.

The volume weighted by maturity represents an estimate of the average exposure of the panel banks to changes in interest rates, offering an indication of the market risk exposure stemming from banks' unsecured borrowing and lending activities. Chart 4 shows that, while in terms of turnover the O/N maturity is dominant, in terms of exposures and stock of outstanding amount of lending/borrowing other maturities are also significant.

On the borrowing side, in line with the above observation, the exposure in the overnight segment declined from 11% to 8% of total exposure while the proportion in maturity buckets above one-month grew.

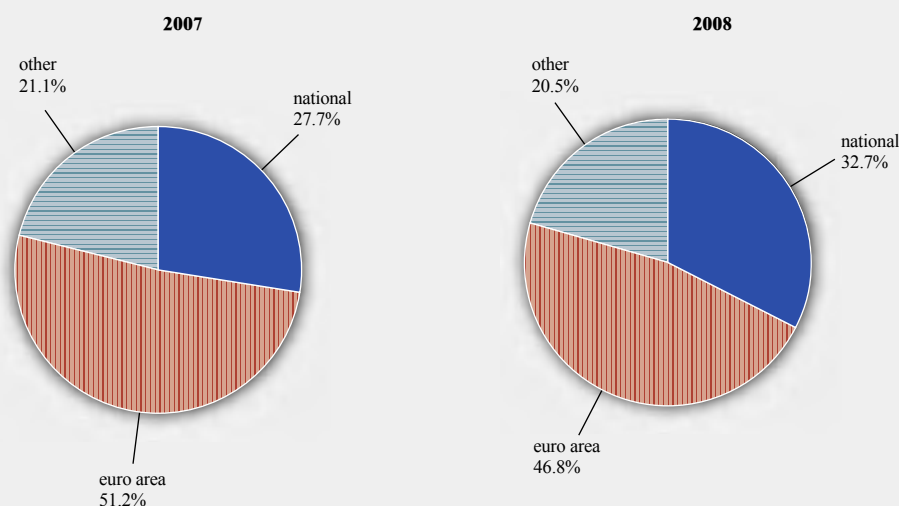
On the lending side, however, there was a significant decline in exposures with maturities longer than three months, especially for one-year maturity, which fell from 20% to 9% of total exposure, possibly reflecting rising aversion among the panel banks to lending on an unsecured basis for longer periods.

3.3 MARKET STRUCTURE

The degree of concentration on the borrowing side declined slightly. The ten largest players accounted for 43% of the volumes transacted in the second quarter of 2008 compared to 48% in the second quarter of 2007. This evidence is consistent with the hypothesis that major players diversified some of their funding away from unsecured borrowing towards alternative sources. In contrast, on the lending side, the level of market concentration increased from 38% to 42%. Taking both borrowing and lending together, the level of concentration in the unsecured market segment increased slightly to 40% for the top ten banks. The unsecured market segment thus remained by far the least concentrated segment of the euro money market.

Chart 5 Geographical counterparty breakdown for unsecured average daily turnover

(percentages of total)



Note: The panel comprised 164 credit institutions.

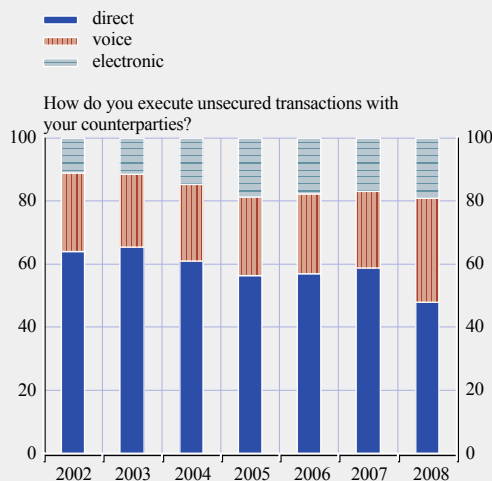
Something of a move towards higher national segmentation took place in the unsecured market between the second quarter of 2007 and the second quarter of 2008 (Chart 5): transactions between counterparties based in the same country increased from 28% to 33%, at the expense of the transactions concluded within the euro area, which decreased from 51% to 47%, while the share of transactions with counterparties based outside the euro area remained unchanged at 21%. Anecdotal evidence suggests that this phenomenon of repatriation mainly involved small banks, specifically those that suffered most from the lack of funding from euro area wide sources in the unsecured segment of the euro money market.

In terms of the mode of trading, roughly half of the transactions (47% in the second quarter of 2008) were executed on a bilateral basis (Chart 6), but this represented a decline from 59% in the second quarter of 2007. Voice broker deals accounted for 32%, which represented an increase in market share from 24% in 2007, while trading via electronic broker (17%) accounted for a relatively small proportion of total activity.

Box 3 reviews data related to activity on one of the electronic trading platforms for the unsecured market, e-Mid.

Chart 6 Breakdown by means of transactions executed with counterparties

(percentages)



Note: The panel comprised 109 credit institutions.

Box 3

THE E-MID ELECTRONIC TRADING PLATFORM

The e-Mid system is a multilateral electronic trading platform for interbank deposits. It is run by e-Mid Sim spa, a company incorporated in Italy and owned by 29 banks and the Italian Banking Association.

Although the maturities traded on the platform range from overnight to one year, both in euro and in other currencies,¹ activity is concentrated on overnight deposits denominated in euro which account for 90% of the total volumes traded. Over 250 counterparties, from inside and outside the euro area, have access to the platform. An important feature of the system is that it allows for a high degree of transparency: in each trade proposal posted on the system the identity of the proponent is disclosed to all members.

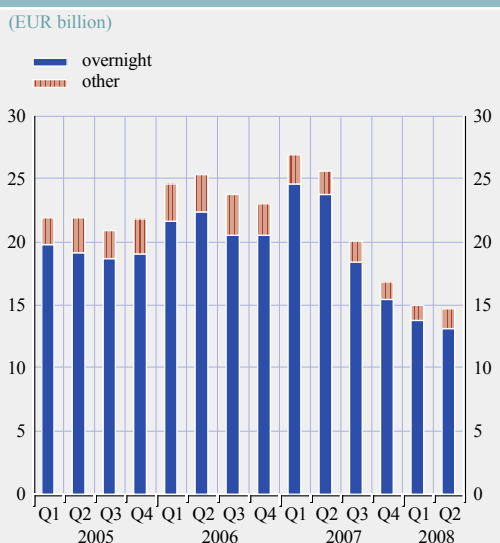
This box focuses on changes in volumes and rates traded on the e-Mid platform from 2005 to 2008. Overall, it appears that the financial market turbulences adversely impacted the volumes traded on the platform and also, to some extent, the pattern of rates traded on the platform.²

From 2005 to the beginning of 2007 volumes traded on e-Mid expanded somewhat. The amount of traded deposits reached a daily average of €26 billion in the first quarter of 2007, compared with €22 billion in the first quarter of 2005. When the financial market turbulence started to affect the money market, traded volumes contracted, first to €20 billion per day in the third quarter

1 US dollar, pound sterling and Polish zloty.

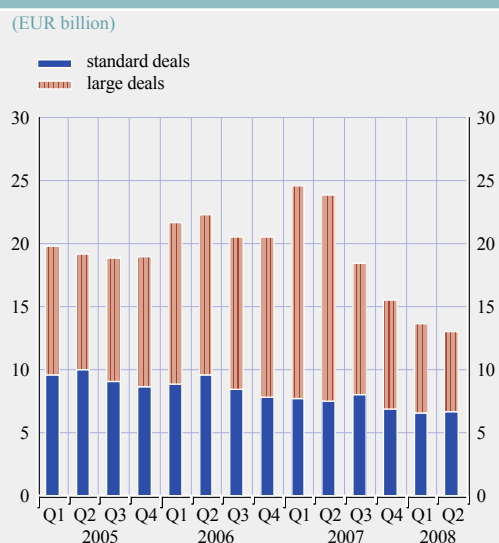
2 Banca d'Italia, the Italian central bank, in its capacity of market supervisor of the e-Mid, receives information on every individual transaction. The database used for this analysis collects all the trades finalised in the market on each business day from January 2005 until June 2008.

Chart A Daily trading volumes on the e-Mid market



Source: e-Mid

Chart B Daily trading volumes in overnight contracts on the e-Mid market



Source: e-Mid

of 2007, and then to less than €15 billion per day in the second quarter of 2008 (a year-on-year decline of 43%). The contraction of activity on the e-MID platform was even more pronounced than the decline in turnover in the unsecured market segment recorded in this year's survey.

Within overnight deposits, which represent the bulk of overall turnover, the reduction occurred mainly in large deals, i.e. above €100 million (-45%), but was less pronounced for standard size deals, i.e. those below €100 million (-14%) (Chart B). As a result, the share of large deals declined to around 50% of the total turnover in Q2 2008, after having reached a maximum of 70% in Q1 2007. The decrease in turnover for large deals stemmed from a lower number of deals rather than from a reduction in the size of transactions: the average daily number of contracts halved from 58 in Q2 2007 to 27 in Q2 2008, while the average contract size decreased only marginally, from €284 million to €242 million.

Looking at the number of participants and the frequency of trades, we see that, while in Q2 2007 on average 126 participants were active in e-Mid every day, the number fell to 107 in Q2 2008.

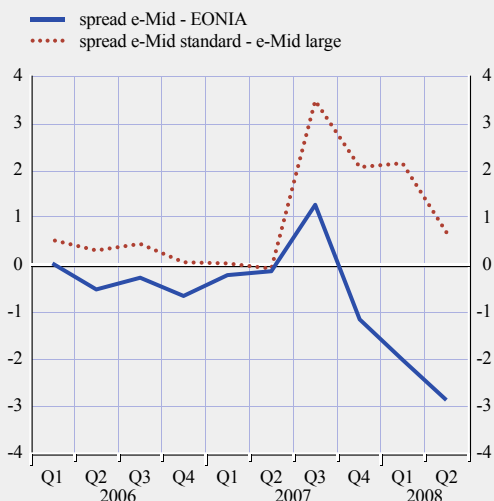
The trading on the e-Mid platform was not highly concentrated: in Q2 2008 the top ten lenders and borrowers represented 34% and 45% of total turnover respectively.

The intraday distribution of trades has changed in recent years: while in 2006 almost 60% of transactions were concluded before 12:00, this fell to below 50% in 2008. Banks seemed to wait for more information about the evolution of their liquidity situation later in the day before turning to the market in e-Mid.

When compared with Eonia, the volume-weighted average overnight deposit rate recorded in e-Mid changed considerably after the start of the financial market turbulences. The e-Mid overnight rate, which in previous years had always been closely aligned with Eonia, moved first

Chart C Daily spread between overnight rate on the e-Mid platform and Eonia

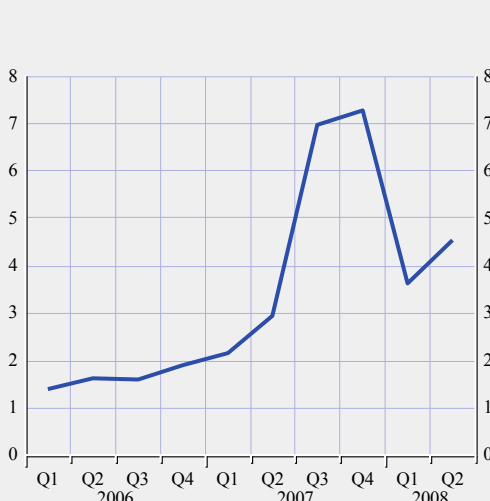
(average, basis points)



Source: e-Mid.

Chart D Daily standard deviation of overnight rate on the e-Mid

(average, basis points)



Source: e-Mid.

above Eonia in Q3 2007 but then moved below Eonia in Q4 2007 and in 2008. Furthermore, a positive spread also appeared between standard-size transactions and large deals, indicating that funding in e-Mid became more expensive for smaller banks than in the past (Chart C).

At the same time, the intraday volatility of the e-Mid overnight rate increased from around 2 basis points or less before the start of the financial market turbulence, to more than 7 basis points in Q3 and Q4 2007 before declining to about 4 basis points in the first half of 2008 (Chart D).

According to market participants, after the start of the financial turbulence some counterparties that are charged higher rates for unsecured funds preferred trading on a bilateral basis, in order to preserve confidentiality. Therefore, only transactions at more favourable rates, i.e. those that implied no reputational risk for the borrower, continued to be concluded on the e-Mid platform, which also explains the declines in volumes.

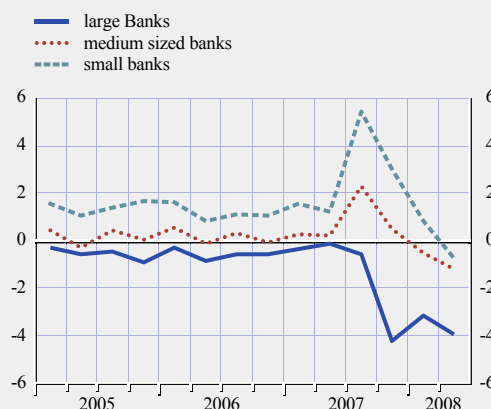
E-Mid turnover data by size of bank indicate a significant decrease in activity originating from large and medium-sized banks, while turnover originating from small banks remained broadly unchanged (Table A).

Complementing the evidence of Table A, Chart E shows that, while small and medium-sized borrowers continued to be charged an interest rate in line with Eonia, large banks paid a rate of 4 basis points below Eonia.

Overall, developments in e-Mid traded volumes and rates data show that the liquidity crisis adversely affected traded volumes on the platform (although electronic trading increased compared to other trading means, see section 3.3). The average number of active counterparties contracted moderately, by 15%, while the number of transactions decreased more significantly and the average size of transactions fell slightly. The e-Mid platform continued to play an important role in the unsecured market segment, especially for smaller counterparties. As confidentiality became a concern, large banks turned to other channels and made use of the e-Mid platform only for deals at favourable rates.

Chart E Daily spread between overnight rate on the e-Mid platform and Eonia, broken down by size of borrow

(average, basis points)



Source: e-Mid.

Table A Average daily trading volumes on the e-Mid platform, broken down by size of bank

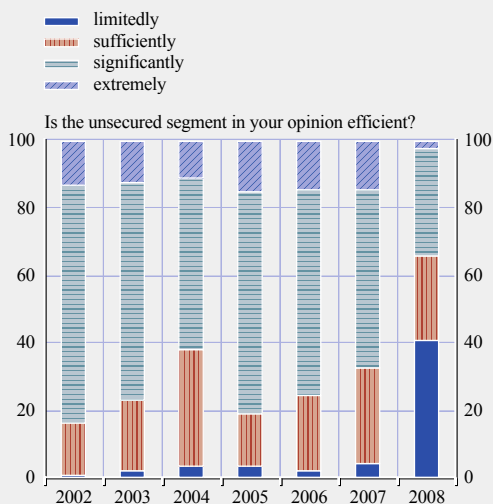
(EUR billion)

Size class	Year (II quarter)			
	2005	2006	2007	2008
Large	5.509	8.259	12.117	4.426
Medium sized	7.001	9.588	10.196	5.411
Small	3.890	3.635	3.117	3.572
Sum	16.400	21.483	25.430	13.409

Source: Total assets from BVD-Bankscope database.
 Large: total assets > EUR 200 billion.
 Medium-sized: total assets between EUR 5 billion and EUR 200 billion.
 Small: total assets < EUR 5 billion.

Chart 7 Efficiency assessment by respondents in the unsecured market

(percentages)

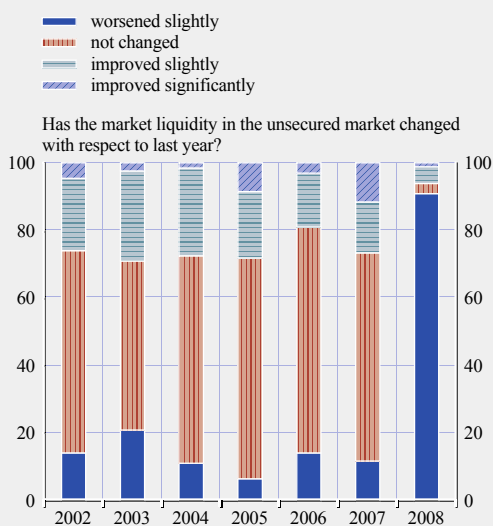


Note: The panel comprised 109 credit institutions.

According to the panel banks' answers to the qualitative questions of the survey, the degree of efficiency of the unsecured market (Chart 7), which was relatively high, deteriorated considerably in the last survey period. In the

Chart 8 Liquidity assessment by respondents in the unsecured market

(percentages)



Note: The panel comprised 109 credit institutions.

second quarter of 2008, 41% of the respondent banks considered that the unsecured market was only "limitedly" efficient, compared to 4% in the second quarter of 2007. This decline in perceived market efficiency was accompanied by perceptions that liquidity conditions in this market segment had deteriorated (Chart 8): 91% of the respondents indicated that market liquidity had worsened in the second quarter of 2008 compared with the second quarter of 2007.

4 THE SECURED MARKET

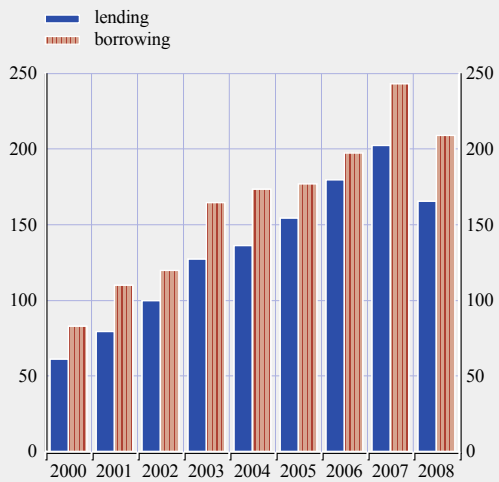
4.1 TURNOVER ANALYSIS

For the first time since 2000, this year's survey shows a significant decline in the secured market segment (Chart 9). After the strong growth recorded between the second quarters of 2006 and 2007, the secured market contracted between the second quarters of 2007 and 2008, with reverse repo transactions (cash lending against securities) and repo transactions (cash borrowing against securities) taken together falling by 16%. The overall turnover fell to levels similar to those recorded in 2004 and 2005. Nevertheless, despite the contraction, the secured segment remained the largest segment of the euro money market in the second quarter of 2008, representing one third of the total turnover in the euro money market.

This decline in the secured market, stronger even than in the unsecured market, challenges a common perception prevailing before the start of the financial market turbulence, according to which repos and reverse repos were one of the safest ways to limit credit risk and therefore the most suitable means of lending and borrowing in the money market during times of stress. However, as the quality of some securities, including various structured products, was at the heart of the financial market turbulence, it is not surprising that the turbulence also had an adverse impact on turnover in those parts of the secured market where such securities are used as collateral.

Chart 9 Average daily turnover in secured cash lending and borrowing

(index: cash lending volume in 2002 = 100)



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

The financial market turbulence impacted the secured market segment in several ways. First, the supply of liquidity via the secured market contracted owing to increased pressure on banks to reduce their balance sheets. As a result, in the second quarter of 2008 banks were primarily focusing on daily liquidity management and engaged less than before in taking strategic positions. Second, heightened credit risk concerns led investors to adopt more restrictive lending policies, both in terms of securities accepted as collateral and in terms of accepted counterparties. In addition, repo transactions were increasingly restricted to shorter maturities. Third, valuation problems, in particular for structured products used as collateral, also contributed to reduced turnover in the secured market. Fourth, the availability in the repo market of highly liquid collateral with high credit quality declined, because such securities were in high demand from investors who intended to use them to replace less safe or liquid securities in repo transactions, or who saw them as safe havens.

However, it is worth recalling the main structural reasons why secured transactions

remained the biggest segment of the euro money market. These include above all the use of repos as a key source of funding for various financial market participants as well as the advantages of repos and reverse repos over unsecured deposits in limiting credit and funding risk exposures as well as constraints resulting from capital adequacy requirements.

The survey shows that, as in the unsecured market, borrowing activities in the secured market outweighed lending activities during the second quarter of 2008 (Chart 9). This could be related to the fact that the banks participating in the survey tend to be relatively large and may for structural reasons have greater need of funding from market sources than the other banks which are active in the euro money market.

The semi-annual survey published by the European Repo Council (ERC) in June 2008 also revealed a decline in the European secured market. The panel of institutions which participated in several ERC surveys reported an aggregate decline in outstanding amounts of around 4% over the year to June 2008, recording a smaller decline than the decline in turnover found in this survey (16%). However, the diverging growth rates may be the result of the different samples of banks and considerable methodological differences (e.g. outstanding amounts vs. turnover), which are described in Annex 3.

Concerning structural policy developments in the secured market, as of 2007 credit claims, which were only eligible collateral in four countries, became eligible across the whole euro area for monetary policy operations. Box 4 looks into the evolution of the use of collateral in ECB operations over the last two years.

Box 4

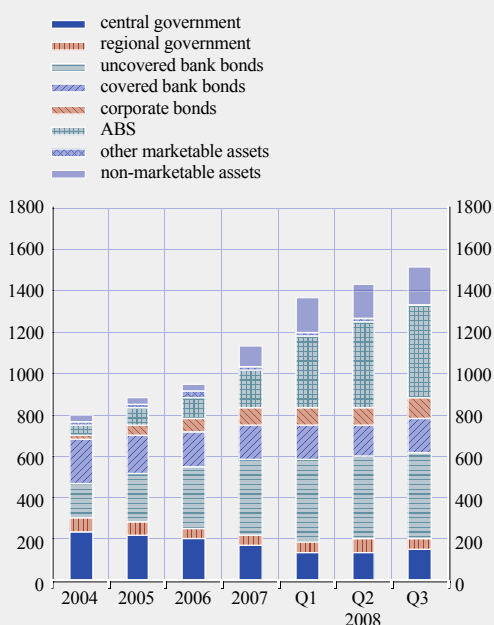
EVOLUTION OF THE USE OF COLLATERAL IN ECB MONETARY POLICY OPERATIONS

Since the start of the financial market turbulence in August 2007 the growth in the amount of collateral deposited with the Eurosystem has significantly accelerated. The average value of marketable and non-marketable assets deposited by counterparties as collateral in Eurosystem credit operations (i.e. liquidity providing monetary policy operations and intraday credit) increased from €959 billion on average in 2006 to €1,148 billion in 2007. This amounts to an average annual growth rate of 20%, up from 7% in 2006. During the first nine months of 2008 the growth in the amount of deposited collateral further accelerated to 33% on annualised basis to reach €1,585 billion at the end of September 2008 (see Chart A).

With regard to the composition of the collateral put forward, the average share of asset-backed securities increased from 11% in 2006 to 16% in 2007 and 29% during the first nine months of 2008, surpassing uncovered bank bonds as the largest class of assets deposited with the Eurosystem. Non-marketable assets, which became eligible for the whole Eurosystem on 1 January 2007, also recorded significant growth, accounting for 12% of the total collateral deposited on average in the first nine months of 2008, compared with 10% in 2007 and 4% in 2006. Conversely, the annual average share of central government bonds dropped from 21% in 2006 to 15% in 2007 and 10% in the first nine months of 2008 (see Chart B).

Chart A Use of collateral

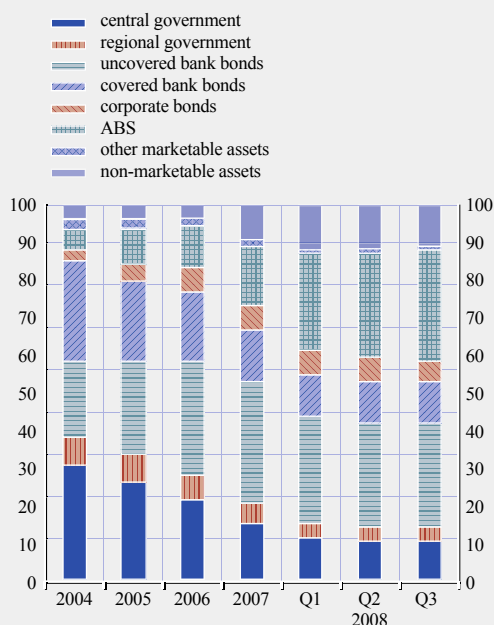
(EUR billion)



Source: ECB.

Chart B Shares of asset types in total used collateral

(percentages)



Source: ECB.

In 2008 the Eurosystem conducted its regular bi-annual review of the adequacy of the risk control framework to ensure that it remains adequately protected against financial risks across time. The review introduced refinements to the risk control measures, which reflect, inter alia, improvements in the methodological framework, the assessment of market and liquidity risk characteristics of eligible assets, the actual use of eligible assets by counterparties and new developments in financial instruments. These refinements, which were communicated by the ECB on 4 September 2008 (http://www.ecb.europa.eu/press/pr/date/2008/html/pr080904_2.en.html) and enter into force on 1 February 2009, require better rating disclosure standards, particularly for asset-backed securities, refine the definition of “close links”, and adjust the haircuts applicable to asset-backed securities and uncovered bank bonds to better reflect their liquidity and credit risk characteristics.

On 15 October 2008 the Governing Council decided to expand the list of eligible collateral on a temporary basis until the end of 2009. Availability of collateral has not been a constraint until recently, due to the breadth and variety of the collateral framework. However, on a forward looking basis, the extension of term liquidity in euro and in US dollars as well as the additional demand for collateral associated with fixed-rate, full allotment tender procedures have warranted a further expansion of the collateral pool. The enlarged collateral set was introduced in two steps as follows.

As of 22 October 2008 the credit threshold for marketable and non-marketable assets has been lowered from “A-” to “BBB-”, with the exception of asset-backed securities (ABS), for which the credit quality threshold of “A-” remains in force. In addition, since 22 October 2008 the Eurosystem has also accepted debt instruments issued by credit institutions, including certificates of deposit, which are not listed on a regulated market, but traded on certain non-regulated markets deemed acceptable by the ECB. Subordinated marketable debt instruments, provided they are protected by an acceptable guarantee and fulfil all other eligibility criteria, can also be used as collateral.

As of 14 November 2008 the Eurosystem also started to accept marketable debt instruments issued in the euro area and denominated in certain foreign currencies, namely US dollar, pound sterling and Japanese yen.

The temporary expansion of the list of eligible collateral may imply an increase in the risks taken by the Eurosystem through its refinancing operations. In order to fulfil the Eurosystem’s statutory obligation to ensure that it remains adequately protected against financial risks over time, adequate risk control measures continue to be carefully and thoroughly applied to the enlarged set of collateral. The expansion of the eligibility criteria is combined with vigilant monitoring of the use of the framework. More information on the temporary measures to expand the collateral framework can be found in the press releases “Technical specifications for the temporary expansion of the collateral framework” (http://www.ecb.europa.eu/press/pr/date/2008/html/pr081017_2.en.html), dated 17 October 2008, and “Further technical specifications for the temporary expansion of the collateral framework” (<http://www.ecb.europa.eu/press/pr/date/2008/html/pr081117.en.html>) of 17 November 2008. Furthermore, the precise eligibility criteria and procedures for Eurosystem credit operations are laid out in the document “The implementation of monetary policy in the euro area”, of which the most recent version was published in November 2008 (<http://www.ecb.int/pub/pdf/other/gendoc2008en.pdf>).

4.2 MATURITY ANALYSIS

For both repo and reverse repo transactions, turnover was concentrated in shorter maturities (Chart 10). In the second quarter of 2008 overnight transactions accounted for 26% of the overall secured market turnover, transactions with maturity between tomorrow/next and one month represented 69%, while transactions with maturities over one month represented 5%. As in previous studies, the maturity band from tomorrow/next to one month remained the most traded.

The share of overnight business continued to grow, much more so than in previous years, and accounted for 26% of total secured market turnover in the second quarter of 2008, compared with 16% in the second quarter of 2007 and 14% in the second quarter of 2006. This seems to indicate that during the financial market turbulence the secured market was used for a substantial part of banks' daily liquidity management, thus replacing to some extent the unsecured business. Moreover, it appears that various technical improvements, in particular as regards cross-border settlements, benefited secured transactions with overnight settlement. In particular, trading on the electronic platform Euro GC Pooling (Box 5 below) contributed to the increase in overnight settlement, thanks to its high settlement efficiency and to the fact that it

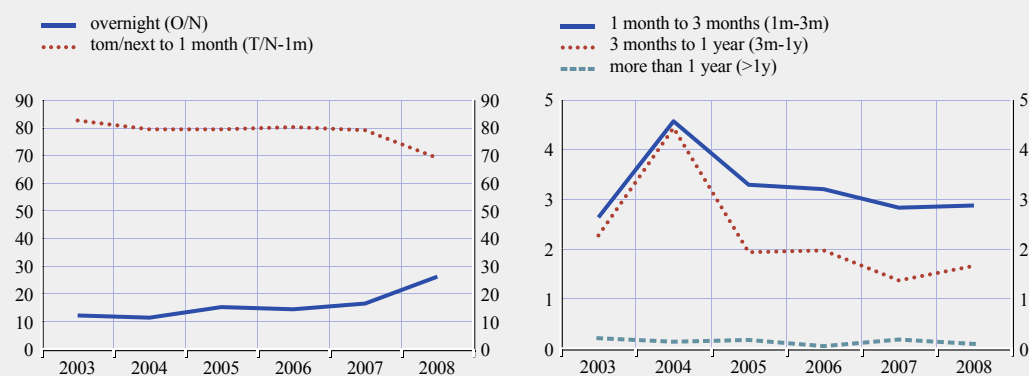
provided welcome anonymity for counterparties during the financial market turbulence. This analysis is confirmed by the answers to the survey's qualitative questions, which indicated that for the secured market segment the share of electronic platforms in total turnover remained at a high level, largely unchanged from the previous year, while for most other segments the share of electronic trading platforms was low and/or declining.

Triparty repos contributed significantly to the increase in turnover at the short end of the secured market. This outcome is not surprising, because triparty repos are more likely to be used than standard repos for the short maturities. The share of overnight maturities in the triparty repo segment was 41% in 2008, compared with 24% in 2007. In the second quarter of 2008 triparty repo transactions seemed to be attractive in particular for some traders who raised cash by lending government papers in bilateral repos and invested the proceeds in triparty transactions, thus earning a significant interest rate premium as compensation for the fact that they received a lower grade of collateral (see also section 4.4).

A comparison of maturity-weighted volumes shows that the bulk of outstanding transactions still go beyond one-week maturities. For reverse repo transactions (cash lending) between 2007 and 2008 there was a continuing shift to overnight

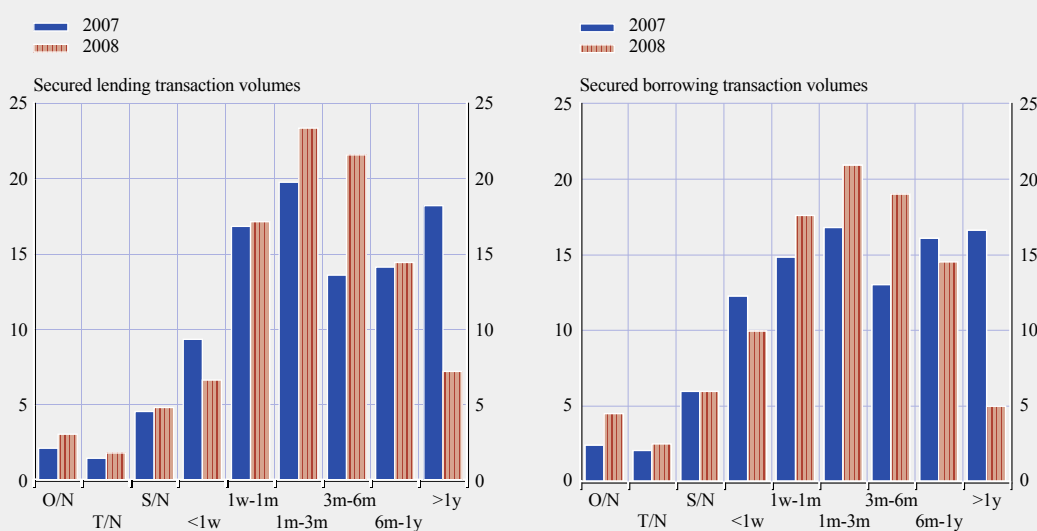
Chart 10 Maturity breakdown for overall secured lending and borrowing activities between 2002 and 2008

(percentages of total)



Note: The panel comprised 109 credit institutions.

Chart 11 Maturity breakdown for (maturity-weighted) secured lending and borrowing in 2007 and 2008



Note: The panel comprised 164 credit institutions.

maturity, which probably occurred at the expense of transactions with maturity beyond overnight and up to one week. However, there was also a shift towards maturities between one and six months, the share of which increased from 34% in 2007 to 45% in 2008 (Chart 11). Although this does not seem to fit into the general pattern of behaviour in times of stress, when shorter maturities are favoured, some cash-rich banks may have chosen to marginally lengthen their cash lending to take advantage of wide spreads in term reverse repos against the highest quality collateral. Meanwhile, the share of turnover represented by maturities above one year declined sharply from 18% in 2007 to 7% in 2008.

The changes in the maturity structure for repo transactions displayed a similar pattern to those of reverse repo transactions.

A comparison with the maturity structure coming out of the ERC survey yields some discrepancies, probably 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 finds a much larger amount of business with an initial maturity of one business day

(75% of overall secured market turnover in the second quarter of 2008, including “overnight”, “tomorrow/next”, and “spot/next”), while the ERC semi-annual survey released in June 2008 only reports a 15% share of outstanding amounts for the one business day maturity.

4.3 MARKET STRUCTURE

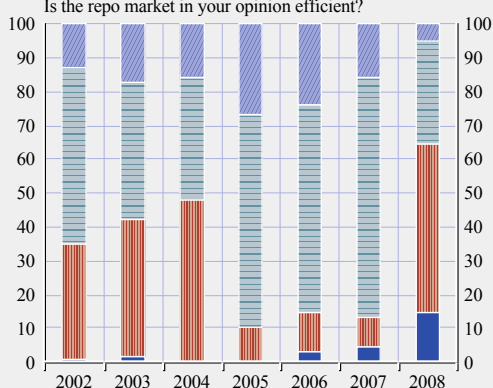
The answers to the survey’s qualitative questions show a deterioration in market efficiency (Chart 12). Whereas in the second quarter of 2007 the majority of respondents (78%) deemed the secured market to be significantly to extremely efficient, in the second quarter of 2008 the majority of respondents described the segment’s efficiency as sufficient to limited. This result could be attributed to the positive assessment prevailing in financial markets in the first half of 2007, which fuelled expectations that turnover in the repo market would remain on a rising trend. This belief changed significantly in the second half of 2007 and in 2008. This interpretation is consistent with the fact that 75% of respondents in the second quarter of 2008 saw a deterioration in market liquidity (Chart 13), compared with only 3% of respondents in the second quarter 2007.

Chart 12 Efficiency assessment by respondents in the secured market

(percentages)

- limitedly
- sufficiently
- significantly
- extremely

Is the repo market in your opinion efficient?

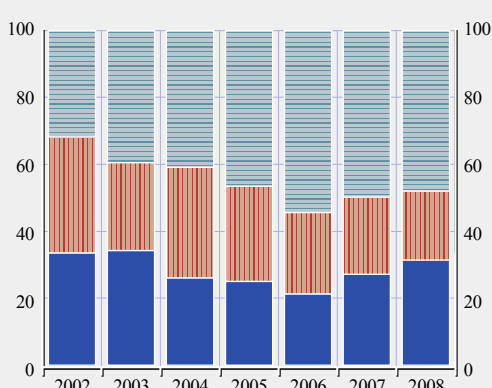


Note: The panel comprised 109 credit institutions.

Chart 14 Trading structure breakdown

(percentages of total)

- direct trading
- voice broker
- electronic trading



Note: The panel comprised 109 credit institutions.

With regard to the trading structure (Chart 14), in the second quarter of 2008 the share of transactions in the secured market conducted via electronic trading platforms continued to be the

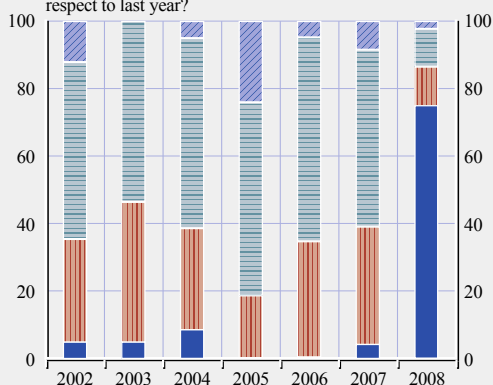
highest of all market segments surveyed, with 48% executed via electronic trading platforms, 20% via voice broker and 32% directly. This could be explained by the popularity of general collateral (GC) repos which are a standardised product that can easily be traded electronically. Moreover, trading of baskets of securities as collateral, rather than individual securities, is becoming widespread, which also explains why the secured market segment is the most suitable for electronic trading. According to observers, the leading electronic trading platforms for the secured segment of the euro money market are ICAP BrokerTec, Eurex Repo and MTS.

Chart 13 Liquidity assessment by respondents in the secured market

(percentages)

- worsened slightly
- not changed
- improved slightly
- improved significantly

Has market liquidity in the repo market changed with respect to last year?



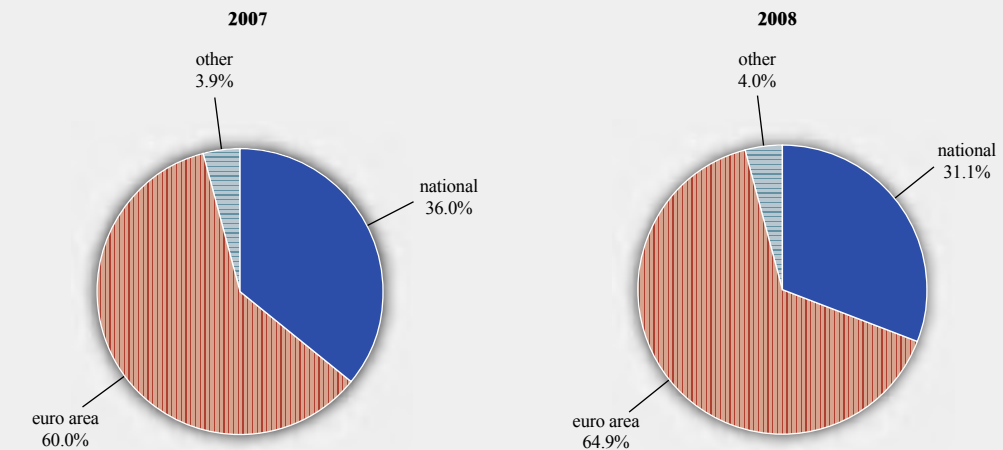
Note: The panel comprised 109 credit institutions.

Compared with the second quarter of 2007, the shares of all trade channels used in the secured market were virtually unchanged in the second quarter of 2008. However, the share of direct trades slightly increased (by 2 percentage points), largely because market players showed an increased preference for trading with specific counterparties.

A geographical breakdown of collateral in the secured market reveals a further increase in the share of collateral issued by entities located in

Chart 15 Geographical collateral breakdown for bilateral repos

(percentages of total)



Note: The panel comprised 164 credit institutions.

the euro area but across national borders, at the expense of collateral issued by entities located in the same country (Chart 15).

The figures thus indicate that the integration of the repo market across the euro area continued despite the turmoil. International Central Securities Depositories (ICSDs), such as Clearstream and Euroclear, and central counterparties (CCPs), such as Eurex Clearing and LCH.Clearnet, which also provide clearing and settlement services for transactions conducted on electronic repo trading platforms, such as Eurex Repo with its instrument Euro GC pooling, facilitated further integration in this market segment (Box 5). The new ICAP Broker Tec and MTS standardised basket trading (euro GC) may also be contributing to this development. However, the diversity in the types of security used in the euro area and the prevailing fragmentation in terms of infrastructure remain major obstacles to further integration.

A geographical analysis of counterparties also provides evidence of the increasing degree of integration in the euro secured market. The share of all deals that were executed between

counterparties from two different euro area countries rose from 42% in 2007 to 48% in 2008, at the expense of the declining share of counterparties from the same country, which declined from 38% in 2007 to 31% in 2008. In the remaining 21% of deals in 2008 one party to the transaction was located outside the euro area. This result, in contrast with the one observed in the unsecured market, shows that the phenomenon of repatriation of the money market is specific to the unsecured segment while the repo market became even more integrated at the level of the euro area.

The level of concentration of both reverse repos and repos declined somewhat in the second quarter of 2008: the largest five banks accounted for 31% of total turnover, compared with 35% in the second quarter of 2007. The top ten banks' share of turnover also declined slightly, from 56% to 51%. The share of the top ten banks in triparty repos was markedly higher, however, accounting for 91% in the reverse repo and 89% in the repo segments in the second quarter of 2008, representing an increase of 1% and a decrease by 10% respectively compared with the second quarter of 2007 (see also section 4.4).

Box 5

EURO GC POOLING DEVELOPMENT DURING THE FINANCIAL MARKET TURBULENCE

To cater for market participants' increasing preference for secured money market transactions, in March 2005 Eurex Repo, a major electronic repo market provider, launched a collateralised money market trading product, called Euro GC Pooling. During the ongoing financial market turbulence, trading in Euro GC Pooling has shown a high degree of resilience. This segment of Eurex Repo allows market participants to seamlessly complete and automatically process repo trades, in particular secured overnight transactions, by offering a combination of anonymous trading together with the efficiency and security of using a CCP.

Since the start of the financial market turbulence in August 2007, while decreasing turnover was observed in the secured market as a whole, the overall outstanding volume of Euro GC Pooling continuously increased from just above €10 billion to a record high of nearly €58 billion in October 2008. The traded volume in repos with overnight maturity reached a daily average of nearly €8.5 billion in October 2008, compared with €5.5 billion a year earlier. Even though daily trading volumes in term repos are significantly lower than overnight, a limited number of trades with terms of up to one year are conducted on a daily basis, even during 2008 when the financial market turbulence was severe. Furthermore, in 2008 the number of Euro GC Pooling participants increased by seven to 28 in October 2008.

Euro GC Pooling offers the possibility of reusing the collateral received in a repo transaction in other transactions as well as in the monetary policy and intraday credit operations of the Eurosystem via the Deutsche Bundesbank. In September 2007 trading in Euro GC Pooling was made more appealing to banks which use Clearstream Banking Luxembourg (CBL) as custodian by linking up CBL's CmaX (Collateral Management Exchange) international triparty collateral pools with XEMAC, the collateral management service offered by Clearstream Banking Frankfurt (CBF), thus creating a single virtual collateral pool for all Euro GC Pooling transactions.

The standardised Euro GC Pooling collateral basket is defined as a subset of the ECB's Eligible Assets Database (EAD) and includes Eurobonds, government bonds, covered bonds and agency bonds issued in Austria, Belgium, France, Germany, Italy, Luxemburg and the Netherlands.

In 2008 the volume-weighted overnight rate for Euro GC Pooling overnight transactions has on average shown a strong positive correlation with Eonia. However, since 9 October 2008, a day after the coordinated rate cuts by several central banks, including the ECB, the Euro GC Pooling overnight rate has been consistently lower than Eonia. This may indicate an increase in the perceived value of secured transactions with high-quality and highly liquid collateral. In particular, repo rates tend to fall when high demand for top collateral meets a reduced supply.

In the first half of 2009 Eurex Repo plans to establish and publish the Euro GC Pooling overnight index, an overnight reference rate for the secured euro money market, as a complement to existing euro reference interest rates (see Box 2).

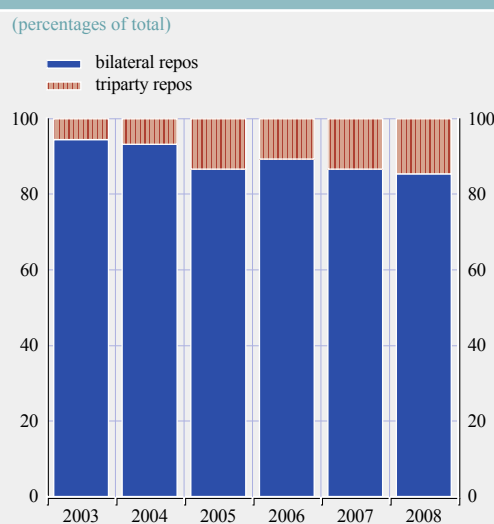
4.4 TRIPARTY REPOS

Since 2003 the survey has also covered triparty repos as a part of the secured market.⁷ In the second quarter of 2008 the reported overall triparty repo business, including reverse repo and repo transactions, contracted by 9% compared with the second quarter of 2007 for the overall sample of 164 banks. However, the breakdown between repo and reverse repo transactions shows very divergent trends: while the volume of triparty reverse repo transactions (cash lending) grew sharply by 31%, it decreased by 29% for repos (cash borrowing), reflecting increased concentration of business towards the panel banks. This discrepancy could be related to the use of triparty repos more as emergency funding, because of their high costs for cash borrowers (fat margins). Some banks also reported that they had strengthened their triparty repo agreements by allowing a narrower choice of “better” collateral accepted in the repo contracts. This may also have caused lower turnover, owing to a decline in the available collateral. Despite the decline in triparty business, the share of triparty repos in the overall secured market increased slightly to 15% in 2008 from 14% in 2007 due to an even larger contraction in the total size of the market (Chart 16).

Results for the constant panel of 109 banks also exhibit a decline in the triparty business. Moreover, both repo (-29%) and reverse repo (-3%) recorded declines in 2008 compared to 2007.

In general, the share of triparty business in the euro money market remains significantly lower than other currencies, in particular the US

Chart 16 Total repo market breakdown



Note: The panel comprised 109 credit institutions.

dollar, for which triparty repo transactions are estimated to represent around 50% of the total repo market.

Table 2 shows the concentration levels for triparty repos, indicating a high level of concentration, with the top ten banks accounting for a very large share of the market.

Triparty repos were mainly conducted in the “overnight up to one week” maturity band. In particular, the 2007 and 2008 surveys showed a strong focus on overnight, tomorrow/next and spot/next maturities. Chart 17 shows that

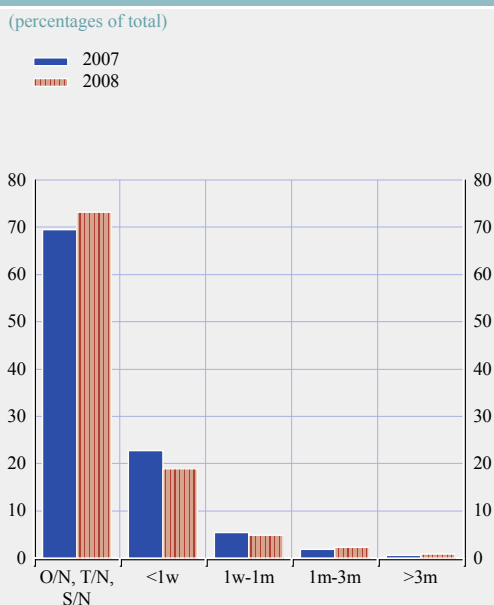
⁷ A triparty repo is a repo that involves a third party, usually a custodian bank or an international central securities depository (ICSD) acting as an agent for both the collateral taker and the collateral provider. These two parties outsource their back office and middle office functions to the triparty agent, who handles the settlement as well as collateral management during the life of the trade.

Table 2 Concentration of triparty repo activity in Q2 2008

(percentages)		
	Reverse repo	Repo
Top 5 banks	70.1	71.8
Top 10 banks	91.0	88.7
Top 20 banks	99.7	99.5

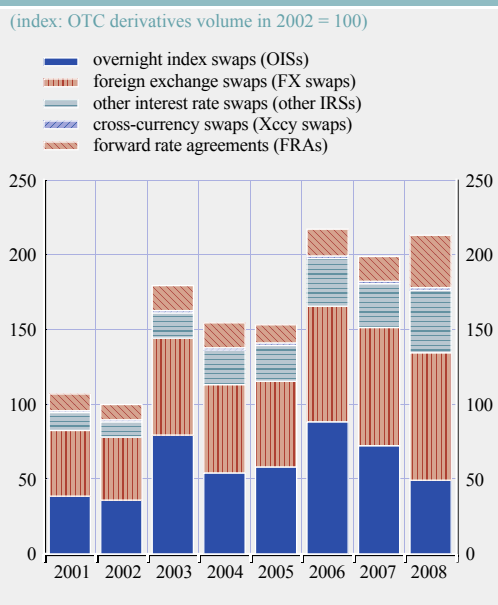
Note: The panel comprised 164 credit institutions.

Chart 17 Maturity breakdown for average daily turnover in the triparty repo market



Note: The panel comprised 164 banks.

Chart 18 Average daily turnover in the various OTC derivatives markets



Note: The panel comprised 85 credit institutions in 2001 and 109 credit institutions thereafter.

turnover tended to decline with maturity. This could be attributed to the increased efficiency of STP arrangements and easier use of cross-border collateral. These findings are also confirmed by other surveys. According to the ERC survey, there were more triparty repos than bilateral repos recorded in the one day/overnight segment.

5 DEVELOPMENTS IN OTC DERIVATIVES MARKETS

5.1 TURNOVER ANALYSIS

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

The reported transaction volumes in the OTC derivatives market decreased in the second quarter of 2007 for the constant panel of 109 credit institutions from its highest level registered in the second quarter of 2006 but subsequently recovered in the second quarter of 2008. Compared with 2007, activity in derivatives rose by 7%, with divergent evolution in the different market segments. The main contributors to the increase were the other IRS and FRA segments, whereas the OIS market recorded the largest decline. Measured by volume, the OIS and FX swap markets remained the biggest OTC derivatives segments, but trading activity in other IRS is close to that of OIS since the latter's decline. Turnover in FRAs also increased notably, partly benefiting from lower liquidity in shorter-dated OIS. The cross-currency swap market remained relatively modest.

In the second quarter of 2008, the daily average turnover of Eonia swaps fell by 32% compared to the same period of 2007. Since the start of the financial market turmoil the OIS market

has suffered from lower liquidity and high spread volatility, partly caused by the reduction in the number of active market makers as well as by reduced hedging activity due to the decline in unsecured borrowing. The lower liquidity in shorter-dated OIS together with the disconnection between Euribor and OIS rates encouraged market players to hedge their exposures to the unsecured market through other instruments like FRAs or Euribor-based IRS.

The steady expansion of the other IRS segment recorded before 2006 came temporarily to a halt in the second quarter of 2007, but resumed and even gathered steam in the second quarter of

2008, rising by 43%. As stated previously, the shift from OIS to other IRS contributed to this trend. In addition, other IRS also benefited from the higher popularity of curve positioning trades (e.g. IRS receiving Euribor three-month against paying Euribor six-month).

The volume in the FRA market more than doubled in the second quarter of 2008, reaching 17% of total OTC derivatives' turnover, after being broadly stable from 2006 to 2007, when it accounted for 9% of the OTC derivatives market. Like other IRS, the FRA segment benefited from the wider spread between the Eonia swap and Euribor rates since the outset of the financial market turmoil (Box 6).

Box 6

A DECOMPOSITION OF EURIBOR SPREADS

With the start of the financial market turbulences in August 2007, interest rate spreads between unsecured (Euribor) and secured (Eurepo) term interbank money markets increased significantly (see Chart A). This development can partly be explained by higher credit risk premia. Indeed, the perceived risk of a default of the borrower in an interbank loan transaction, measured by spreads of credit default swaps (CDSs) on banks, also moved up with the start of the turbulence.

However, a comparison of Euribor-Eurepo spreads and CDS spreads indicates that higher credit risk premia alone may not be able to explain money markets spreads.¹ It can be argued that, in the absence of liquidity problems, the spread of a one-year CDS on a specific bank should be approximately equal to the spread of the interest rate that this bank has to pay on a one-year unsecured loan over the one-year risk-free interest rate (e.g. the repo rate). If the CDS spread is below this interest rate spread, then market participants could make arbitrage-like profits. They could raise funds in the repo market, lend them unsecured to the bank and buy protection via a CDS on the same bank.²

Euribor is defined as the rate at which euro interbank term deposits are offered by one prime bank to another prime bank ("the best price between the best banks").³ Under the assumption that "prime banks" are offered relatively low rates when they borrow unsecured funds, Euribor could be considered as a lower bound for unsecured interbank lending. Banks should normally not be able to borrow significantly below Euribor. With this in mind, it can be assumed that arbitrage-like profits may be possible, in the absence of liquidity problems, if average (one-year) CDS

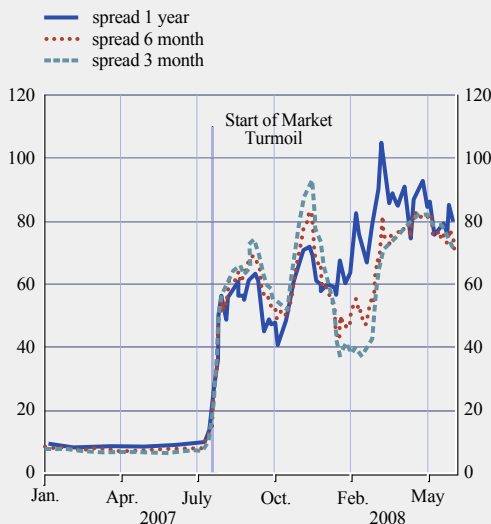
1 For a detailed analysis, see Eisenschmidt and Tapking (2008), "Liquidity risk premia in unsecured interbank money markets", forthcoming ECB Working Paper

2 The arbitrage is not perfect though. For example, the CDS will have a bond issued by the bank as a reference obligation, and not the interbank loan granted to the bank.

3 Quoted from the Euribor Code of Conduct, see www.euribor.org.

Chart A Euribor-Eurepo spreads

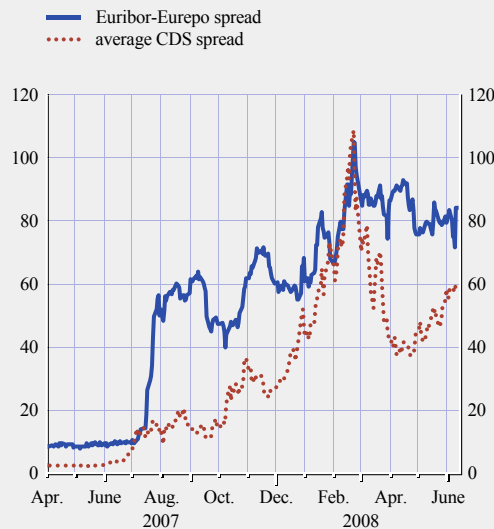
(in basis points)



Sources: EBF/ACI.

Chart B Euribor one year spread versus average spread of CDSs on Euribor panel banks-Eurepo spreads

(in basis points)



Sources: Bloomberg and www.eurepo.org

spreads on banks are below (one-year) Euribor-Eurepo spreads, as CDSs should only reflect the credit risk.

Chart B shows that before the start of the turbulence the one-year Euribor spread exceeded the average bank CDS spread by only a few basis points. However, at the very beginning of the turbulences the difference between the two spreads had already risen to more than 40 basis points and has remained high most of the time since then.

Why do Euribor-Eurepo spreads remain at levels that seem open to arbitrage opportunities? A possible explanation refers to the funding liquidity risk taken by the lender of an unsecured interbank loan. This is the risk that the lender may experience a liquidity shock and need the funds before the loan matures. In this case, he would need to raise funds at the time of the liquidity shock. If he expects that he could do so only at elevated rates, for example because he cannot revert to the repo market due to a lack of collateral, then he will demand a liquidity risk premium on top of the credit risk premium when he offers unsecured term loans. If borrowers are not ready to pay this premium, then the lender will prefer to lend funds repeatedly on an overnight basis rather than for a longer term.

FX swap market volumes stabilised in the second quarter of 2007, but increased by 7% in the second quarter of 2008. The FX swap market held up well in difficult market conditions, with a relatively low bid-ask spread compared to other segments of the money market. Many European banks continued using FX swaps for liquidity management purposes. The main dislocation in the FX market came in the second

half of 2008 which was followed by the new measures from the ECB and the Federal Reserve to reinforce the provision of US dollar funding to Eurosystem counterparties under the Term Auction Facilities (TAF) scheme.

Turnover in the cross-currency swap segment rose by 51% in 2008. This was partly linked to issuance activity in different currencies as

flight to quality flows limited the opportunities for smaller corporate issuers to gain access to the US dollar or euro bond markets. Overall turnover in this segment remained very modest, as it is a rather specific and more complex market.

5.2 MATURITY ANALYSIS

As already mentioned, *OIS* volumes fell by 32% in 2008 (Chart 19), falling even below the levels attained in 2004. The reduction took place mostly in the “up to one month” maturity bucket, i.e. within the minimum reserve maintenance period. The contracts expiring in one month or less were roughly stable between 2006 and 2007, but fell by 50% in 2008. Generous liquidity allotments above the neutral benchmark in the ECB’s weekly main refinancing operations (although the final liquidity provision over a maintenance period remained stable) reduced the hedging needs for periods up to one month. This liquidity policy, which also led to higher volatility in overnight rates and lower Eonia predictability, may have also contributed to a widening of the bid-offer spread quoted by the Eonia swap market makers, discouraging some of them from dealing in shorter maturities and therefore causing a decrease in turnover of shorter-dated *OIS*.

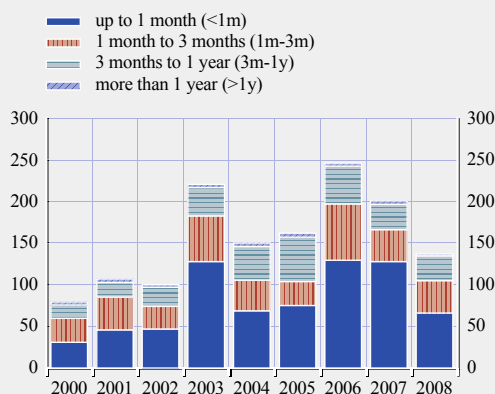
Against this background, the maturities between one month and three months, although stable, gained in relative terms. The one-month historical volatility in Eonia swaps in 2008 compared to the previous two years showed a diverging pattern in the different maturity buckets. In the one-month maturity bucket, the historical volatility in 2008 was only half that of 2007, while in the one-year maturity bucket it more than doubled. The elevated volatility in more than 3-month maturities made longer-dated *OIS* hedges more useful and may have helped to stabilise their turnover.

Looking at the maturity-weighted distribution of *OIS* turnover (Chart 20), a strong decrease in shorter maturities can be observed between 2007 and 2008. The proportion of maturities shorter than one month almost halved in 2008. Only 13% of maturity-weighted *OIS* were concluded at maturities shorter than one-month, with three quarters of the turnover fairly evenly spread among maturities between one-month and one-year.

The breakdown of turnover by maturity also showed wide swings in the other *IRS* segment (Chart 21). All the maturities up to ten years decreased substantially between 2006 and 2007 before rising to the highest levels since the start

Chart 19 Average daily turnover in the *OIS* segment

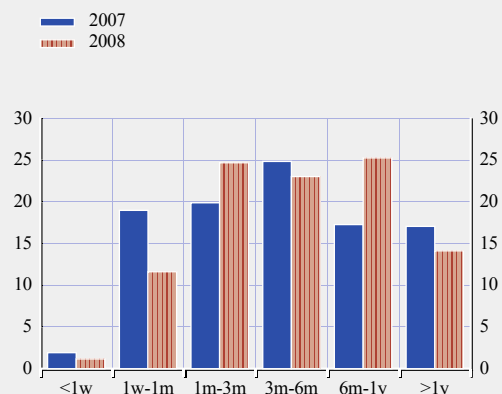
(index: *OIS* volume in 2002 = 100)



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 20 Maturity-weighted breakdown for average daily turnover in the *OIS* segment

(percentages of total)

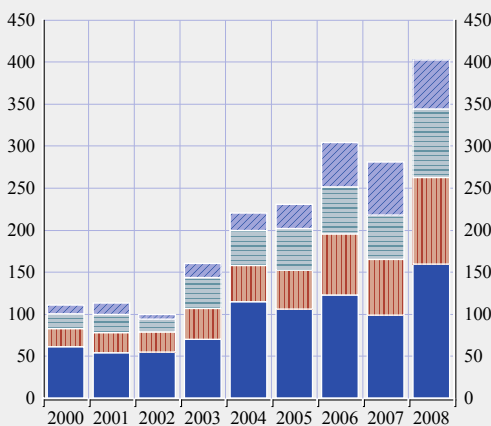


Note: The panel comprised 164 credit institutions.

Chart 21 Average daily turnover in the other IRS segment

(index: other IRS volume in 2002 = 100)

- up to 2 years (<2y)
- 2 years to 5 years (2y-5y)
- 5 years to 10 years (5y-10y)
- more than 10 years (>10y)

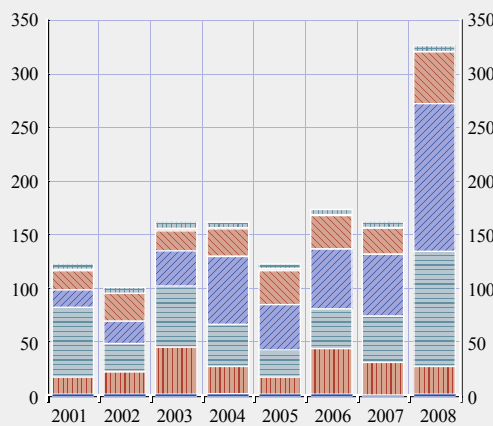


Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 23 Average daily turnover in the FRA segment

(index: FRA volume in 2002 = 100)

- up to 1 week (<1w)
- 1 week to 1 month (1w-1m)
- 1 month to 3 months (1m-3m)
- 3 months to 6 months (3m-6m)
- 6 months to 1 year (6m-1y)
- more than 1 year (>1y)



Note: The panel comprised 85 credit institutions in 2001 and 109 credit institutions thereafter.

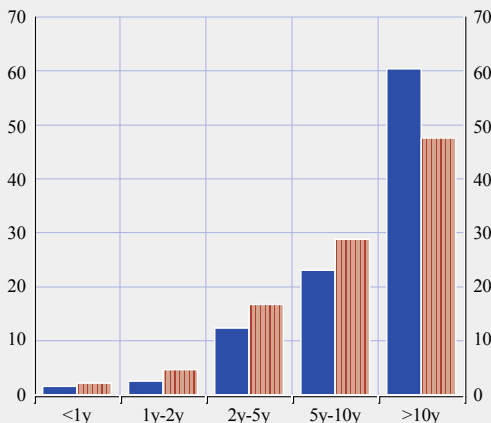
of this survey in 2008. The longer than ten-year IRS segment moved in the opposite directions, although less strongly. The significantly increased volume overall was probably due

to basis trading, e.g. curve positioning trades buying two-years IRS and simultaneously selling five-years IRS.

Chart 22 Maturity-weighted breakdown for average daily turnover in the other IRS segment

(percentages of total)

- 2007
- 2008

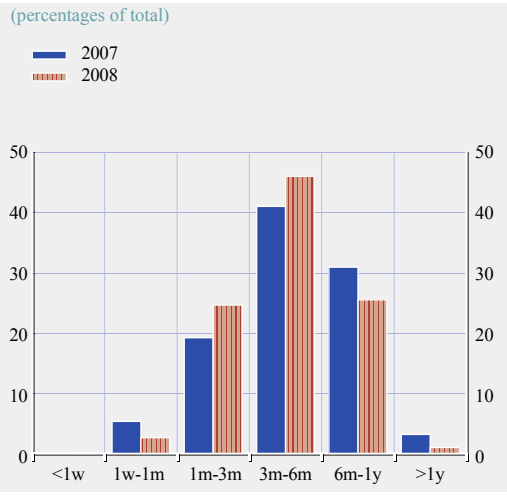


Note: The panel comprised 164 credit institutions.

The maturity-weighted breakdown of turnover of the other IRS segment (Chart 22) illustrates the high market share of the longest IRS. However, the more than ten-years maturity bucket decreased from 60% in 2007 to just under half of the total volume of other IRS turnover in 2008, a similar level to that recorded in 2006.

Looking at the long term evolution of FRAs (Chart 23), the striking feature is the large rise in turnover in the one-month to six-month maturity buckets. Turnover in the six-months to one-year maturity bucket also grew strongly. As previously mentioned, some hedging activity which in previous years was carried out through OIS was switched to FRAs as a result of the decoupling of the previously closely related Euribor and Eonia swap rates. Overall, the maturity-weighted data (Chart 24) show a decrease in the six-month to one-year maturity bucket in favour

Chart 24 Maturity-weighted breakdown for average daily turnover in the FRA segment

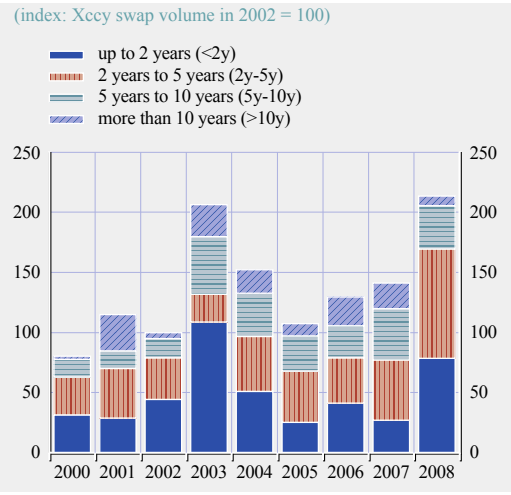


Note: The panel comprised 164 credit institutions.

of maturities between one and three months that now represent 70% of the total activity in this market segment.

Turnover in FX swaps (Chart 25) has barely changed over the last two years, representing a stable share of around 40% of the global turnover in OTC derivatives. The one-month to three-month maturities and, to a lesser extent, those between three-months and one-year

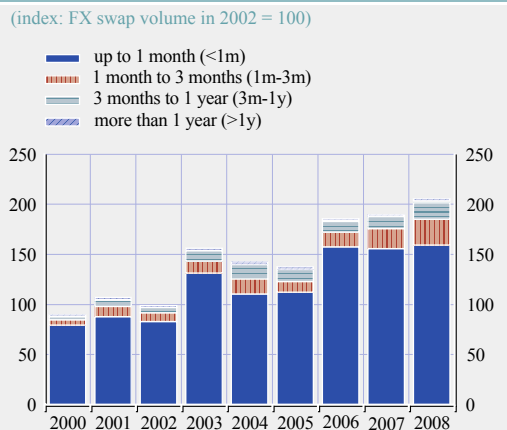
Chart 26 Average daily turnover in the Xccy swap segment



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

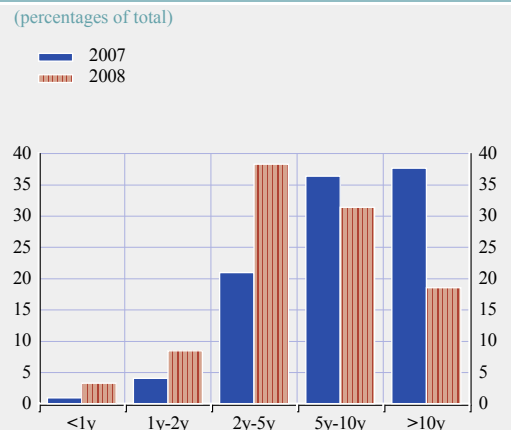
exhibited the most significant increases. The stability in the FX swaps segment was reflected in the low bid-ask spreads that made it possible for European banks to fund US dollar assets through this instrument. The recent dislocation of the FX swaps market came essentially after the second quarter of 2008, i.e. after end of reporting. Short maturity FX swaps, which represent the bulk of activity, fell back to the 2006 level.

Chart 25 Average daily turnover in the FX swap segment



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 27 Maturity-weighted breakdown for average daily turnover in the Xccy swap segment



Note: The panel comprised 164 credit institutions.

In 2008 *cross-currency swaps* grew strongly in the two shorter maturity buckets (Chart 26). In fact, in maturity-weighted terms (Chart 27), the segment between two and five years became the largest, accounting for more than 35% of turnover in 2008 compared to 21% in 2007. Conversely, maturities longer than ten years halved from 38% in 2007 to 19% in 2008. Although some counterparties indicated that the limited access to US dollar funding boosted activity in cross-currency swaps, this market remains very customer oriented and limited in size.

5.3 MARKET STRUCTURE

Concerning the efficiency of the various OTC derivatives market segments, participating banks have continued to regard OIS, other IRS and FX swaps as the most efficient market segments, while the cross-currency swap markets is considered to be the least efficient segment. Qualitative data for the second quarter of 2008 indicate that respondents believe the efficiency of all the market segments in the OTC derivatives market deteriorated somewhat in 2008, although to a lesser extent than the unsecured and secured markets.

Most participating banks felt that the liquidity of the main OTC derivatives market segments had worsened in 2008 compared with 2007 due to market turbulence. Market liquidity in the OIS segment was the most affected, with 77% of respondents saying liquidity conditions had deteriorated. It was closely followed by the other IRS and FX swap segments, with 67%

and 65% respectively, while liquidity in the cross-currency swap and FRA segments was said to have deteriorated by 55% and 44% of respondents respectively. On the other hand, 44% of participants were of the opinion that the FRA liquidity had improved, showing differing views on this particular market segment.

The drop in liquidity in the OIS market is attributed mainly to the tensions in the financial markets. First, both the number of market makers and the average traded amount decreased and, second, the bid-ask spread also widened significantly as a consequence of the decoupling of unsecured borrowing rates from OIS rates.

The results of the geographical counterparty analysis show that OTC transaction volumes traded with euro area counterparties increased slightly to around 45% of the total in 2008. Trades between domestic counterparties also increased, albeit only marginally, to around 23% by volume in 2008. This reflects a reorientation of activity towards the euro area and the domestic market as a result of the turmoil, reversing the trend observed in recent years.

As for the trading structure, the share of activity in the OTC derivatives market concluded directly with counterparties declined compared to 2007, while, for the first time since the start of the survey, transactions via voice broker were reported to be the most popular means of trading. The widening of the bid-ask spread contributed to this trend as it encouraged some traders to find a match through a voice broker in order to deal inside this spread. Voice brokers were the

Table 3 Execution of transactions with counterparties in 2008

(in %)	Direct	via Voice Broker	via Electronic Broker
OIS	34	59	8
FX Swaps	40	32	27
IRS	45	39	16
X-ccy Swaps	46	53	0
FRA	32	52	16

Note: The panel comprised 164 credit institutions.

Table 4 Concentration for OTC derivatives in Q2 2008

	OIS	Other IRS	FRAs	FX swaps	Xccy
Top 5 banks	41.2	66.2	50.9	44.0	57.6
Top 10 banks	67.1	79.3	80.2	61.3	74.2

Note: The panel comprised 164 credit institutions.

main channel for OIS (59%), cross-currency swap (53%) and FRA (52%) transactions, while direct dealing with counterparties was the predominant channel for other IRS (45%) and FX swaps (40%). In the FX swap market, transactions are concluded fairly evenly with direct counterparties, brokers and electronically. Electronic trading is also important in the FRA and other IRS segments (16% each), whereas for cross-currency swaps and OIS electronic platforms are hardly used.

In terms of concentration (Table 4), the data show that activity in the euro OTC derivatives market remains quite concentrated, particularly for FRAs, other IRS and cross-currency swaps. In fact, concentration has increased slightly in most segments, reflecting elevated counterparty risk considerations.

6 DEVELOPMENTS IN THE SHORT-TERM INTEREST RATE FUTURES AND OPTIONS MARKETS

Although the credit crunch may have adversely affected activity in some money market segments, other segments, such as exchange-traded derivatives, have flourished due to increasing concerns among market participants about credit and liquidity risks. In this environment, activity in the euro short-term interest rate futures and options markets has continued to expand robustly since the last survey, recording double digit growth. The financial turbulence that erupted in mid-2007 seems to have accelerated the growth in trading volumes that reached new record highs in recent months. Much of the increase in volume came with the higher volatility in short-term interest rates, as market participants had to adjust their

hedge positions more frequently than in periods of stable interest rates. It is also possible that market participants shifted some trading from the spot or OTC derivatives markets to the exchanges, either because of lower perceived counterparty risk, given the existence of a central counterparty, or because of greater market transparency.

The most important exchange-traded derivative instruments on short-term euro interest rates are included in Euronext.liffe's three-month Euribor interest rate contract suite.⁸ This contract suite accounts for over 99% of euro denominated exchange-traded short-term interest rate derivatives and comprises the most liquid and most heavily traded euro denominated short-term interest rate contracts in the world. The Euribor futures and options contract is a well-established global benchmark used throughout the world to manage exposure to euro interest rates. This benchmark status reflects both the concentration of global liquidity in these instruments and the increasing use of the euro as an international reserve currency.

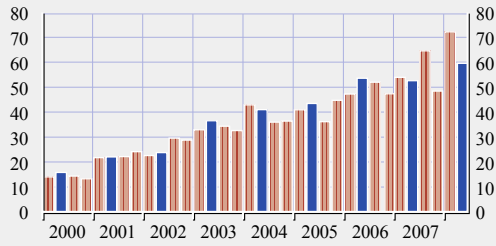
An analysis of Euronext.liffe's data (Chart 28) shows that in the second quarter of 2008 the daily average volume of the contract suite reached approximately 1.4 million contracts, against around 1 million in the same period in 2006 and 2007. Overall, the second quarter year-on-year growth rate, which has been 24% on average since 2001, increased to 29% in 2008. In the second quarter of 2008 the trading volume on three-month Euribor futures increased by 13% year-on-year, while options increased by 84%.

⁸ The contract suite comprises a futures contract, an option on the futures contract, and a one-year mid-curve option on the futures contract.

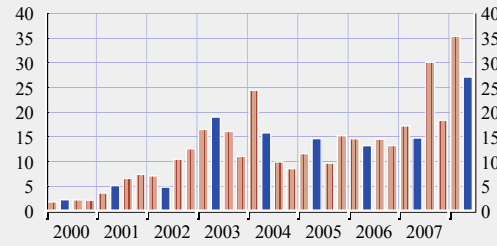
Chart 28 Developments in Euribor short-term interest rate futures and options between 2000 and 2008 – number of contract traded in each quarter

(in millions)

3-month Euribor futures traded on Euronext.liffe



3-month Euribor options traded on Euronext.liffe



Source: Euronext.liffe

New monthly record highs were registered for both interest-rate products in August 2007.

Contracts on Euribor futures continued to dominate short-term interest rate futures trading on Euronext.liffe, although they have lost some ground in recent years. In the second quarter of 2008 Euribor futures contracts accounted for 65% of the total volume on Euronext.liffe.

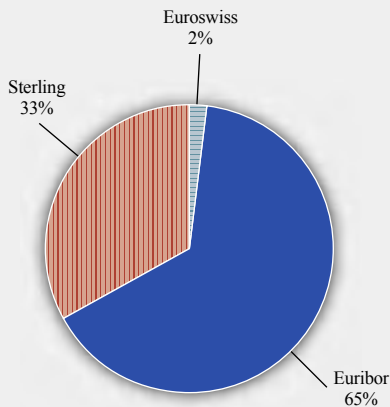
In 2007 Euronext.liffe extended the trading hours of the Euribor futures contract further into the Asian trading day, reflecting the increasing

international use of the contract. Indeed, since 25 June 2007 the trading day of the Euribor futures contract ranges from the opening in Tokyo (1 a.m. London time) to the close in Chicago (9 p.m. London time). In this way, market participants based in Europe, America and Asia are able to trade Euronext.liffe's benchmark Euribor futures contract during their trading day, which is also seen as an important driver for the increasing liquidity of this instrument.

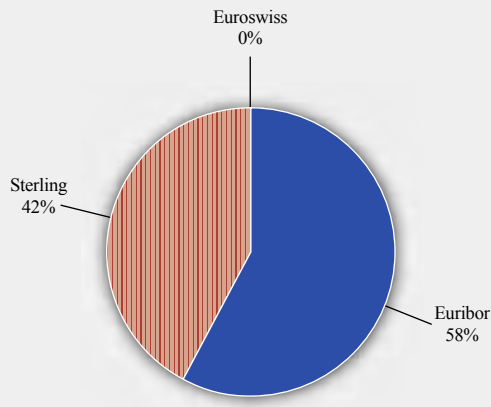
The qualitative part of this year's survey confirms that the bulk of the interviewed

Chart 29 Breakdown by volume of short-term interest rate futures and options in Q2 2008

Short-term rate futures



Short-term rate options



Source: Euronext.liffe.

banks assess the Euribor futures market as either significantly (27%) or extremely efficient (52%). However, there has been a deterioration of this sentiment. Indeed, in 2007 62% of respondents perceived the futures market as extremely efficient and 29% as “significantly” efficient. As for market liquidity, the majority of interviewed banks (68%) mentioned that it had not changed, while 21% said that liquidity had slightly worsened in 2008.

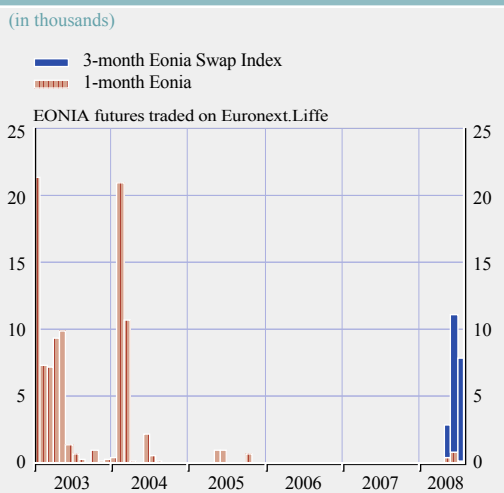
Turning to the options market (Chart 29), both longer-dated Euribor mid-curve options⁹ and standard Euribor options trading volumes have soared since the last survey. As in the futures market, the turbulence in international financial markets also seems to have left its imprint in this segment. However, in contrast with the developments in the futures business, the share of Euribor options activity on Euronext.liffe increased from 53% in 2006 to 58% in the second quarter of 2008. In terms of market efficiency, 12% of survey participants reported that this segment is extremely efficient, while 38% said it was “significantly” efficient. In line with other market segments, the share of participants reporting a deterioration in market liquidity also increased in the options segment

(27% in 2008, against only 2% and 4% in 2007 and 2006 respectively).

In recent years demand in the money markets for near-dated interest rate futures, in particular with a maturity of three months or less, has increased. In June 2008, in order to meet evolving market demand, Euronext.liffe launched a revised one-month Eonia and a new three-month Eonia Swap Index futures contract (Chart 30). Unlike the previous Eonia futures contract, the one-month Eonia revised contract is related to European Central Bank (ECB) reserve maintenance periods and the three-month Eonia Swap Index contract is related to IMM (International Monetary Market) dates, which means the contracts are of greater relevance for short-term money market traders and will offer market participants enhanced hedging and exposure opportunities. The one-month Eonia contract still continues to be referenced to the Eonia rate calculated by the ECB, while the three-month Eonia Swap Index futures contract is referenced to the three month Eonia Swap Index, sponsored by the European Banking Federation (EBF) and published by Reuters.

Early feedback on the introduction of these two new contracts seem to be positive and trading activity is benefiting from the growing interest amongst market participants in trading on an exchange with the central counterparty clearing in order to mitigate credit risk and also to achieve the benefits of cross margining. However, bid-ask spreads are relatively wide and volumes are low when compared to Euronext.liffe’s well-established Euribor interest rate futures. In the first three months after the introduction 21,879 contracts were traded, out of which 20,578 contracts on the three-month Eonia Swap Index futures contract and 1,301 contracts on the revised one-month Eonia future contract. On average, the bid-ask spread for these two new

Chart 30 Monthly volume of Eonia futures (number of contracts traded)



Source: Euronext.liffe.

⁹ 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.

contracts was around two basis points, while for the Euribor interest rates futures it is usually just half a basis point.

7 THE SHORT-TERM SECURITIES MARKET

7.1 TURNOVER ANALYSIS IN THE SECONDARY MARKET

In 2008 there was a marginal reduction in total turnover in the secondary market for short-term securities following several years of steady growth (Chart 31). The largest decline, of 26%, was observed in non-bank issues, i.e. securities issued by corporations, which could possibly demonstrate the growing difficulties that companies faced in refinancing themselves in the market by issuing paper at a reasonable price. Outright transactions in government issues declined only slightly, by 1%. Conversely, transactions on bank issues rose by 35% in 2008 and amounted to 36% of total turnover in short-term securities on the secondary market in 2008, at the expense of non-bank issues that registered a corresponding decline. Issuance of debt certificates was reported as the main means

of refinancing for banks, whereas deposits suffered from the lack of liquidity available in the interbank market. The average maturity of short-term paper issuances decreased from 126 days in 2007 to 107 days in 2008, but the latter figure was unexpectedly high in view of anecdotal feedback provided by market players, i.e. that issuance was mostly concentrated in the very short-term maturities, such as overnight or weekly. Some long-term rolling-over of large issuances may have pushed up the weighted average maturity, whereas the great majority of new paper issues were short-term. This illustrates the asymmetry of refinancing conditions among issuers.

7.2 OUTSTANDING AMOUNTS AND ISSUANCE

According to ECB monthly data on securities issues statistics, the outstanding nominal amounts of euro-denominated short-term securities issued by euro area residents increased from €936 billion in October 2006 to €1,387 billion in October 2008 (Chart 32).

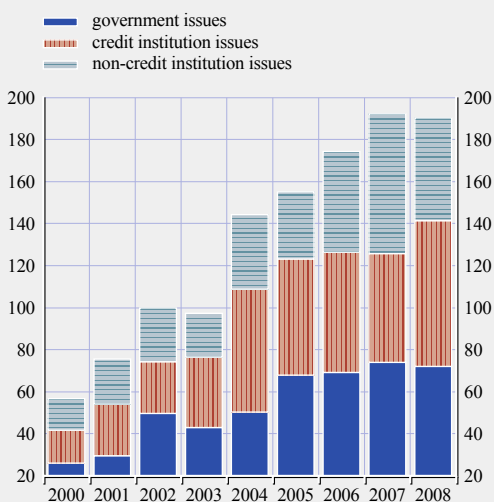
The increase in outstanding volumes over the two-year period was distributed among all types of issuer more or less in proportion to existing volumes. The largest share in the €450 billion increase came from monetary financial institution (MFI) issuances, which accounted for nearly 50% of the outstanding amount. The MFIs' share rose from €463 billion to €670 billion, i.e. a €200 billion increase over the two-year period. The share of MFIs in total outstanding volumes remained stable at 48%.

A more volatile trend was observed in gross issuance statistics: issuance volumes declined by 27% from the peak of €1,078 billion reached in October 2007 to €783 billion September 2008. However, gross issuance by all sectors rebounded sharply in October 2008, posting a new high of €1,234 billion (Chart 33).

The setback in gross issuance in the first three quarters of 2008, including MFIs' issuance, is reflected in this year's survey, which covers the second quarter of 2008. However, since

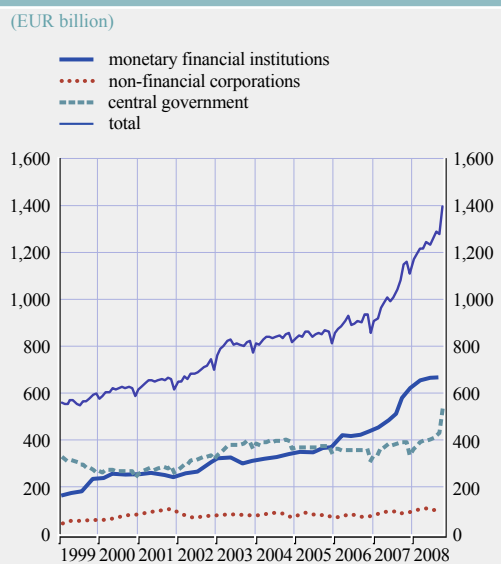
Chart 31 Average daily turnover in outright transactions

(index: outright transaction volume in 2002 = 100)



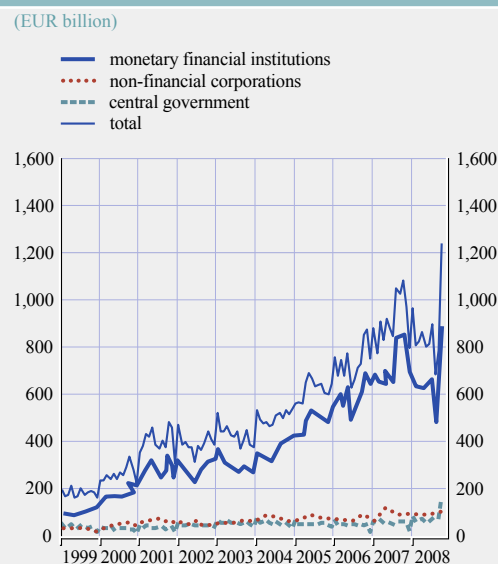
Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 32 Outstanding amounts of euro-denominated short-term securities by issuing sector since January 1999



Source: ECB securities issues statistics.

Chart 33 Gross issuance of euro-denominated short-term securities by issuing sector since January 1999



Source: ECB securities issues statistics.

September 2008 issuance by financial institutions has risen sharply. The change in the ECB monetary policy stance and the decrease in short-term rates that has occurred since the collapse of Lehman Brothers may have played a significant role in fostering issuance. But the most important supporting factor was certainly the ECB decision taken on 15 October to temporarily broaden eligible collateral to debt instruments issued by credit institutions, including certificates of deposit which are not listed in a regulated market but are traded on certain non-regulated markets deemed acceptable by the ECB. For example, STEP-labelled paper issued by credit institutions will be accepted as collateral until the end of 2009, provided they fulfil all other eligibility criteria. Anecdotal evidence suggests that this change in eligibility for the Eurosystem operations boosted confidence among market players and helped to reactivate the issuance market. Despite the sharp increase in gross issuance by MFIs since September 2008, outstanding volumes of securities issued by MFIs were broadly stable over the same period.

Whereas a notable decline in the issuance of central government securities was observed in

previous years, amounts issued by this sector increased by 50% towards the end of 2008, especially during October 2008 (€90 billion). This hike could be attributed to the recently announced European government rescue plans, which require new issuances.

Issuance by non-financial corporations has flattened since the previous Euro Money Market Survey. Lower issuance volumes and rather stable outstanding amounts reflect the risk-averse environment and uncompetitive funding conditions that most corporations have encountered since August 2007.

While markets continue to witness unprecedented volatility and evolving market conditions, the current trends, namely the increase in issuance by the government and MFI sectors, may continue and even strengthen in the near future. The various measures introduced by governments to support both the financial sector and the broader economy are expected to lead to growing public debt issuance. MFI issuance is also expected to grow as MFIs are likely to diversify their sources of funding.

Box 7

ASSET-BACKED COMMERCIAL PAPER: A MARKET SEGMENT SEVERELY AFFECTED BY THE TURMOIL

In the years prior to the emergence of the financial turmoil, the market for asset-backed commercial paper (ABCP) grew rapidly. The market, in terms of outstanding amounts, was estimated in 2006 to be worth more than USD 1,000 billion for US dollar-denominated ABCP and €160 billion for the euro-denominated asset-backed euro commercial paper (ABECP) market.¹ At the outset of the market turbulence in August 2007, investors' risk aversion towards securitised products increased significantly. As a result, ABCP issuance fell sharply in both the United States and the euro area. Having reached a peak of around USD 1,200 billion in August 2007, US ABCP fell to approximately USD 750 billion one year later. The same pattern was observed for ABECP, which declined from €175 billion to around €70 billion (see Chart B).² The ABECP market, however, does not encompass all euro-denominated asset-backed paper as the French ABCP market is a large domestic market, largely separate from the London-based ABECP market. Chart A shows that this market has more than doubled in size over the course of the turmoil.³

The overall market for commercial paper in the United States has seen significant declines, albeit largely driven by developments in the asset-backed segment (see Chart D). The overall market for euro-denominated paper, however, has not declined in the same way, as new issuance in

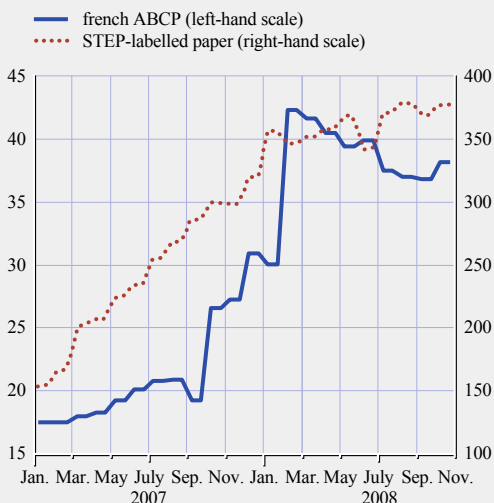
1 See Box 8 "A comparison between European and US commercial paper", Euro money market study 2006, ECB.

2 It is perhaps ironic to note that the commercial paper market grew substantially in advance of the Great Depression of 1929 in the United States. It lay largely dormant thereafter, only re-appearing as a common instrument in structured finance in the 1970s.

3 Chart A also shows outstanding amounts for the short-term European paper or STEP market. Although it is not restricted to asset-backed issuance and may be included in the data displayed in Chart B, it is nevertheless useful to note the evolution of this market segment.

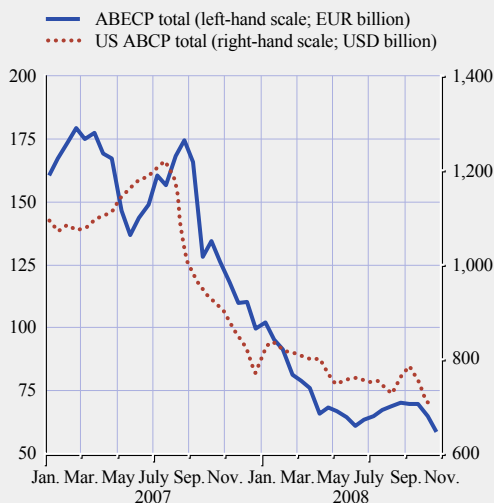
Chart A Amount outstanding French ABCP & STEP

(EUR billion)



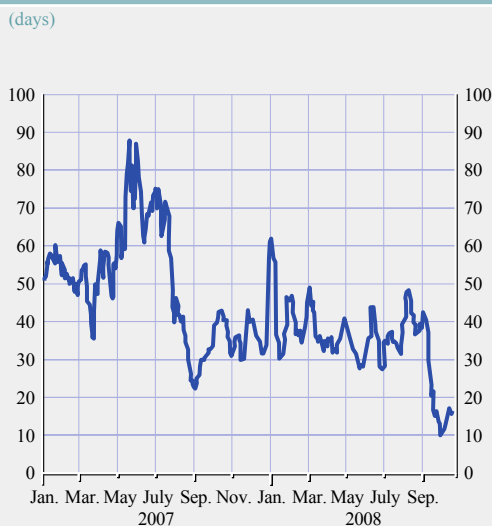
Sources: Banque de France, ECB.

Chart B Amount outstanding US and euro ABCP



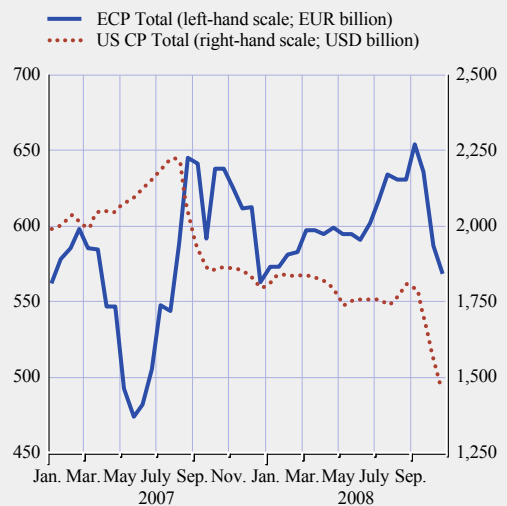
Sources: Board of Governors of the Federal Reserve, Dealogic.

Chart C Average maturities for ABCEP



Sources: Bloomberg and Dealogic.

Chart D Amount outstanding US and euro CP



Source: Dealogic.

the French market and in the financial and non-financial ECP sectors has offset the declines in the ABCEP sector. Anecdotal evidence suggests that from a euro area perspective, however, difficulties in re-issuing paper denominated in US dollars have very likely added further strains to the foreign exchange swap markets.

The general increase in the risk premium demanded for funding was particularly evident for the ABCEP market. Prior to the turmoil, ABCEP were issued with a spread of just a few basis points above Euribor. Since then, however, these spreads have increased significantly. According to the major issuers of euro-denominated ABCEP, spreads to Euribor have remained close to or above 30 basis points throughout the turmoil. Also, as market participants became increasingly reluctant to invest over a medium to long-term horizon, owing to heightened counterparty credit risk, ABCEP issues traded increasingly at the very short-term, i.e. with overnight maturity. In the United States, prior to the turbulence, 60% of paper was issued with a maturity of 1 to 4 days, while 8% had a maturity of more than 80 days. Currently, 80% is issued with a 1 to 4-day maturity and just 0.5% with a maturity of more than 80 days. Unweighted average maturities for outstanding ABCEP fell from around 70 days to below 30 days by October 2008 (see Chart C, which shows the average maturity for ABCEP issuance as a nine day centred moving average).⁴

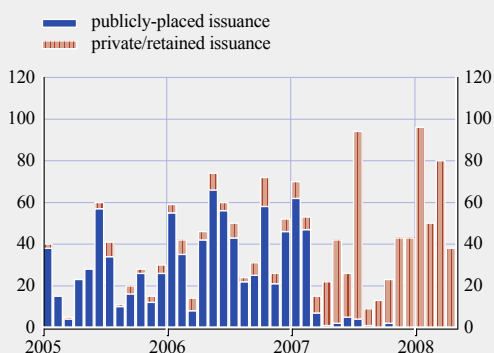
Like the entire asset-backed securities (ABS) segment, which has been particularly affected by the turmoil, the ABCP market has suffered from illiquidity. ABCP issuers encountered growing difficulties issuing and placing new paper in the market. This has led to new behaviour by these issuers, who instead accumulated portfolios of ABCP, either because the supporting conduits or special vehicles that they had sponsored had to be taken onto their balance sheets, due to funding difficulties encountered by these entities, or, in the case of French ABCP and STEP-labelled issuance, with the aim of accessing central bank liquidity.⁵ In the latter case, the paper

⁴ See "Euro CP Markets Review First Nine Months 2008", Dealogic, 2008.

⁵ French ABCP and STEP-labelled paper are eligible collateral for Eurosystem refinancing operations if they meet all the relevant criteria.

Chart E Monthly Issuance of ABS

(EUR billion)



Source: Citigroup.

was not publicly-placed but rather privately-placed with the counterparty that sponsored the conduit. Chart E illustrates a similar trend with ABSs. Evidence to support this trend can also be seen in the average number of daily trades, which has declined sharply during the turmoil, whereas the average daily amount traded has increased significantly.

This pattern also explains to some extent the increase in outstanding volumes of both the French ABCP and STEP-labelled paper, whose eligibility has contributed to limiting the effects of the turmoil. In fact, the characteristics of both markets may have allowed them to capitalise on developments, as investors sought the relative safety offered by these segments,

along with the benefit of eligibility. These developments, however, appear to reflect changes in investors' risk appetite and do not question the underlying model or show evidence that the credit quality of assets has declined.

The importance of the commercial paper market, for corporate as well as financial entities, has been highlighted by the recent initiatives. In the United States, with the Commercial Paper Funding Facility the US Government is providing a liquidity guarantee to issuers of commercial paper in order to reverse the declines in lending volumes through this medium. The Eurosystem has also recently announced that a broader range of commercial paper, like CDs in non-regulated markets, will be considered as eligible collateral for its operations.

7.3 MARKET STRUCTURE

The qualitative feedback from the questionnaire indicates that the short-term securities market has room for increasing its overall efficiency. The vast majority of respondents (80%) deemed the market to be only "limitedly" to "sufficiently" efficient, which is consistent with the survey of last year. Only 20% considered it to be "extremely" or "significantly" efficient, which is the lowest percentage of all market segments.

This relative inefficiency could, among other factors, be attributed to the lack of liquidity and the difficulties in issuing without top rating. Furthermore, 60% of respondents considered that market liquidity conditions had worsened compared to last year.

The geographical distribution of counterparties was largely unchanged in 2008. The share of domestic turnover declined marginally to 46% in 2008, compared with 48% in 2007, in favour of transactions conducted with euro area counterparties, which accounted for 32% of the total turnover. The volume traded with the rest of the world amounted to 22%.

In terms of trading venue, the share of electronic trading declined to 11% of all transactions, versus 14% in 2007, in favour of direct trading, which rose by 4 percentage points to 11% of all transactions. The ongoing financial market turbulence, which spurred credit risk concerns, may have contributed to this development. The share of direct trading in short-term securities transactions (78%) remained unchanged, being the highest of all market segments. The low use

of electronic platforms or voice brokers may be an additional factor in explaining the poor efficiency of this market segment.

The short-term securities segment remained among the most concentrated of all money market segments. The share of the top ten market players in the trading of euro-denominated short-term securities in the secondary market accounted for 76% in 2008, a slight increase from the 74% recorded in 2007.

8 CROSS-MARKET SEGMENT ANALYSIS

8.1 TURNOVER ANALYSIS

In the second quarter of 2008, overall turnover in the euro money market was around 5% lower than in the second quarter of 2007 (Chart 34). This represented the first year-on-year decline since 2004, following strong growth recorded in 2006 and a slight increase observed in 2007. This development suggests that, although the financial market turbulence had some impact

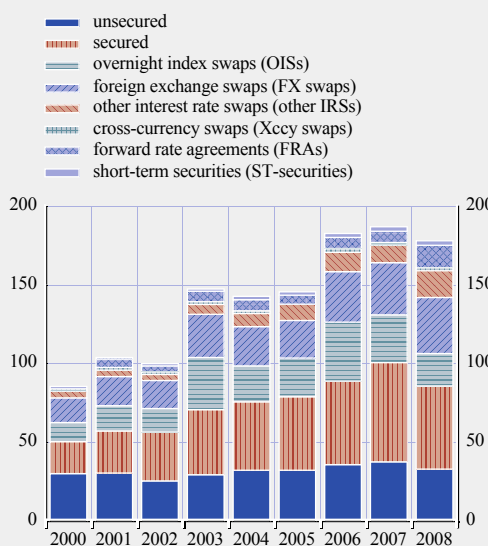
on the amounts traded in various segments, the overall level of activity remained robust and the euro money market showed resilience to the adverse financial market conditions, with several segments registering a large increase in activity, in particular some OTC segments. Therefore, the euro money market appears to be weathering the financial markets storm rather well overall, even though it was impacted by it.

The decrease registered in the overall euro money market turnover stemmed chiefly from a decline in activity in the unsecured, secured and OIS segments. Indeed, turnover in the unsecured and secured segments contracted by 13% and 16% respectively. The fall in activity in these two segments resulted from tight and volatile market conditions that led to a shifting of banks' risk tolerance towards a more conservative stance. Banks generally reduced their risk exposure to other banks and there was an increase of the use of internal sources of funding within banking groups, which contributed to the decrease in market depth and liquidity. Although the growth of the secured market was interrupted, this segment maintained its leading position in the euro money market, accounting for 30% of total turnover in the second quarter of 2008. The share of the unsecured segment decreased to 19%. This segment was thus surpassed by the FX swap segment, which became the second largest segment of the euro money market in terms of turnover. Turnover in the FX swap segment increased modestly in the second quarter of 2008 compared with the second quarter of 2007, but maintained the upward trend observed in recent years.

The largest decline in activity took place in the OIS segment, where the turnover fell by 32% in the second quarter of 2008 compared with the second quarter of 2007 (Chart 35). Apart from the OIS segment, activity in the other OTC segments soared, in particular in the FRA segment, where the turnover more than doubled. It would appear that part of the trading activity previously undertaken in the OIS segment shifted to the FRA and other IRS segments. Indeed, until the onset of the financial market turbulence there was a rather stable relationship between OIS and

Chart 34 Aggregated average daily turnover of the euro money market

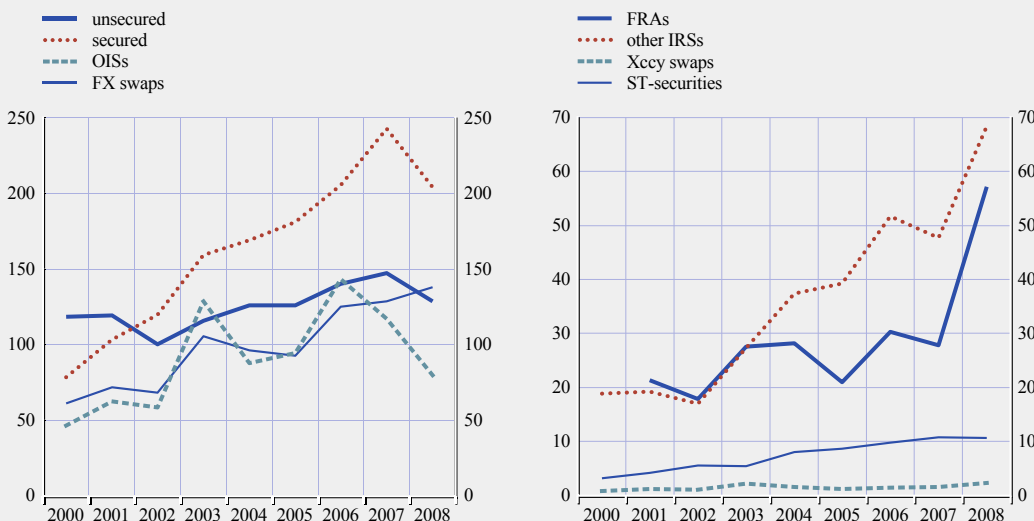
(index: aggregated average daily turnover volume in 2002 = 100)



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Chart 35 Average daily turnover in various money market segments

(index: unsecured transaction volume in 2002 = 100)



Note: The panel comprised 85 credit institutions in 2000 and 2001 and 109 credit institutions thereafter.

Euribor rates and between OIS and FRA rates. Until then market participants had traded more actively in the OIS segment than in the FRA segments because the former was more liquid than the latter. However, the widening of the spread between Euribor and OIS rates and the increasing volatility of this spread reduced the effectiveness of OIS contracts as a hedging tool when the risk exposure to be hedged was related to future Euribor rates rather than future Eonia rates. This led market participants to give up hedging with OIS and come back to FRA instead in these cases. It is also possible that the decline in activity in the unsecured and secured segments may have contributed to the reduction in OIS turnover, as it implied reduced needs for hedging. As a result, the share of the OIS segment in total euro money market turnover decreased to 12%, which was the lowest level since 2000.

The turnover in the other IRS segment expanded again, by 43% in the second quarter of 2008 compared with the second quarter of 2007. This was driven by hedging and positioning activity which was fuelled in turn by the increasing volatility of Euribor -OIS spreads after the slight

contraction in activity in 2007. Another factor that is likely to have played an important role in the increase in activity in the other IRS segment was the significant growth in basis trading, whereby market participants take positions, or place hedges, on risk exposure related to the difference between different reference interest rates (see Box 2 above). In the second quarter of 2008, the share of other IRS in the total euro money market turnover was 10%, while in the previous four years it had remained nearly unchanged at 7%.

Although the turnover in the cross-currency swap segment registered an increase of 51%, this segment remained by far the smallest segment of the euro money market, accounting for less than 1% of overall activity. This type of instrument continued to be traded by a very restricted set of institutions, mainly for customer needs.

Trading volumes in the short-term securities segment remained stable and rather low in the second quarter of 2008, and its share in overall money market activity (1.5%) remained broadly unchanged from previous years.

8.2 MATURITY ANALYSIS

Although there were a few changes in the maturity distribution of business in some market segments, which would appear to mainly reflect the impact of the financial market turbulence, the overall picture reveals that no significant changes related to maturity distribution occurred in the majority of euro money market segments.

Activity in unsecured, secured and FX swap markets continued to be mainly focused on very short-term maturities in the second quarter of 2008 (Chart 36). Specifically in the unsecured market, trading remained concentrated in the overnight maturity, which accounted for 68% of total turnover, a similar share to the one observed in the recent years. In the secured segment, the maturity profile showed a shift of transactions made from the maturity bucket “tomorrow/next to up to one week” to the overnight bucket. Indeed, despite the decline in aggregated turnover in this segment, the share of overnight transactions increased significantly, from 16% in 2007 to 26% in 2008, while the weight of transactions in

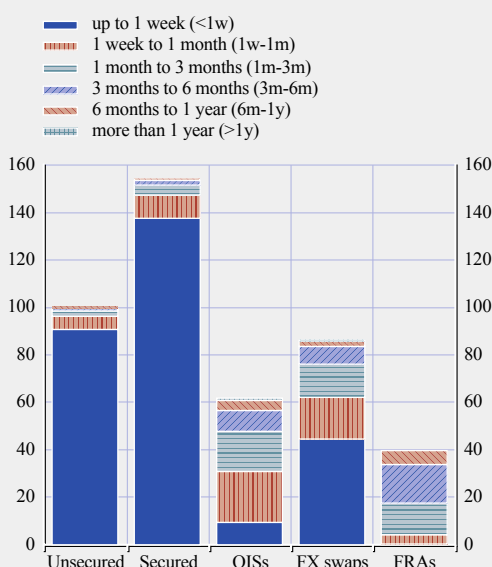
the “tomorrow/next to up to one week” bucket decreased from 72% in 2007 to 62% in 2008. Turnover in maturities above one year decreased substantially, both in the unsecured (-21%) and secured transactions (-61%). As for the FX swap market there was little change in the maturity profile of transactions. The share of the turnover from maturities up to one week was 68% in the second quarter of 2008 (70% in the second quarter of 2007).

Following the substantial reduction in OIS turnover, the weight of transactions in this segment in longer maturities increased. Indeed, while in the second quarter of 2007 64% of total OIS business comprised maturities up to one month, in the second quarter of 2008 that share decreased to 48%.

In the FRA segment, the share of transactions in maturities between one and six months increased from 65% in the second quarter of 2007 to 77% in the second quarter of 2008, at the expense of both short and long-dated transactions. In both the other IRS and cross-currency swap segments the survey data reveals a shortening of maturities traded. Although the bulk of transactions still comprised maturities above two years, between the second quarter of 2007 and the second quarter of 2008 the share of turnover in shorter maturities increased from 35% to 40% in the other IRS segment and from 19% to 37% in the cross-currency swap segment.

Chart 36 Maturity breakdown for various money market segments in 2008

(index: unsecured volume = 100)



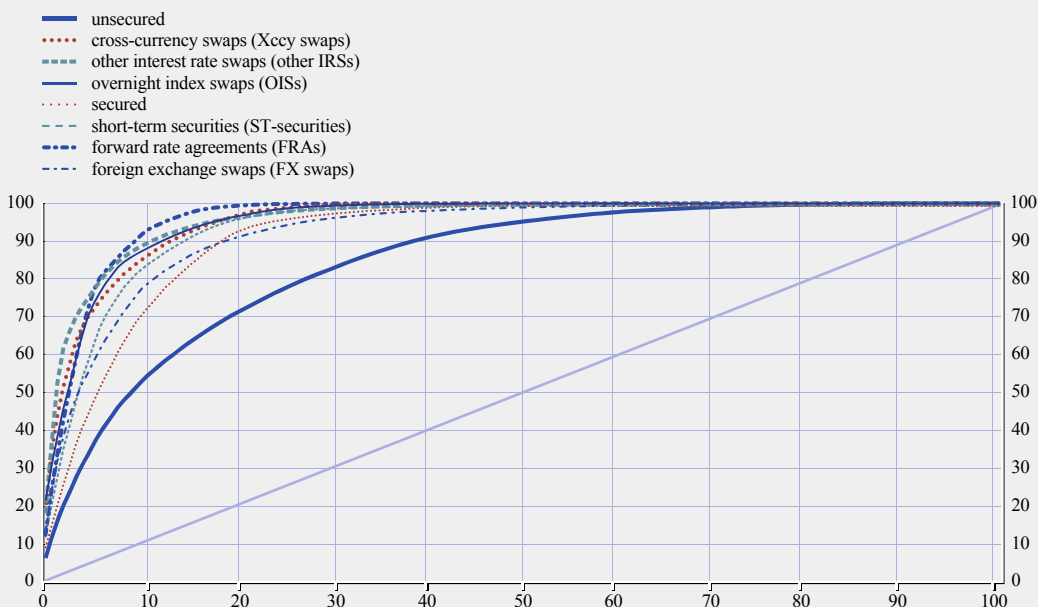
Note: The panel comprised 164 credit institutions.

8.3 MARKET STRUCTURE

Despite the severity of the financial market turbulence, changes in the degree of concentration in the different market segments were rather modest. However, a key development was the increase in concentration across almost all segments, which may suggest that adverse market conditions contributed to a reduction in the number of active players in some market segments. On the other hand, the foreign exchange OTC derivatives showed a slight decrease in concentration ratios, thus maintaining the tendency observed in recent years. An increase in turnover, better liquidity

Chart 37 Lorenz curve: concentration of activity in various market segments in 2008

(x axis: percentage of market participants; y axis: percentage of activity)



Note: The panel comprised 164 credit institutions.

in these instruments for some currencies other than the euro, increasing opportunities for arbitrage and a drive towards diversification of counterparty risk exposures were some of the reasons that may have attracted more players to these segments.

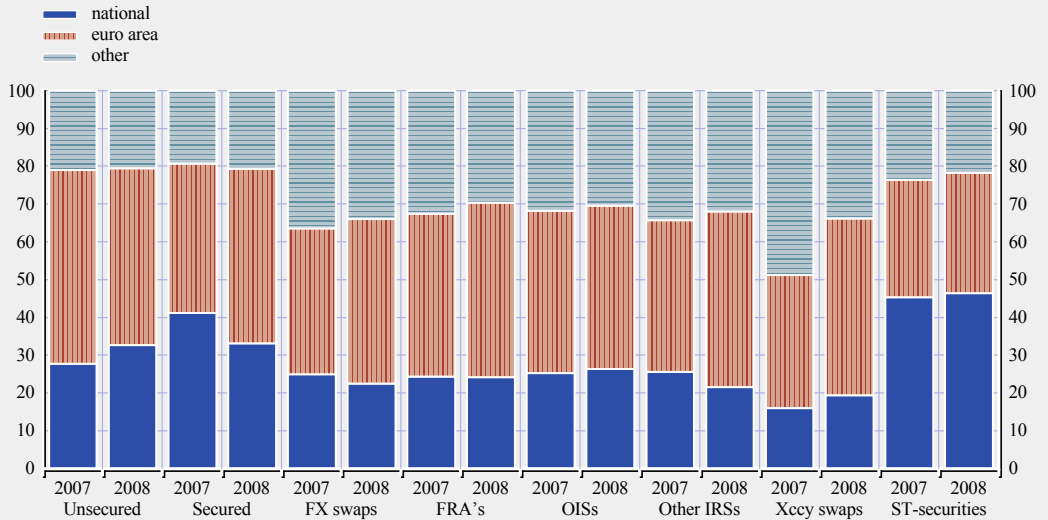
Overall, the degree of concentration in the different market segments, apart from the unsecured segment, continues to be rather high. The unsecured market has remained by far the least concentrated money market segment, followed by the secured, the FX swap and the OIS segments. The share of the top ten institutions increased in all segments except two. In the unsecured segment, this share increased to 40% in the second quarter of 2008 from 37% in the second quarter of 2007. In the OIS segments, it increased from 62% to 67% while in the FRA, other IRS, cross-currency swap and short-term securities segments it increased to levels close to 80%. In contrast, in the secured segment, this share decreased from 55% to 52% and in the FX swaps segment it decreased from 65% to 61% (Chart 37).

The analysis by type of counterparty reveals that the structure of the various market segments has not changed significantly in the last few years. The bulk of business continues to be carried out with counterparties from the euro area. The share of transactions with counterparties outside the euro area decreased in all segments except the secured segment. This development suggests that financial market turbulence may have dampened euro money market cross-border flows between banks located in the euro area and banks located outside it. Moreover, in some segments there was an increase in the share of transactions conducted with counterparties located in the same country. In the unsecured segment, this share increased from 28% in the second quarter of 2007 to 32% in the second quarter of 2008.

Despite the gradual increase over the last few years in trading with counterparties located in a different country, the proportion of business carried out with counterparties from the same country in the secured segment and in the short-

Chart 38 Geographical structure of various money market segments

(percentages of total)



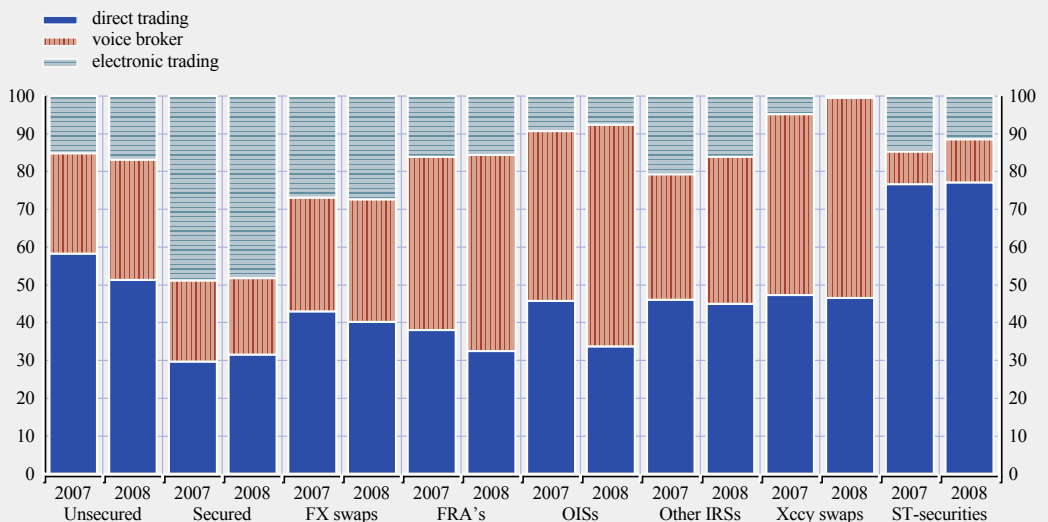
Note: The panel comprised 164 credit institutions.

term securities segment remained comparatively high. In the secured segment, however, this share declined significantly. In the short-term securities segment it remained virtually unchanged at around 54% (Chart 38).

The survey results show that the financial market turbulence may also have had an impact on the way banks execute their transactions with counterparties. In almost every market segment, the proportion of electronic trading

Chart 39 Trading structure of various money market segments

(percentages of total)



Note: The panel comprised 164 credit institutions.

decreased and the proportion of voice broker deals increased, contrasting with the growing trend towards more electronic trading which had been seen until the second quarter of 2007. This may reflect the greater use of brokers to seek out liquidity in the difficult market conditions prevailing since mid-2007, as well as some reluctance to use non-anonymous means of trading, such as some electronic trading platforms.

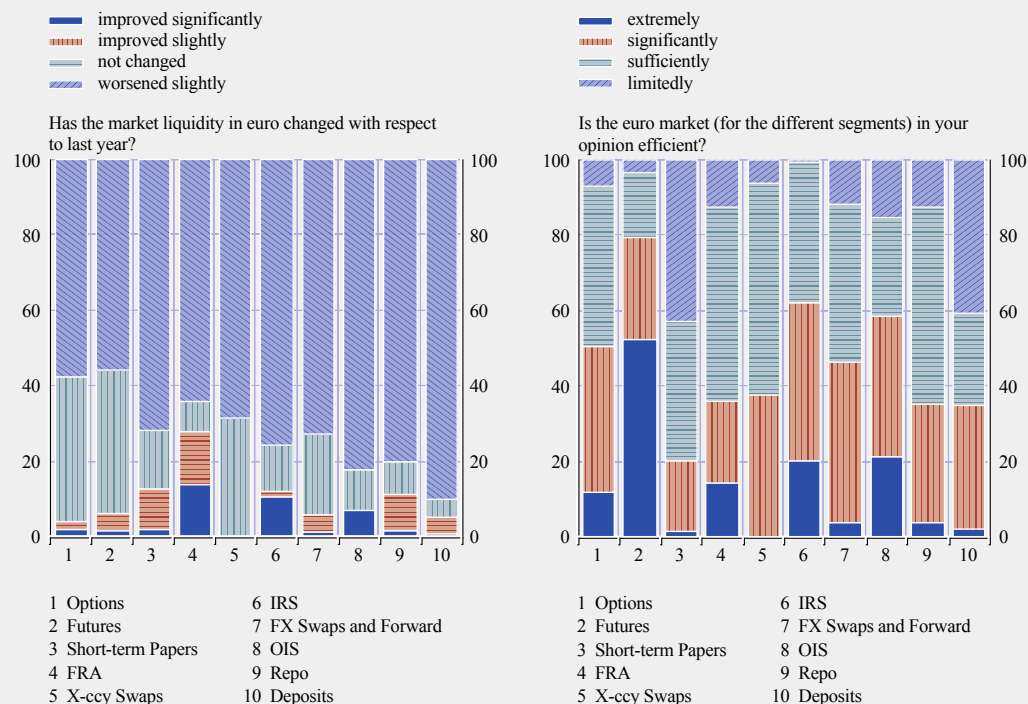
Direct trading continued to be the most popular way of carrying out business in the majority of the euro money market segments, accounting for around half of turnover in the unsecured, FX swap, other IRS and cross-currency swap segments and almost 80% of turnover in the short-term securities segment. In the OIS and FRA segments, respectively, 59% and 52% of turnover was made through voice brokers, who gained some ground in the second quarter of 2008 compared with the second quarter of

2007. In the secured segment, electronic trading continued to be the preferred way to make deals, accounting for 48% of all transactions in the second quarter of 2008 (Chart 39).

Answers to the survey's qualitative questions revealed that the majority of survey respondents thought that market liquidity in the various segments of the euro money market had worsened compared with the previous year. The deterioration in market liquidity conditions was perceived to be more relevant in the unsecured, secured and OIS segments, while exchange-traded products such as short-term interest rate futures and options seemed to be less affected by the financial market turbulence in this respect. Turning to the questions related to the efficiency of the euro money market, answers showed perceptions of a clear loss of efficiency across all market segments, although in several segments the majority of survey respondents reported that efficiency remained at an

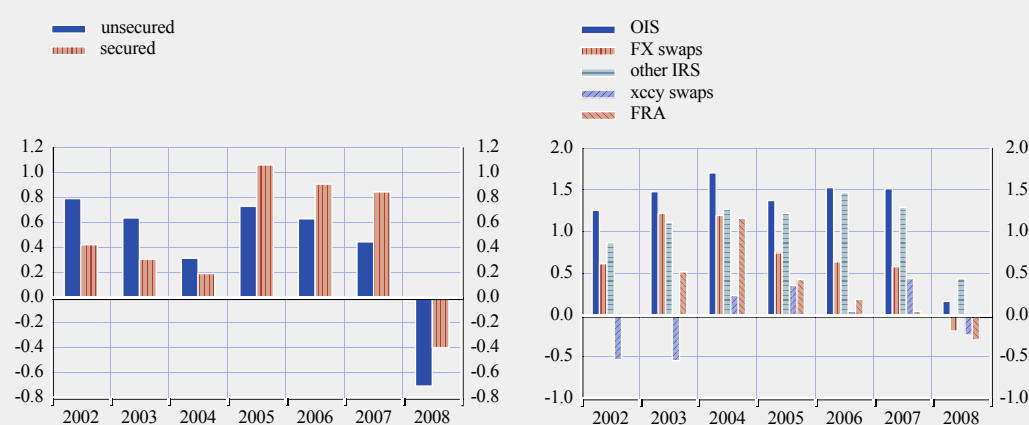
Chart 40 Liquidity and efficiency in the euro money market in 2008

(percentages)



Note: The panel comprised 164 credit institutions.

Chart 41 Efficiency diffusion index



Note: the panel comprised 109 credit institutions.

“extremely” or “significantly” high level. The other IRS segment and the short-term interest rate futures and options segments were seen as the most efficient segments, while almost half of the survey participants regarded the efficiency in the unsecured and short-term securities segments as “limited” in the second quarter of 2008 (chart 40).

The “efficiency diffusion index” (Chart 41), created with the replies of the surveyed institutions, clearly shows how the different market segments are perceived by the banks. This perception dramatically deteriorated in the second quarter of 2008 compared to previous years. For the unsecured and secured market, this index has remained at between 0 and 1 in recent years, reflecting a significant level of efficiency. Even the secured market began to be considered more efficient than the unsecured market as of 2005. However, this year the view of the market has plunged, with many market participants tending to see the markets as only

“sufficiently” efficient, or even “limitedly” efficient in the case of the unsecured market.

The OTC derivatives market efficiency diffusion index shows a similar pattern. Until last year the market segments, with the exception of the cross-currency swap segment, were considered to be “significantly” to “extremely” efficient, especially in the case of the OIS and the other IRS segments, but the perception of all these markets has significantly declined, with only the other IRS, one of the beneficiaries of the turmoil, still regarded as “significantly” efficient.

Regarding developments in non-euro area countries, Box 8 highlights the main differences in money market structure between banks in non-euro area Member States and those within the euro area.

Box 8

THE EURO MONEY MARKET IN NON-EURO AREA MEMBER STATES

As shown by Charts A, B and C, money market developments have been quite different in the euro area, in the United Kingdom and in the other non-euro area Member States, both in terms of trends and in terms of turnover structure.

In the euro area the largest market segment in terms of transaction volumes is the secured market (representing 30% of total turnover in the second quarter of 2008). In the non-euro area Member States the FX swaps segment gradually became the prevailing market segment (accounting for 34% of total turnover in 2008). A few banks in particular significantly increased their FX swap transaction volumes between 2006 and 2008 in the non-euro area countries excluding the United Kingdom. This difference may be explained by the fact that FX swaps are the main derivative instrument available to banks outside the euro area to get funding in euro.

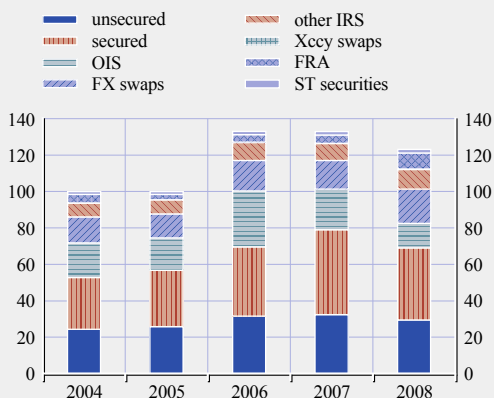
Another difference is that the proportion of unsecured transaction volumes in euro is lower in the non-euro area (including the United Kingdom) than in the euro area, but it is higher in the non-euro area (excluding the United Kingdom). The size of banks which responded to the survey in the United Kingdom, mainly large banks at European level, might explain this behaviour: large banks are more active in the secured market than in the unsecured. By contrast, in the rest of the non-euro area smaller retail banks responded to the survey: those banks tend to be liquidity providers and lend to larger banks in the unsecured market. In addition, for these banks, it is also sometimes easier to obtain liquidity in the unsecured domestic market than in the secured market, as they do not always have enough collateral to borrow in the secured market.

Regarding the development in turnover between the second quarter of 2007 and the second quarter of 2008, charts A, B and C show that while total turnover decreased in the euro area, it

Chart A Total euro area

(moving panel)

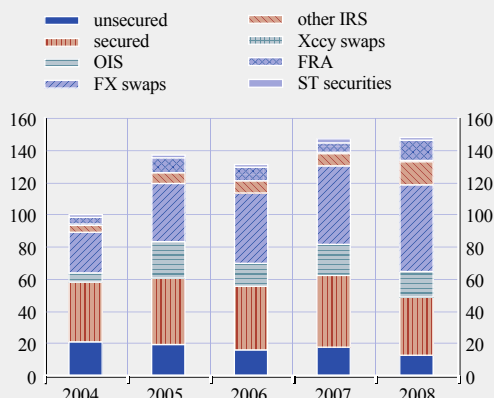
(index: aggregated average daily turnover in 2004 = 100)



Source: ECB.

Chart B Total non-euro area

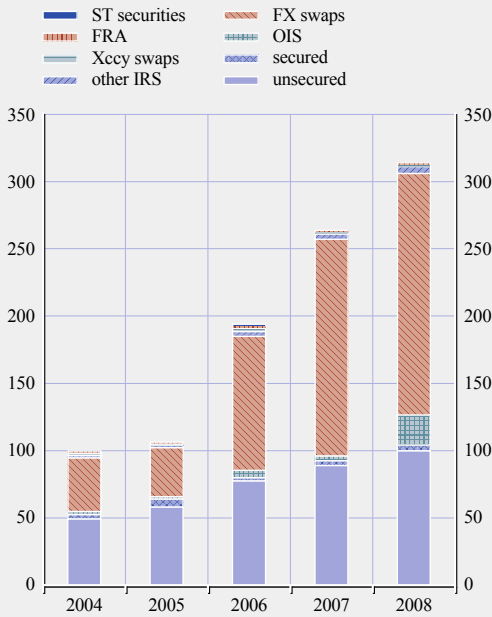
(index: aggregated average daily turnover in 2004 = 100)



Source: ECB.

Chart C Total non-euro area excluding UK

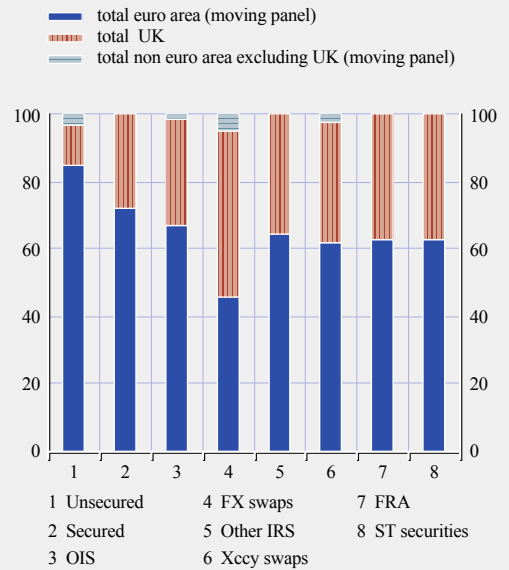
(moving panel)
(index: aggregated average daily turnover in 2004 = 100)



Source: ECB.

Chart D Turnover breakdown for euro area, UK and other non-euro area in 2008

(percentages)



Source: ECB.

continued to increase in non-euro area Member States. This difference in trend might indicate that non-euro area banks have been less impacted by the financial turmoil than euro area banks. Nevertheless, the overall increase in the turnover of non-euro area Member States was largely supported by the derivatives market, in particular by the FX swaps market, while the volumes in the secured and unsecured segments decreased. This was most pronounced in non-euro area Member States excluding the United Kingdom, where average daily turnover in FX swaps almost doubled between 2006 and 2008 (+80% growth). Moreover, there is a lot of heterogeneity among non-euro area Member States. While some banks saw their derivatives turnover increase between the second quarter of 2007 and the second quarter of 2008, others reported a significant decrease, even in the FX swaps segment.

ANNEX I

TECHNICAL ANNEX

SCOPE OF THE STUDY

In this seventh ECB euro money market study, banks were invited to provide data about their interbank activity during the second quarters of 2007 and 2008, covering the main segments of the euro money market. Non-interbank and 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 2008 study.

Banks reported interbank activity if this activity is booked in their own entity. Intragroup flows derived from intragroup operations are excluded from the 2008 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

systems. Finally, the 2008 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 2008, 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 15 euro area countries; if the reporting bank is located in the euro area, “euro area” refers to counterparties located in the other 14 euro area countries. “Others” refers to counterparties located in all non-euro area countries.

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 2008 study covers different kinds of swap transaction.

- Overnight indexed swaps (OIS) are financial operations calculated on the basis of the exchange of a fixed rate agreed at the outset 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 (FX 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 was 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, in this case the euro; they can be fixed-for-floating or floating-for-floating, based on different indices.

- Cross-currency swaps (Xccy 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 was 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. An “outright transaction” is defined as the 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 issuance by the reporting bank.

REVISION OF THE COMPOSITION OF THE PANEL

In order to be able to compare findings with those of previous studies and to analyse long-term trends in the euro money market,

Table 5 Effect of the changes to the composition of the constant panel¹

(percentages)	2002	2003	2004	2005	2006	2007
Unsecured	-0.7	-0.8	0.5	1.1	-0.1	4.4
Secured	1.3	-2.3	0.2	2.2	2.9	4.0
OIS	-1.0	1.7	6.0	9.0	16.0	11.8
FX swaps	-0.7	0.2	0.4	0.5	1.6	0.6
Other IRS	-1.3	-0.3	1.1	2.7	1.9	3.1
Xccy swaps	-1.7	2.5	0.8	0.1	1.0	3.9
FRA	0.6	0.6	1.9	3.6	8.0	7.6
ST securities	8.6	1.6	0.4	1.5	2.1	1.2

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

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 representativeness of the sample (for the statistical impact of these panel changes, see Table 5 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). The base year for the study is 2002.

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.

REVISIONS TO 2007 DATA

As in previous years, some revisions were made to the values collected and published in the 2007 euro money market survey. The following table briefly describes the net changes by segment:

	No of revisions	No of new banks	Net change
Unsecured			
Lending	15	9	1.80%
Borrowing	14	10	3.99%
Secured			
Lending	11	1	-0.48%
Borrowing	11	1	0.09%
Derivatives			
OIS	10	2	4.38%
FX swaps	15	10	2.49%
IRS	12	4	2.99%
Xccy swaps	6	1	-9.09%
FRA	6	3	6.71%
Short-term securities	10	1	2.95%

ANNEX 2

EURO MONEY MARKET REFERENCE RATES

Benchmark	Definition	Market segment	Owner/ sponsor
Eonia (euro overnight index average)	An effective overnight rate computed as a weighted average of all overnight unsecured lending transactions in the interbank market, initiated within the euro area by the contributing panel banks.	unsecured	EBF and ACI
Euribor (euro interbank offered rate)	The rate at which euro interbank term deposits within the euro area are offered by one prime bank to another prime bank.	unsecured	EBF and ACI
Euro Libor (London interbank offered rate)	The rate at which one prime bank offers funds in euro to another prime bank if in exchange the former receives from the latter Euro GC as collateral.	unsecured	BBA
Eurepo	The rate at which one prime bank offers funds in euro to another prime bank if in exchange the former receives from the latter Eurepo GC as collateral.	secured	EBF with the support of the ERC
Eonia Swap Index	The average rate at which a representative panel of prime banks provides daily quotes that each panel bank believes is the mid market rate for Eonia swap quotations between prime banks.	derivatives	EBF

Maturities	Publication time	Panel banks	Calculation mechanism
O/N	Between 6.45 p.m. and 7 p.m. (CET)	43 banks (of which 36 from the euro area): - active players in the euro money markets in the euro area or worldwide, - able to handle good volumes in euro-interest rate related instruments, especially in the money market, even in turbulent market conditions, and - of first class credit standing.	A volume-weighted average of all overnight unsecured lending transactions reported by the panel banks to the ECB, rounded to three decimal places.
1, 2, 3 weeks and from 1 to 12 months.	11 a.m. (CET)	Same as Eonia	The highest and lowest 15% of all quotes are eliminated. The remaining rates are averaged and rounded to three decimal places. Individual banks' contributions are also published.
O/N, 1, 2 weeks and from 1 to 12 months.	Shortly after 11 a.m. London time	16 banks (of which 4 from the euro area): - selected on the basis of reputation, scale of activity in the London market and perceived expertise in the currency concerned, and - giving due consideration to credit standing.	The highest and lowest 25% of all quotes are eliminated. The remaining rates are averaged. Individual banks' contributions are also published.
T/N, 1, 2, 3 weeks and 1, 2, 3, 6, 9 and 12 months.	11 a.m. (CET)	36 banks (of which 30 from the euro area): - active players in the euro repo markets in the euro area or worldwide, - able to handle good volumes in euro repo rate related instruments, even in turbulent market conditions, and - of first class credit standing.	The highest and lowest 15% of all the quotes are eliminated. The remaining rates are averaged and rounded to three decimal places. Individual banks' contributions are also published.
1, 2, 3 weeks and 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 21 and 24 months.	11 a.m. (CET)	24 banks (of which 20 from the euro area): - active players in euro derivatives markets in the euro area or worldwide, - able to handle good volumes in Eonia swaps, even in turbulent market conditions, and - of first class credit standing.	The highest and lowest 15% of all quotes are eliminated. The remaining rates are averaged and rounded to three decimal places.

ANNEX 3

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

A comparison of the European Repo Council (ERC) 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	13 European countries, North America and Japan.	25 EU countries (those EU countries before 1 January 2007, except Denmark and Estonia) plus Switzerland.
Type of institution	All financial institutions (e.g. including national debt and other public agencies). Transactions with all counterparties except central banks.	Credit institutions only. 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; CHF; other. The total figure is broken down into: cross-currency; other (same currency).	EUR only.
Maturities	Measures remaining term to maturity. Aggregates one-day transactions. 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 12 months; over 12 months; forward-forwards.	Measures original term to maturity. 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; 6 months to 1 year; over 1 year. (There is 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 United States; 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.

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

	ERC survey	ECB survey
Counterparties	The total figure is broken down into: direct; via voice broker; via ATS. Each category is further broken down into: domestic; cross-border; anonymous. ATS is also further broken down into: anonymous via a CCP.	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”).
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 4

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 the 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 and 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 in exchange the former receives from the latter Eurepo general collateral (GC) as collateral. Eurepo is supported by the European Banking Federation (EBF) 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 other things, 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 (EBF) and Association Cambiste Internationale (ACI). It is an index price source covering dealings from 43 prime banks.

Euroclear: the world's largest settlement system for domestic and international securities transactions. It is an international central securities depository (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 collateralised funding and efficient collateral management.

Euro overnight index average (Eonia): the 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 43 prime banks.

Euronext: the company born out of the merger of the Amsterdam, Brussels and Paris exchanges on 22 September 2000. In 2007 it merged with the New York Stock Exchange (NYSE), creating NYSE Euronext.

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 was the euro and, in that 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/fix 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 (a diagonal line in the charts). For convenience of interpretation, the Lorenz curves presented in this 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 who is obliged to quote buy and sell prices in return for certain privileges in a market (sometimes used to refer to any participant who 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 corresponding 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 takes place on the primary market).

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

Spot/next (day): this expression is used by traders when a transaction is settled two business days after today and matures the following business day.

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

TARGET2 (Trans-European Automated Real-time Gross settlement Express Transfer system): TARGET2 is the RTGS system for the euro. It is used for the settlement of central bank operations, large-value euro interbank transfers and other euro payments. It provides real-time processing, settlement in central bank money and immediate finality.

Tomorrow/next (day): this expression is used by traders when a transaction is settled on the next business day after today and matures the following business day.

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, 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, who handles the settlement as well as collateral management during the life of the trade.

ANNEX 5

BANKS PARTICIPATING IN THE STUDY

ANNEX 5

AT	Bank Austria Creditanstalt AG	ES	Barclays Bank, S.A.
AT	Oberbank AG	ES	Banco Pastor, S.A.
AT	Erste Bank der österreichischen Sparkassen AG	ES	Banco Popular Español, S.A.
AT	Allgemeine Sparkasse Oberösterreich Bank AG	ES	Banco de Sabadell, S.A.
AT	Raiffeisen Zentralbank Österreich AG	ES	Bankinter, S.A.
AT	Österreichische Volksbanken AG	ES	Banco Bilbao Vizcaya Argentaria, S.A.
BE	Dexia Bank Belgium	ES	Banco Cooperativo Español, S.A.
BE	Fortis Bank	ES	Confederación Española de Cajas de Ahorros
BE	KBC Bank NV	ES	Caixa d'Estalvis de Catalunya
BG	BNP Paribas, S.A.	ES	Caja de Ahorros y M.P. de Madrid
BG	Eurobank EFG Bulgaria	ES	Caja de Ahorros del Mediterráneo
BG	DSK Bank	ES	Caja de Ahorros de Galicia
BG	United Bulgarian Bank	ES	Caja de Ahorros y Pensiones de Barcelona
CH	UBS AG	ES	Banco de Crédito Local de España, S.A.
CY	Bank of Cyprus Public Company Ltd	ES	Banesto
CY	Hellenic Bank Public Company Ltd	FI	Pohjola Bank Plc
CY	Marfin Popular Bank Public Company Ltd	FI	Nordea Bank Finland Abp
CZ	Československá obchodní banka, a.s.	FR	Bred - Banque Populaire
CZ	Citibank Europe plc	FR	Société Générale
CZ	Česká spořitelna, a.s.	FR	BNP Paribas
CZ	Komerční banka, a.s.	FR	Crédit Agricole S.A.
CZ	ABN AMRO Bank N.V. (Prague branch)	FR	Natixis
CZ	ING Bank N.V. (Prague branch)	FR	HSBC France
CZ	UniCredit Bank Czech Republic, a.s.	FR	Calyon
CZ	HSBC Bank plc (Prague branch)	FR	La Banque Postale
DE	Deutsche Bank AG	FR	Crédit Industriel et Commercial - Cic
DE	Dresdner Bank AG	GB	JP MORGAN Chase Bank
DE	Commerzbank AG	GB	Abbey National Treasury Services Plc
DE	SEB AG	GB	HBOS Treasury Services plc
DE	Landesbank Baden-Württemberg	GB	BNP Paribas (London)
DE	Bayerische Landesbank	GB	Barclays Bank PLC
DE	Landesbank Hessen-Thüringen Girozentrale	GB	Deutsche Bank AG (London)
DE	WestLB AG	GB	Goldman Sachs International Bank
DE	DZ Bank AG Deutsche Zentral- Genossenschaftsbank	GB	Lloyds TSB Bank Plc
DE	WGZ BANK Westdeutsche Genossenschafts-Zentralbank	GB	HSBC Bank plc
DE	Landwirtschaftliche Rentenbank	GB	The Royal Bank of Scotland plc
DE	Deutsche Postbank AG	GB	ABN Amro Bank NV (London)
DE	Landesbank Berlin	GB	Citibank NA (London)
DE	Bayerische Hypo- und Vereinsbank AG	GB	Credit Suisse (London)
DE	BHF-Bank AG	GB	Calyon (UK)
DE	HSH Nordbank AG	GB	Dexia (London)
DE	DekaBank Deutsche Girozentrale	GB	Banco Espirito Santo (London branch)
ES	Banco Santander Central Hispano, S.A.	GB	Banco do Brasil (UK)
		GR	National Bank of Greece
		GR	Emporiki Bank of Greece, S.A.
		GR	Alpha Bank, S.A.
		GR	Piraeus Bank, S.A.

GR	EFG Eurobank Ergasias, S.A.	PT	Banco Bilbao Vizcaya Argentaria (Portugal), SA
GR	ATE Bank, S.A.	PT	Banco BPI, SA
GR	BNP Paribas	PT	Barclays Bank, plc
GR	HSBC Bank plc	PT	Banco Comercial Português, SA
HU	Kereskedelmi és Hitelbank Nyrt.	PT	Caixa Geral de Depósitos, SA
HU	UniCredit Bank Hungary Zrt.	PT	Caixa Económica Montepio Geral
HU	ING Bank (Magyarország) Zrt.	PT	BANIF - Banco Internacional do Funchal, Sa
IE	Allied Irish Banks plc	PT	Deutsche Bank (Portugal), SA
IE	Anglo Irish Bank Corporation plc	PT	Banco Finantia, SA
IE	Bank of Ireland	PT	Banco Espírito Santo, SA
IE	UniCredito Italiano Bank (Ireland) plc	PT	BPN - Banco Português de Negócios, SA
IE	Depfa Bank plc	PT	Banco Santander Totta, SA
IE	Irish Life and Permanent plc	PT	Banco Itaú Europa, SA
IE	Rabobank Ireland plc	PT	Caixa Central - Caixa Central de Crédito Agrícola Mútuo, CRL
IT	BANCA IMI	PT	Banco do Brasil, SA
IT	Banca Nazionale del Lavoro Spa	RO	Romanian Commercial Bank SA
IT	Banca Monte dei Paschi di Siena Spa	RO	Abn Amro (Romania) SA
IT	Unicredito Italiano Spa	RO	BRD - Groupe Societe Generale SA
IT	Dexia Crediop Spa	SE	SEB (Skandinaviska Enskilda Banken AB)
IT	Banca Intesa Spa	SE	Nordea Bank AB
IT	BNP Paribas SA	SE	Swedbank AB
LT	AB SEB bankas	SE	Svenska Handelsbanken AB
LT	AB bankas Snoras	SI	Abanka Vipava d.d.
LT	AB bankas Hansabankas	SI	UniCredit Banka Slovenija d.d.
LU	Banque et Caisse d'Epargne de l'Etat, Luxembourg	SI	Nova Ljubljanska banka d.d. Ljubljana
LU	Kredietbank Luxembourgeoise	SK	Slovenská sporiteľňa, a.s.
LU	HVB Banque Luxembourg S.A.	SK	Všeobecná úverová banka, a.s.
LV	Parex Banka		
LV	Rietumu Banka		
LV	HANSABANKA		
LV	SEB banka		
LV	DnB NORD Banka		
MT	BAWAG Malta Bank Ltd		
MT	HSBC Bank Malta plc		
MT	Bank of Valletta plc		
MT	Volksbank Malta Ltd		
NL	ABN AMRO Bank N.V.		
NL	ING Bank N.V.		
NL	Rabobank Nederland		
NL	Bank Nederlandse Gemeenten N.V.		
NL	F. van Lanschot Bankiers N.V.		
PL	Bank Handlowy w Warszawie SA		
PL	Bank BPH SA		
PL	Bank Zachodni WBK SA		
PL	Kredyt Bank SA		
PL	Deutsche Bank Polska SA		
PL	Bank Pekao SA		

ANNEX 6

COORDINATION OF THE 2008 ECB EURO MONEY MARKET STUDY

The 2008 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.

ANNEX 6

