

# THE IMPLEMENTATION OF MONETARY POLICY SINCE AUGUST 2007

## ARTICLES

The implementation of monetary policy since August 2007

*The financial market turmoil has been the greatest test so far of the resilience of the Eurosystem's operational framework. This article describes the implementation of monetary policy by the Eurosystem in response to the financial market tensions that started in August 2007. In particular, the changes in tender procedures and in the corridor formed by the rates of the standing facilities and their impact on the money market are analysed in detail. The changes to the collateral framework and the operations conducted in cooperation with other central banks are also presented. Finally, the measures decided most recently – namely to conduct liquidity-providing longer-term refinancing operations with a maturity of 12 months, to purchase euro-denominated covered bonds issued in the euro area and to grant the European Investment Bank the status of an eligible counterparty in the Eurosystem's refinancing operations – are mentioned.*

*The article argues that the design of the operational framework, together with the significant changes that were implemented in October 2008, have played a central role in reducing the impact of market illiquidity on the operation of solvent financial institutions. Furthermore, the article stresses that, during the most severe period of the financial market turmoil, the Eurosystem was a critical source of liquidity for many banks, temporarily assuming a more prominent function as an intermediary in the money market.*

## I INTRODUCTION

The turmoil in financial markets that started in mid-2007 has been the most difficult test of the Eurosystem's operational framework so far. The euro money market has also been affected, at times severely, by the financial market tensions. Turnover declined substantially and spreads between interest rates on secured and unsecured lending rose to unprecedented levels. As a result, banks with liquidity needs could no longer be sure of obtaining funds in the interbank market, while other banks kept large liquidity buffers in their current accounts with the central bank and used the Eurosystem's deposit facility. In all circumstances, the good functioning of the money market is of great importance to the Eurosystem, as the formation of interest rates in the money market constitutes the first step in the transmission of monetary policy to financial markets and the real economy. Without a properly functioning money market, the pass-through of policy interest rate changes to the real sector becomes more erratic and less predictable. Moreover, a breakdown of the money market would endanger financial stability, as solvent institutions could become insolvent due to liquidity shortages.

The Eurosystem's operational framework usually relies on three main elements: (1) refinancing of the banking sector through open market operations; (2) standing facilities; and (3) reserve requirements. In the period up to October 2008, the ECB used this framework for its liquidity management, which aims to steer short-term money market interest rates to a level close to the minimum bid rate that signals the Eurosystem's monetary policy stance. This minimum bid rate was applied to the main refinancing operations (MROs), which were conducted in the form of variable rate tenders with a minimum bid rate. With these operations, the ECB steered the marginal cost of refinancing for banks. To do so, the ECB essentially chose an appropriate level of aggregate liquidity provision to the banking sector, which needs central bank liquidity to fulfil its reserve requirements and to accommodate changes in autonomous factors. The ECB relied on the money market to distribute this liquidity among banks at market interest rates and to achieve a smooth fulfilment of the aggregate reserve requirements during the course of each reserve maintenance period. After August 2007 this approach was adapted to take into account the higher and more variable demand for liquidity from the banking sector, but was not significantly changed.

With the intensification of the financial market turmoil, and particularly in the months around the end of 2008, the malfunctioning of the money market meant that the formation of short-term interest rates depended not only on the net aggregate liquidity situation, but also on the distribution of liquidity among individual banks and thus on the gross injections of liquidity from the central bank. In this environment, the Eurosystem had to also assume the role of an intermediary in the flow of liquid funds from one bank to another, by changing its operational framework in ways that facilitated its intermediation role (see Section 4).

In the Eurosystem framework banks are required to hold a certain level of reserves in their current accounts with the central bank. Because these requirements only have to be fulfilled on average during each maintenance period (which has a length of approximately one month), in pre-turmoil times banks were largely indifferent as to the days on which they actually held reserves with the central bank: liquidity on one day was a quasi-perfect substitute for liquidity on another day. In this way, the aggregate demand for central bank liquidity was smoothed over time, thus achieving an automatic stabilisation of money market interest rates. During the financial market turmoil, however, the malfunctioning of the money market impaired this stabilising function.

Counterparties also have access to the Eurosystem's standing facilities, i.e. they can obtain overnight financing from the marginal lending facility or place overnight liquidity in the deposit facility. These standing facilities provide an upper and lower limit for the overnight interest rate and thus help to constrain the volatility of this rate.

Finally, all Eurosystem credit operations, including open market operations and usage of the marginal lending facility, require adequate collateral. The concept of adequate collateral has two dimensions: first, it implies that the Eurosystem should be protected from incurring losses in its credit operations; second, it requires

that sufficient collateral be available to a wide set of counterparties so that they can obtain the necessary amount of liquidity from the Eurosystem.

The remainder of this article will discuss the changes to the way the Eurosystem conducts its operations that were introduced in response to the financial market turmoil. In Section 2, developments in the euro money market since the outbreak of the tensions in August 2007 are described. Section 3 briefly describes the measures taken by the Eurosystem between August 2007 and September 2008.<sup>1</sup> Section 4 contains an analysis of the measures taken after the failure of Lehman Brothers further unsettled the market and covers the period until May 2009.<sup>2</sup> Section 5 concludes.

## 2 THE EURO MONEY MARKET SINCE AUGUST 2007

The euro money market was strongly affected by the tensions originating in the US sub-prime mortgage market on 9 August 2007, when rumours about large exposures of some European banks affected their ability to obtain liquidity in the US dollar market and subsequently led to a spike in euro money market interest rates. Activity in money markets decreased sharply, especially in the market for loans with maturities of over one week where activity almost came to a complete halt. At the same time, spreads between interest rates on unsecured and secured lending in those markets increased significantly. While the liquidity management measures implemented by the Eurosystem countered the extreme volatility of interest rates at the very short end of the money market yield curve (as discussed in Section 3), interest rates in the unsecured term market remained elevated. At the same time, a marked shift in transactions

<sup>1</sup> Most of the liquidity management-related measures taken in this period are covered in more detail in the article entitled "The Eurosystem's open market operations during the recent period of financial market volatility" in the May 2008 issue of the Monthly Bulletin.

<sup>2</sup> The cut-off date for data is 29 May 2009.

to loans with shorter maturities took place, i.e. instead of lending at long maturities, banks rolled over short-term contracts. Furthermore, a shift in transactions from the unsecured segment of the money market to the secured segment was witnessed.

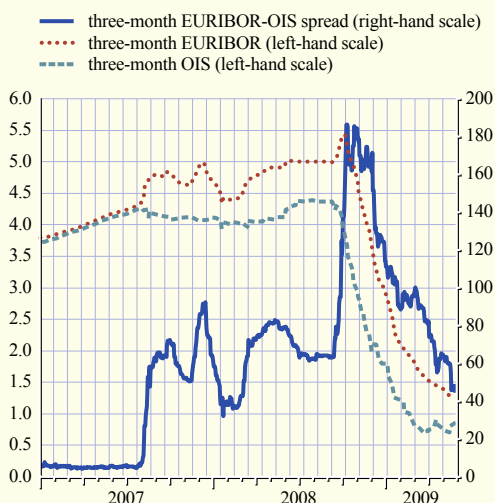
The main reasons why banks were less willing to engage in unsecured lending in the money market seem to stem from liquidity and solvency concerns, which were a result of asymmetric information and uncertainty. On the one hand, in times of high volatility, banks are uncertain both about their own liquidity needs and their ability to obtain refinancing from the market in the future.<sup>3</sup> On the other hand, a high degree of uncertainty about individual banks' exposures, reinforced by market turbulence and the resulting decline in asset values, cast doubt on borrowing banks' solvency and thus their ability to repay a money market loan. While a central bank can, using its operational tools, address the first of these concerns, these tools cannot be used to directly address problems related to credit risk.

A measure of tensions in money markets is the spread between the unsecured interbank deposit rate (e.g. the euro interbank offered rate – EURIBOR) for a given maturity and the overnight indexed swap (OIS) rate (e.g. the euro overnight index average – EONIA – swap rate) with the corresponding maturity. The swap rate is the fixed rate that banks are willing to pay in exchange for receiving the average overnight rate for the duration of the swap contract. It reflects the same credit and liquidity risk premia as the overnight rate, for which these premia are however negligible. The swap rate is therefore relatively immune to changes in liquidity or credit risk. Thus, the spread of the OIS rate against the deposit rate of the same maturity is an indication of perceived credit and funding liquidity risk.<sup>4</sup> Very similar indications are obtained by looking at the spread between unsecured and secured money market rates.

Using this indicator, some periods of particularly severe stress on the euro money

Chart 1 EURIBOR-OIS spread

(percentages per annum; basis points)



Sources: ECB and Bloomberg.

market can be identified (see Chart 1). First, the appearance of the financial market turmoil on the money market can be clearly identified as a level shift in the EURIBOR-OIS spread from around 5 basis points to more than 60 basis points in August 2007. Second, from April 2008 to September 2008 the broadly stable spread reflects a stabilisation of the situation in financial markets, although the spreads remain sizeable. The heightened tensions after the bankruptcy of Lehman Brothers in September 2008 led to an unprecedented level of spreads, with a peak above 180 basis points. In the period immediately after that event, financial markets were in a state of extreme alertness, as the bankruptcy of one important market player increased fears of more bank failures. Serious concerns about the financial health of several other financial institutions, both in the United States and in Europe, raised fears of further bankruptcies. The euro money

<sup>3</sup> The topic of liquidity concerns as a source of liquidity hoarding is analysed in J. Eisenschmidt and J. Tapking (2009), "Liquidity risk premia in unsecured interbank money markets", ECB Working Paper No 1025.

<sup>4</sup> For a more detailed explanation, see the box entitled "Spread between deposit and swap rates as an indicator of money market tensions" in the May 2008 issue of the Monthly Bulletin.

market all but came to a complete standstill in late September 2008, when banks became extremely dependent on obtaining refinancing from the Eurosystem. At this time, the Eurosystem avoided a complete stall of the money market by aggressively changing its liquidity management and the Governing Council initiated a series of cuts in the key ECB interest rates, as visible from the downward trend in rates in Chart 1.

The most important change was the introduction of fixed rate full allotment tenders which gave assurance to banks that they could get from the Eurosystem as much liquidity as they desired at the, fast decreasing, policy interest rate provided they had enough eligible collateral.

The value of the ECB's interventions since October 2008 can be measured, inter alia, by the more important role of the Eurosystem as intermediary in the money market, which is reflected in a strong increase in the use of its deposit facility. Since this time, as will be analysed in detail in Section 4, the ECB has fully satisfied the liquidity demand of the banking sector, which arose in times of great distress.

Almost two years after the beginning of the turmoil, the euro money market was still characterised by an unusually high level of stress. Banks continued to fear that the sector's exposures and losses have still not been fully revealed. While in the first few months of 2009 the tensions have declined, as can be seen both from a reduction in the EURIBOR-OIS spread (see Chart 1) and from a decline in the liquidity provision of the Eurosystem, anecdotal evidence suggests that money market activity in May 2009 was still far below its pre-turmoil level. The term money market and the unsecured segment of the money market remained the most affected. At the same time, it is unclear to what extent activity in the unsecured market will fully recover and a structural trend towards collateralised lending, especially for longer maturities, may develop instead. Indeed, for secured lending transactions there is some evidence of a shift towards longer maturities, i.e. between one and six months, in 2008.<sup>5</sup>

### 3 MEASURES TAKEN BETWEEN AUGUST 2007 AND SEPTEMBER 2008

#### LIQUIDITY MANAGEMENT MEASURES

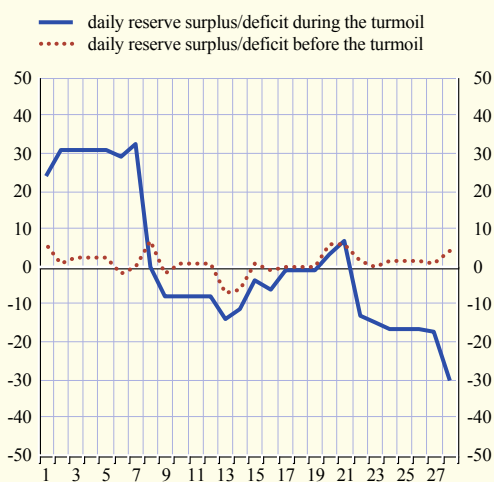
The ECB's immediate response to the tensions in the euro area money market that arose in August 2007 was the temporary supply of additional liquidity with the aim of countering excessive deviations of very short-term rates from the policy rate. This liquidity injection initiated a different pattern in the timing of liquidity supply by the Eurosystem to the banking sector during the course of the reserve maintenance period. The ECB also made more frequent use of fine-tuning operations (FTOs). Prior to August 2007, as already mentioned, the ECB had provided liquidity in a way that allowed the banking sector to smoothly fulfil the minimum reserve requirements over the course of each maintenance period. During the first year of the financial market turmoil, the allotment pattern in MROs was changed. Generally, more ample liquidity was provided at the beginning of each maintenance period, while over the course of the maintenance period the liquidity supply was gradually adjusted downwards so that by the end of each period banks continued to have, as before August 2007, a liquidity surplus of close to zero on average. Chart 2 illustrates the resulting "frontloading" of liquidity by counterparties. In pre-turmoil times, the daily reserve surplus of banks was quite stable and close to its average over the maintenance period. In the first phase of the turmoil between August 2007 and September 2008 it displayed levels above the reserve requirement at the beginning of a typical maintenance period, but levels below that requirement towards the end of such period. The aggregate liquidity supply over time remained unchanged.

With this measure, the ECB managed to avoid excessive deviations of short-term interest rates from the minimum bid rate. Between 7 August 2007 and 12 September 2008 (the last

<sup>5</sup> For a more detailed analysis, see "Euro Money Market Study 2008", February 2009, ECB.

Chart 2 Average daily reserve surplus/deficit

(EUR billions)



Source: ECB.

Note: The series for the daily reserve surplus/deficit during the turmoil shows the average of seven 28-day maintenance periods between August 2007 and September 2008, while the series for the daily reserve surplus/deficit before the turmoil shows the average of four 28-day maintenance periods between April and August 2007.

trading day before the announcement of the bankruptcy of Lehman Brothers) the average EONIA was just 0.7 basis point above the minimum bid rate of the MRO. At the same time, this spread displayed a higher degree of volatility than before: the standard deviation during this period was 12 basis points – double the size in the year to August 2007. This high degree of variability was the result of the unstable financial market environment (which was characterised by successive waves of tensions) and of the resulting difficulties faced by the ECB in estimating the liquidity needs of the banking sector.

As a second measure, in August 2007 the Eurosystem started conducting supplementary longer-term refinancing operations (LTROs) with maturities of three months, and later also six months. By the end of October 2008, both types of operations were being conducted regularly in each maintenance period, and all longer-term operations taken together provided more than €600 billion of refinancing to the banking sector. As a consequence, the share of

all longer-term refinancing (i.e. all refinancing operations with a maturity of three and six months) in total refinancing almost doubled from 33% on average in the first half of 2007 to 61% in the first half of 2008. Thus, the average maturity of refinancing provided to the banking sector rose substantially.

A particularly challenging period proved to be the end of the year 2007. The usual tensions in money markets at a year-end were exacerbated at the end of 2007. In an environment of extreme uncertainty about individual credit risk and the overall market situation, the ECB reassured market participants about its willingness to supply ample liquidity, mainly by conducting a special MRO with a maturity of two weeks covering Christmas and the year-end, in which all bids above a certain rate were satisfied in full.

In the first half of 2008 the situation in money markets improved somewhat. The ECB's frontloading policy proved to be effective in steering money market rates close to the minimum bid rate without increasing the supply of liquidity to the banking sector. This changed in the period following the failure of Lehman Brothers, when the Eurosystem had to employ non-standard liquidity management measures in order to stabilise the money market, as will be discussed in the following section.

#### MEASURES TAKEN IN COOPERATION WITH OTHER CENTRAL BANKS

In response to a significant increase in the difficulties faced by euro area banks in accessing US dollar funding through both the unsecured US dollar market and the foreign exchange (FX) swap market, in December 2007 the ECB launched (in cooperation with the Federal Reserve System and other major central banks) US dollar liquidity-providing operations, against collateral eligible for Eurosystem credit operations, in connection with the Federal Reserve System's US dollar Term Auction Facility (TAF). The US dollars were provided by the Federal Reserve System to the ECB by means of a temporary swap line

and the Eurosystem passed on these US dollars to its counterparties in repo operations. At first, a total amount of USD 20 billion was provided to the euro area banking sector, with a maturity of 28 days, through fixed rate tender auctions with a common pricing scheme applied by all central banks that were drawing from the Federal Reserve System's US dollar swap line. When the tensions eased at the beginning of 2008, the operations were temporarily discontinued, but resumed again in March of the same year, when liquidity pressures in funding markets increased again after the collapse of Bear Stearns. In July 2008 this measure was enhanced to better accommodate euro area banks' US dollar funding needs. The operations with a 28-day maturity were thereby complemented by 84-day operations under the TAF, while leaving the outstanding amount of US dollar refinancing at that time unchanged at USD 50 billion. In September 2008, a period of heightened market tensions, daily overnight variable rate tenders were also introduced and the overall outstanding amounts were further increased.

#### 4 MEASURES TAKEN BETWEEN SEPTEMBER 2008 AND MAY 2009

The sharp deterioration of conditions in the euro money markets that started in September 2008 had important implications for the provision of refinancing by the Eurosystem to the euro area banking sector. First, tender rates in open market operations increased to unprecedented levels. Second, banks significantly increased their usage of both of the ECB's standing facilities. In September and October 2008 the Eurosystem reacted by announcing further operational measures.

#### 29 SEPTEMBER 2008: SPECIAL-TERM REFINANCING OPERATION

On 29 September the introduction of a special-term refinancing operation with a maturity of 38 days was announced. Out of total bids of €141 billion, €120 billion were allotted. Upon maturity, this operation was replaced with

a series of operations with a maturity of the length of one maintenance period.

#### 8 OCTOBER 2008: FIXED RATE TENDER PROCEDURE WITH FULL ALLOTMENT AND NARROWING OF THE CORRIDOR

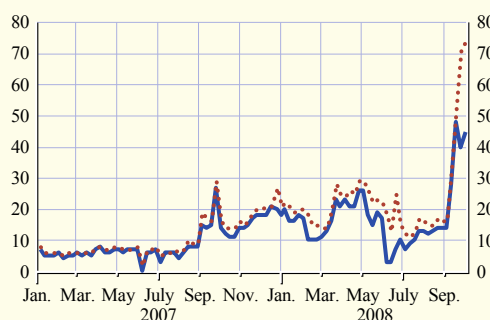
On 8 October the Governing Council decided to change the tender procedure for MROs and LTROs and to symmetrically halve the corridor formed by the rates on the standing facilities.

The gridlock in money markets in late September 2008 had made banks extremely dependent on obtaining refinancing from the Eurosystem. This can be seen from the sharp increase in interest rates that banks were willing to pay in the ECB's open market operations (see Chart 3). In this environment, the Eurosystem considered it essential to ensure that ample liquidity was provided directly to all banks in need, given that the usual mechanism for distributing aggregate liquidity provision via the money market was seriously impaired. Moreover, the Eurosystem aimed to eliminate uncertainty about the amount of liquidity allocated to each bank. Because of the rationing that inevitably occurs in variable rate tenders, a counterparty can ex ante never be entirely sure of the amount of liquidity it will get in the auction.

Chart 3 Tender spreads

(basis points)

— spread between the marginal rate and the minimum bid rate  
 ..... spread between the weighted average rate and the minimum bid rate



Source: ECB.

In pre-turmoil times, such allotment uncertainty and its consequences were limited. The marginal rate of the MRO was predictable, because it tended to be quite stable over time. Moreover, banks bidding at too low a rate could easily obtain any shortfall in funds on the interbank market. During the financial market turmoil, however, these factors changed: first, the marginal rate of the MRO (i.e. the lowest successful bid rate at the tender) displayed a high degree of variability and had become difficult to predict; second, banks faced high uncertainty as to whether they would be able to borrow liquidity in the interbank market, given the general reluctance of banks to lend to each other. This led to a spiral effect where counterparties bid at increasingly high rates in MROs and LTROs. The spread between the marginal rate and the minimum bid rate of the MRO, which in pre-turmoil times had been usually around 7 basis points, began to increase when the turmoil started in August 2007 and fluctuated for one year between 3 basis points and 27 basis points. In mid-September 2008, however, the marginal rate rose above 40 basis points and the average MRO rate even stood at more than 70 basis points above the minimum bid rate.

Against this background, the Governing Council announced on 8 October 2008 the switch, as of 15 October 2008, to a fixed rate tender procedure with full allotment in MROs, in which banks' bids would be satisfied in full at the fixed MRO rate.

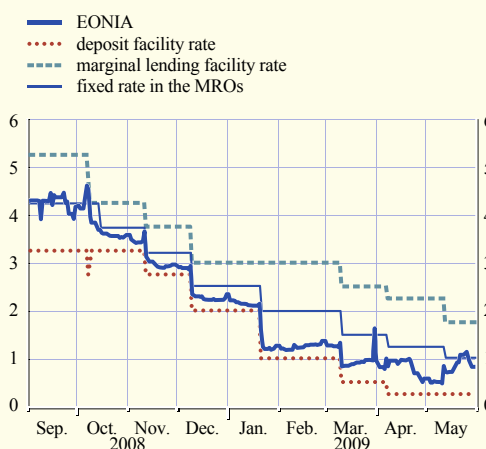
The second measure announced on 8 October 2008 was a narrowing of the corridor formed by the rates on the two standing facilities around the MRO rate. Since early 1999 the corridor had been symmetric around the minimum bid rate, with a width of 200 basis points. Thus, while counterparties could at any time either obtain overnight refinancing or to deposit excess funds overnight with the Eurosystem, they incurred a penalty rate of 100 basis points compared with the MRO rate when doing so. With the intensification of the

turmoil, it was recognised that even solvent banks' ability to obtain funds in the interbank market was impaired, and that recourse to the standing facilities was increasingly important for banks. Indeed, in the first week of October, the average daily recourse to the marginal lending facility was €21 billion, compared with less than €0.5 billion in the period from January to August 2008. Over that period, the average daily recourse to the deposit facility increased from €1.5 billion to €43 billion. While the latter development was mainly a direct result of the ample liquidity situation in early October, the former reflected the increased difficulties for banks to obtain refinancing in the interbank money market.

In order to align banks' cost of refinancing with the MRO rate, the Governing Council decided to narrow the corridor symmetrically to 100 basis points. Consequently, as of 9 October 2008, the rates on the marginal lending facility and the deposit facility were set at 50 basis points above and below the rate on the MRO respectively (see Chart 4).

Chart 4 Key ECB interest rates and the EONIA

(percentages per annum)



Sources: ECB and Bloomberg.

### 13 AND 15 OCTOBER 2008: EXPANSION OF THE LIST OF ASSETS ELIGIBLE AS COLLATERAL AND FURTHER ENHANCEMENT OF THE PROVISION OF LIQUIDITY

On 13 and 15 October 2009 the Governing Council agreed to complement the measures announced one week earlier with another set of measures. These measures affected the list of assets eligible as collateral for Eurosystem operations, the tender modalities of longer-term refinancing operations and operations in US dollars, and further liquidity-providing operations in US dollars and Swiss francs.

As the Eurosystem has always accepted a broad range of assets as collateral, availability of collateral was not a constraint throughout much of 2008. To ensure that collateral did not constitute a constraint after the introduction of the fixed rate procedure with full allotment, the first element of the measures announced on 15 October was a temporary expansion of the list of assets eligible as collateral.

As of 22 October the rating threshold for marketable and non-marketable assets was lowered from “A-” to “BBB-”, with the exception of asset-backed securities, for which the threshold of “A-” remained unchanged. Since that same date the Eurosystem has accepted debt instruments issued by credit institutions which are not listed on a regulated market, but are traded on certain non-regulated markets recognised by the ECB. Furthermore, subordinated marketable debt instruments, which are protected by an acceptable guarantee and fulfil all other eligibility criteria, may also be used as collateral. Since 14 November the Eurosystem has also accepted marketable debt instruments issued in the euro area and denominated in US dollars, pounds sterling and Japanese yen, provided that the issuer is established in the European Economic Area.

In order to fulfil its statutory obligation to ensure that its balance sheet remains protected against financial risk, the ECB applied specific

risk control measures such as additional haircuts to these assets.

The marketable assets added at the end of 2008 to the list of eligible collateral amounted to a volume of around €870 billion, or about 7% of the total amount of eligible marketable assets. They accounted for around 3% of the total marketable collateral posted by counterparties. Moreover, a significant amount of non-marketable assets, mainly credit claims (i.e. bank loans), became eligible when the rating threshold was lowered to “BBB-”.

As a second element of the measures announced on 15 October, the fixed rate tender procedure with full allotment, already applicable to MROs, was also applied, with effect from 30 October, to all LTROs, including regular and supplementary operations, as well as the special-term refinancing operations with a maturity of one maintenance period. During the period under review between October 2008 and May 2009, the fixed rate applied to all LTROs was equal to the MRO rate, but the Eurosystem retained the option to apply a spread to this rate at a later stage. The application of the fixed rate tender procedure with full allotment to all open market operations was essential in order to remove any allotment uncertainty as regards the continued provision to the euro area banking sector of longer-term refinancing and to maintain liquidity ratios at a time when the term money market was seriously impaired.

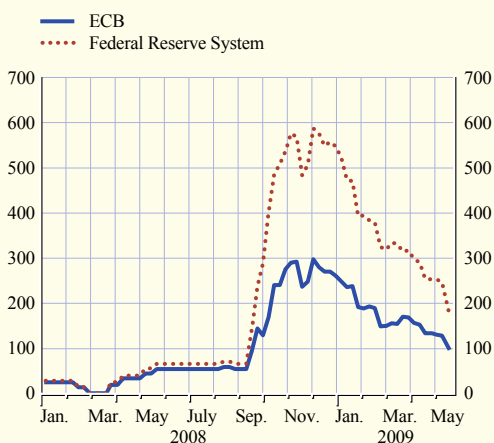
Finally, two other measures announced in mid-October related to the provision of liquidity in foreign currencies and were part of a coordinated effort by major central banks to alleviate interbank funding tensions in those currencies.

On 13 October fixed rate tenders with full allotment were adopted for the US dollar operations. Between December 2007 and May 2009, 114 US dollar liquidity-providing operations were carried out, with varying modalities. As Chart 5 shows, the outstanding



**Chart 5 US dollars provided by the ECB and the Federal Reserve System through central bank swap lines**

(outstanding amounts in USD billions)



Source: ECB and Bloomberg.

amount of US dollars provided by the ECB peaked in early December 2008 at USD 293 billion and declined thereafter to around USD 100 billion in late May 2009. This pattern is in line with the overall supply of US dollars by the Federal Reserve System to central banks around the world through its swap lines (on average the ECB accounted for around 50% of these swap lines) and reflects the easing of US dollar funding tensions after the end of 2008.

On 15 October the ECB and the Swiss National Bank jointly announced that they would start providing Swiss franc liquidity to their counterparties via EUR/CHF foreign exchange swap operations. This measure was intended to counter upward pressure on short-term Swiss franc money market rates and to address the funding needs of euro area banks in that currency. Since then the Eurosystem has offered weekly one-week EUR/CHF FX swaps for amounts that were increased to €25 billion in February 2009 from €20 billion previously. In addition, it conducted four 84-day operations in late 2008 for maximum amounts of €5 billion each. By late May 2009 a total of

36 Swiss franc liquidity-providing operations had been carried out.

### IMPACT OF THE OCTOBER 2008 MEASURES ON THE MONEY MARKET AND THE ROLE OF THE EUROSISTEM

With a fixed rate tender with full allotment in both MROs and LTROs, banks could be certain to obtain all desired liquidity at the ECB's weekly tenders, provided that they had sufficient assets eligible as collateral in Eurosystem liquidity-providing operations. Thus, allotment uncertainty was eliminated. The tender procedure also meant that the aggregate liquidity provided by the Eurosystem to the banking sector was no longer determined by the ECB, but instead was purely demand-driven. This led to a significant increase in the Eurosystem's liquidity provision to the banking sector: on 7 October (the last day of the September-October maintenance period), the total liquidity provision stood at €463 billion. The introduction of the full allotment procedure in MROs and LTROs in the second half of October led to a significant increase in liquidity provision, which rose to €802 billion on average in the period from 30 October to 31 December 2008, with a peak at €860.7 billion at the year-end, as illustrated by Chart 6.

Moreover, the share of longer-term refinancing (i.e. all refinancing operations with a maturity of one to six months) in total refinancing increased further, from 61% in the first half of 2008, to 64% between November and December 2008, and to 70% between January and May 2009.

The ample liquidity provision in refinancing operations caused an aggregate liquidity surplus in the banking sector throughout maintenance periods. Consequently, banks accumulated large liquidity surpluses on their current accounts with the Eurosystem, which they could place on an overnight basis with the deposit facility, at a rate of 50 basis points below the MRO rate (for the period between 9 October 2008

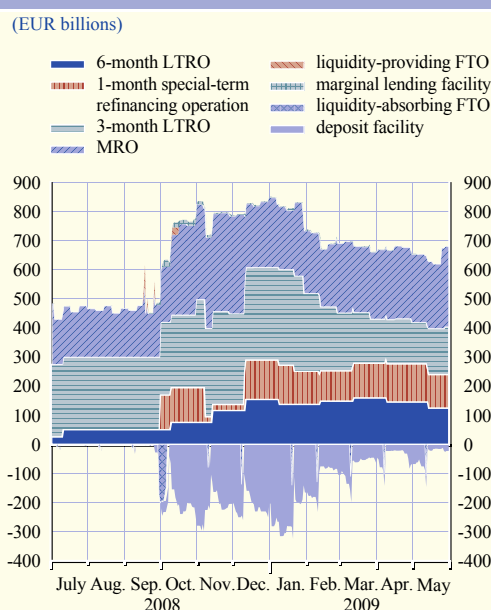
and 20 January 2009). Indeed, a significant increase in the usage of the deposit facility took place, mirroring the increase in liquidity supply (see Chart 6): banks' average recourse to the deposit facility rose to more than €220 billion between 9 October 2008 and 20 January 2009.

The usage of the deposit facility increased towards the end of each maintenance period when increasing numbers of counterparties had met their reserve requirements for the period. On the last day of each maintenance period, by contrast, the aggregate usage was reduced sharply, because the ECB continued throughout the turmoil the practice of absorbing part of the liquidity surplus with an overnight fine-tuning operation.

The recourse to the marginal lending facility also rose, albeit on a much smaller scale, to €6.0 billion per day on average between 9 October 2008 and 20 January 2009. It is noticeable that the use of the marginal lending facility was particularly high between September and early November, when tensions in financial markets were at their greatest, even though, since early October, counterparties had already had unlimited access to refinancing through open market operations. This probably reflects the high level of uncertainty that counterparties faced during this time as regards their own liquidity situation and the inability to raise and dispose of large amounts of liquidity in the interbank market in the week between two Eurosystem operations.

With the introduction of the fixed rate full allotment procedure and the narrowing of the corridor, which were unprecedented in the history of the ECB, the Eurosystem entered a new phase of its liquidity management. The full allotment in open market operations enabled counterparties with liquidity needs to satisfy them directly with the Eurosystem. At the same time, the narrower corridor meant that usage of the deposit facility became much more attractive – compared with the interbank market – for those counterparties with excess liquidity. As a result, the Eurosystem assumed a prominent role as an intermediary for money market transactions, replacing trading on

Chart 6 Provision of refinancing broken down by maturity



Source: ECB.

the money market, which was highly dysfunctional at the time. The extent of this intermediation is directly reflected in the near doubling of its balance sheet, which at its peak on 2 January 2009 stood at €1.763 billion, an increase of €850 billion since June 2007.<sup>6</sup> Banks' demand for the intermediation carried out by the Eurosystem is demonstrated by the 27% increase in the number of counterparties participating in open market operations. In October and November 2008, 128 credit institutions applied for eligibility as counterparties. Participation in open market operations increased markedly during this time. For instance, the number of participants in MROs more than doubled in October and November (to an average participation of 720 counterparties) compared with the period from January to mid-September 2008 (when there were 333 counterparties on average).

The replacement of money market activity with central bank intermediation is also illustrated

<sup>6</sup> These figures refer to a "simplified balance sheet" of the Eurosystem.

in Chart 7, which shows that lending volumes in the unsecured overnight segment by EONIA panel banks declined somewhat after the corridor was narrowed. While during the turmoil, but prior to the narrowing of the corridor, the daily average EONIA volume had stood at €52 billion, it declined to €34 billion after the corridor was narrowed. At the same time, the ample liquidity provision was reflected in a lower level of short-term rates. After the introduction of the full allotment in MROs, the EONIA was quoted consistently below the MRO rate and the EONIA spread decreased to -14 basis points in the period from 9 October 2008 to 20 January 2009.

Finally, the extent of the Eurosystem's intermediation role can also be assessed by analysing the sets of individual counterparties using the different components of the Eurosystem's operational framework. Between 9 October 2008 and 20 January 2009, the proportion of banks using the deposit facility that obtained refinancing in the previous MRO was only 15% on average.<sup>7</sup> Thus, the set of banks obtaining refinancing from the Eurosystem in a given week was largely different from the set of counterparties placing liquidity with it. During the period with a narrower corridor, however, this share has tended to increase slightly. At the same time, the share of deposit facility usage by banks that had previously obtained refinancing in an LTRO has remained quite stable over time, at about 50%. On average, 45% of deposit facility usage was by counterparties that had no outstanding refinancing at all from the Eurosystem. These figures highlight the importance of the intermediation role assumed by the Eurosystem in channelling funds from institutions with excess liquidity that were unwilling to lend directly to those with liquidity needs.

The impact of the measures introduced by the Eurosystem on the broader economy is presented in the box.

#### 18 DECEMBER 2008: ANNOUNCEMENT OF THE WIDENING OF THE CORRIDOR

The ECB's extraordinary measures had a stabilising impact on the euro money market.

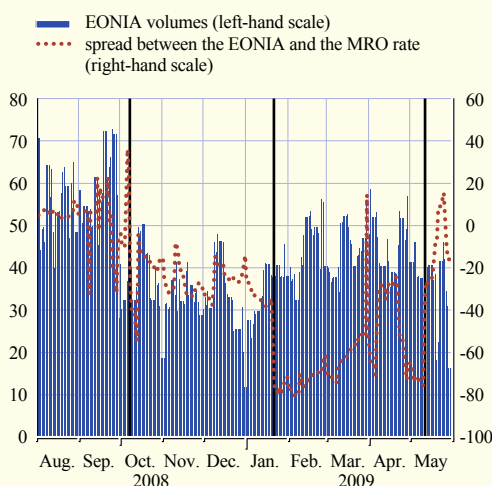
Towards the end of 2008 the worst tensions in the money market seemed to have eased. In addition, the EURIBOR-OIS spread had begun a significant decline from its peak levels, as shown in Chart 1. In this environment, and with the expectation that conditions in the money market would improve further after the turn of the year, the Governing Council announced on 18 December 2008 that, as of the maintenance period starting on 21 January 2009, the corridor formed by the standing facility rates would be widened again to 200 basis points, in line with the desire to avoid crowding out money market activity any more than necessary. With the improving money market conditions, the prominent intermediation role played by the Eurosystem could be reduced to a certain extent.

Chart 6 demonstrates that since late January, when the corridor was re-widened, the degree of intermediation by the Eurosystem started to

7 The figures in this paragraph relate to the largest individual recourse to the deposit facility and cover on average 96% of the total recourse in the period under review.

Chart 7 EONIA spread and volumes

(EUR billions; basis points)



Sources: ECB and Bloomberg.

Note: The vertical lines indicate the narrowing of the corridor on 9 October 2008 and the re-widening of the corridor on 21 January 2009.

decline: the total amount of refinancing stabilised at below €700 billion in the following months, and recourse to the deposit facility, which had become much less attractive, declined to a daily average of €84 billion between 21 January and 12 May 2009. Also, EONIA turnover started to increase again (see Chart 7). In the same period, the average daily EONIA volume stood at €44 billion, up from €34 billion during the period with a narrower corridor. This could be an indication that the wider corridor left more room for the matching of demand and supply in the short-term money market, even in an environment of continuing high credit risk.

At the same time, the wider corridor allowed for a further increase of the spread between the EONIA and the fixed rate in the MRO which was caused by the continued ample liquidity supply. With a narrower corridor between 9 October 2008 and 20 January 2009, the EONIA spread stood at 27 basis points. This spread rose to 62 basis points in the period from 21 January to 12 May 2009. This substantial decoupling of short-term rates from the policy rate illustrates further the segmentation of the money market, since the cost of refinancing for banks with access to the money market (close to the EONIA rate) was substantially below the cost of refinancing for banks that needed to rely on the Eurosystem for refinancing (the MRO rate).

## 7 MAY 2009: ENHANCED CREDIT SUPPORT

More recently, the Eurosystem has decided to further expand its non-standard measures. Specifically, in line with the additional longer-term refinancing operations conducted since October 2008, the Eurosystem decided that, starting on 23 June 2009, it will carry out a series of refinancing operations with a maturity of 12 months, applying a fixed rate tender procedure with full allotment. In addition, it decided to purchase euro-denominated covered bonds issued in the euro area and to grant the European Investment Bank the status of an eligible counterparty in the Eurosystem's refinancing operations. These decisions were taken to promote the decline in money market term rates, to encourage banks to maintain and expand their lending to customers, to help to improve market liquidity in important segments of the private debt security market, and to ease funding conditions for banks and enterprises. In that context and against the background of signs of increasing confidence in the short-term money market, the narrowing of the corridor between the MRO rate and the deposit facility rate from 100 to 75 basis points, that took place in conjunction with the reduction of the MRO rate from 1.25% to 1.00% as of 13 May 2009, was not deemed to entail a significant risk of reducing money market activity.

### Box

#### IMPACT ON THE BROADER ECONOMY OF THE MEASURES IMPLEMENTED SINCE OCTOBER 2008

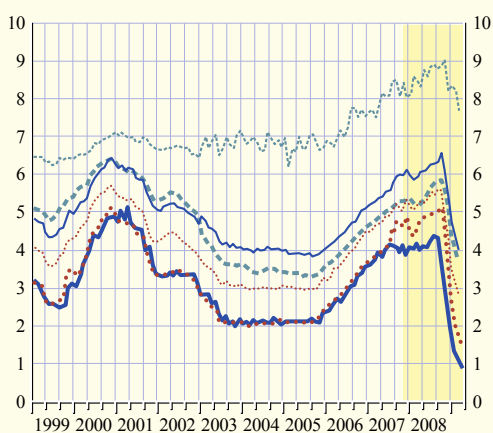
The changes in the operational framework introduced since October 2008, in combination with the easing of the ECB's key interest rates, have helped to lower the cost of financing for the economy at large. As seen in Chart A, the recent and significant drop in the euro overnight index average (EONIA), which mainly resulted from the unprecedented cut in rates in the main refinancing operations (a reduction of 325 basis points between October 2008 and May 2009), but also to some extent from the fixed rate tender procedure with full allotment, was reflected in a variety of short-term money market rates and bank interest rates, which have also posted a marked drop since October.

Moreover, the introduction of the fixed rate tender procedure with full allotment has ensured that some of the necessary conditions for preserving the flow of loans from euro area credit

**Chart A The EONIA, the euro interbank offered rate (EURIBOR) and short-term MFI rates**

(percentages per annum)

- EONIA
- three-month EURIBOR
- - - short-term rate on loans to households for house purchase
- short-term rate on small loans to NFCs
- short-term rate on large loans to NFCs
- - - short-term rate on consumer credit

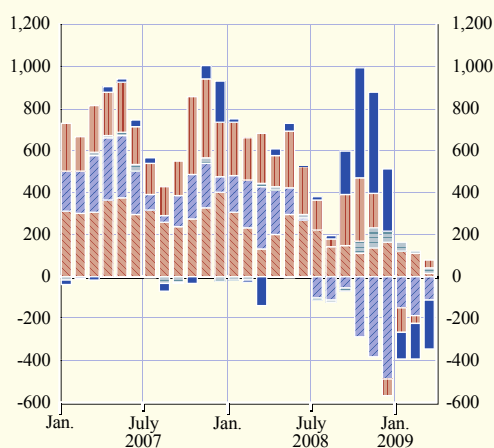


Sources: ECB and Reuters.

**Chart B Funding sources of euro area credit institutions by counterpart sector**

(three-month flows; EUR billions)

- Eurosystem lending operations
- MFIs excluding the Eurosystem
- central government
- external liabilities
- money-holding sector



Source: ECB.

institutions to the private sector have remained in place. In this respect, the Eurosystem alleviated the immediate funding pressure on banks with liquidity needs, thereby substituting market-based borrowing in the interbank market. In essence, these liquidity management measures have contributed to interrupting the “negative feedback loop” from the financial market tensions.

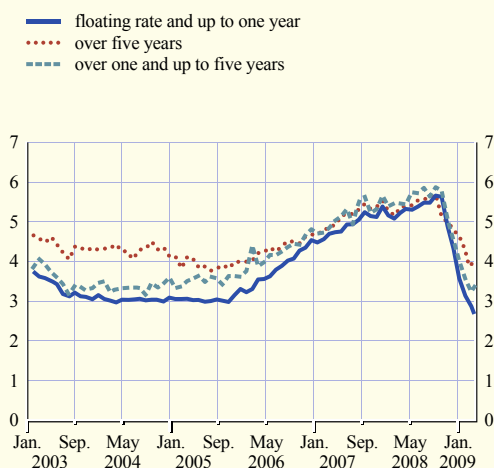
Chart B shows the increased recourse by banks to central bank lending throughout the fourth quarter of 2008, which allowed euro area credit institutions to withstand the shock resulting from the reduction in funding from international financial markets and from other euro area monetary financial institutions (MFIs). In conjunction with retained securitisation activity, this measure has therefore allowed even liquidity-constrained banks to maintain the refinancing of their loan portfolios and thus cover their short-term funding gap. As a result, banks have been able to either maintain the flow of loans or, at least, have faced less pressure to withdraw from lending.

As regards the pass-through of interest rate cuts in the euro area, bank lending rates have declined rapidly since November 2008, in parallel with the fall in money market rates. For example, between October 2008 and April 2009 short-term nominal bank lending rates (i.e. for loans with a maturity of less than one year) for large loans to non-financial corporations (NFCs) declined by around 300 basis points while corresponding long-term rates (i.e. for loans with a maturity of more than five years) declined by around 100 basis points (see Chart C). In real terms, despite the effect of rapidly declining inflation expectations, equivalent bank lending rates (both short and long-term) declined by around 90 basis points.<sup>1</sup> In addition, the widening of spreads on short-term MFI lending rates and deposit rates vis-à-vis short-term market rates have

1 For a comparison of recent developments in banks' interest rates between the euro area and the United States, please refer to Box 3 in this issue of the Monthly Bulletin.

**Chart C Selected nominal bank lending rates for loans over €1 million to NFCs**

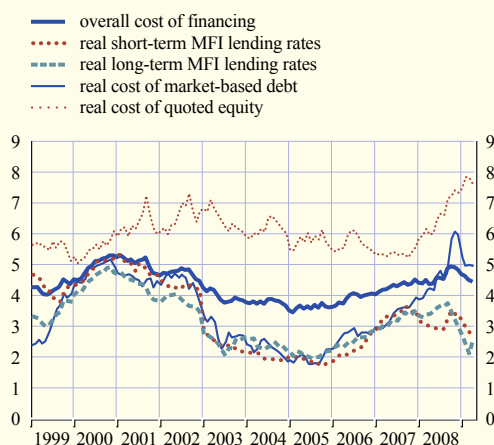
(basis points; January 2003 to April 2009)



Source: ECB.

**Chart D Real cost of external financing of euro area NFCs**

(percentages per annum)



Sources: ECB, Thomson Financial Datastream, Merrill Lynch and Consensus.

stabilised recently and in some cases even reversed in April 2009. All in all, the average nominal cost of external financing has dropped by more than 140 basis points since October 2008. In real terms, as shown in Chart D, the cost of market-based debt has clearly retrenched from its historical peaks in late 2008 and the cost of equity financing, while still elevated, seems to have eased as of late.

All this indicates that the non-standard liquidity measures taken by the Eurosystem since October 2008 have limited a possible hampering of the transmission of monetary policy in the euro area related to the financial market turmoil.

## 5 CONCLUSION

Following the intensification of the financial market tensions in the euro money market in late September and early October 2008, the Eurosystem reacted forcefully by implementing various non-standard measures in its liquidity management. In particular, it has introduced fixed rate tender procedures with full allotment in its open market operations, temporarily narrowed the corridor formed by the rates on its standing facilities, broadened its list of assets eligible as collateral (along with concomitant risk mitigation measures), and provided liquidity in foreign currencies in cooperation with other central banks.

These measures, which have been non-standard in nature, reassured financial market participants that the availability of central bank liquidity was not a reason for concern, and contributed to a return towards stable money market conditions. In this connection, in January 2009 the Eurosystem was able to reduce its intermediation role and it therefore increased the width of the corridor between the standing facility rates.

Most recently, the Eurosystem has decided to enhance its credit support through the conduct of a series of 12-month longer-term refinancing operations (fixed rate tender procedure with full allotment), the purchase of

## ARTICLES

The implementation  
of monetary policy  
since August 2007

euro-denominated covered bonds issued in the euro area and granting the European Investment Bank the status of an eligible counterparty in the Eurosystem's refinancing operations. These measures aim to promote the decline in money market term rates, to encourage banks to maintain and expand their lending to customers, to help to improve market liquidity in important segments of the private debt security market, and to ease funding conditions for banks and enterprises.