Initial experience with the new monetary policy framework and the Bundesbank's contribution to liquidity management by the Eurosystem

In 2002 the Eurosystem carried out a thorough efficiency analysis of its monetary policy instruments and presented various suggestions for operational improvements for discussion in a public consultation procedure. One particular aim was to avoid underbidding in the main refinancing operations, this being undesirable from a monetary policy point of view. Taking account of the results of the analysis as well as the comments and suggestions made by market participants, the Governing Council of the ECB decided in January 2003 to make the reserve maintenance periods more flexible and to shorten the maturity of the main refinancing operations from two weeks to one. In March 2004 the monetary policy instruments were changed to reflect the new minimum reserve and tender regime. This article depicts and analyses the experience of working with the new monetary policy framework through four reserve maintenance periods. The changeover went smoothly; the more flexible reserve maintenance period and the shorter maturity of the main refinancing operations fulfilled expectations during the review period. The article also looks at the Bundesbank's contribution to liquidity management by the Eurosystem and the expanded publication of liquidity data related to the main refinancing operations executed in the new monetary policy framework.

An overview of changes to the monetary policy instruments[1]

Liquidity management as operational means of implementing interest rate decisions by the Governing Council of the ECB

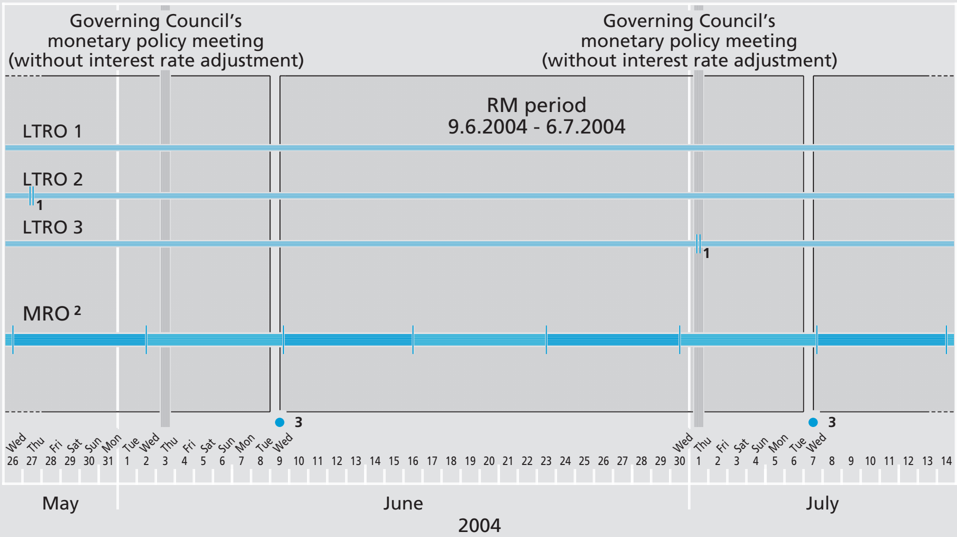
The Eurosystem's liquidity management task is to forecast the need for central bank money in the euro area as accurately as possible and to cover it through open market operations. The aim of liquidity management is to keep the overnight rate in the interbank market close to the rate on the main refinancing operations. Liquidity management therefore implements the ECB's monetary policy decisions in the money market and is the first link in the monetary policy transmission process. Furthermore, liquidity management ensures that the credit institutions are able to fulfil their minimum reserve requirements without undue difficulty.

Synchronising the reserve maintenance period and the maturity of the main refinancing operation with the Governing Council meetings

From the start of European monetary union to the beginning of 2004, the reserve maintenance periods started on the 24th calendar day of one month and ended on the 23rd calendar day of the following month and were independent of the Governing Council meetings. Changes to the key interest rates occurred within a reserve maintenance period and during the maturity of the two-week main refinancing operations, ie changes to the rate on the standing facilities took effect on the very next day following an interest rate decision and changes in the terms and conditions of the main tenders became effective with the next operation. Accordingly, the bidding behaviour of the Eurosystem's counterparties also depended on their interest rate expectations. After the Eurosystem had switched in June 2000 to variable rate tenders, primarily because of the problem of overbidding with the previous fixed rate tender procedure,[2] the environment of low interest rate expectations often led to heavy underbidding, which had an adverse effect on liquidity management in the Eurosystem.[3] As a result, since early March 2004 the reserve maintenance period has been timed to coincide with the monthly monetary policy meetings of the Governing Council of the ECB. The reserve maintenance period now starts on the settlement day of the main refinancing operation following the Governing Council meeting for which the monthly assessment of the monetary policy stance is scheduled (as a rule, the first meeting of the month). Now that the scheduling of the reserve maintenance period has been adjusted, changes in the interest rate on the main refinancing operations (the minimum bid rate in the case of variable rate tenders and – currently not in use – the fixed interest rate for fixed rate tenders) as well as on the standing facilities do not take effect until the start of the new reserve maintenance period. Central bank rates can no longer be adjusted during

1 For a comprehensive report on the efficiency of the monetary policy framework, the public consultation procedure in autumn 2002 and the decisions taken by the Governing Council of the ECB in January 2003, see The Eurosystem's monetary policy framework – experience to date and measures to improve its efficiency, Deutsche Bundesbank, *Monthly Report,* March 2003, pp 15-26. The changes are documented in the current version of the ECB publication entitled *The implementation of monetary policy in the euro area: General documentation on Eurosystem monetary policy instruments and procedures,* published in February 2004; the provisions entered into force on 8 March 2004.
2 See European Central Bank, The switch to variable rate tenders in the main refinancing operations, *Monthly Bulletin,* July 2000, pp 37-42.
3 Against this background, the Governing Council of the ECB decided in November 2001 to take decisions relating to the monetary policy stance as a rule only at its first meeting of the month. This has brought about a considerable reduction in the opportunities to engage in speculative underbidding.

Monetary policy meeting of the Governing Council of the ECB, position of the reserve maintenance period and tender operations



LTRO = longer-term refinancing operation. MRO = main refinancing operation. — **1** Longer-term refinancing operation settled (three-month maturity). — **2** One-week maturity. — **3** Crediting of the first main refinancing operation after the monetary policy meeting of the Governing Council of the ECB; the reserve maintenance period also starts. Minimum bid rate or interest rate on the standing facilities adjusted, if decided by the Governing Council.

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the reserve maintenance period; however, if necessary, the Governing Council of the ECB may deviate from this rule. The additional step of shortening the maturity of the main refinancing operations to one week means that there is no longer an overlap with the following reserve maintenance period. Therefore, interest rate expectations should no longer influence counterparties' bidding behaviour in the main refinancing operations.

Reserve maintenance period starts and ends on TARGET operating days

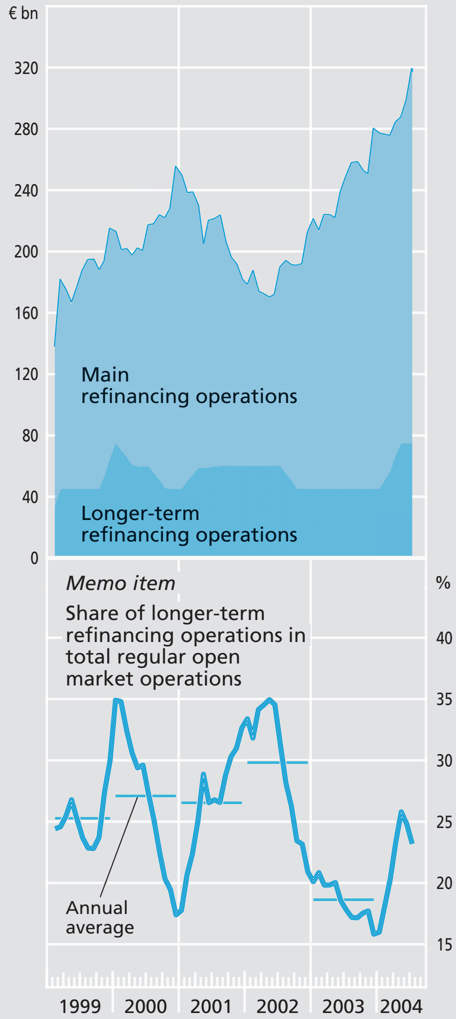
Changing the timing of the reserve maintenance period also ensures that the maintenance period always starts on a TARGET operating day and that recourse to the standing facilities, which is concentrated at the end of the reserve maintenance period, is no longer carried over into the new reserve maintenance period. Furthermore, the reserve maintenance period generally ends on a TARGET operating day, which makes it easier for credit institutions to carry out final fine-tuning at the end of the reserve maintenance period. For security reasons as well as to avoid reserve shortfalls, credit institutions tend to keep higher balances than absolutely necessary at the central bank towards the end of the reserve maintenance period. Whenever the reserve maintenance period ended at the weekend or on a TARGET closing day, large, generally non-interest-bearing excess reserves tended to be held.

Allotment policy simplified and more transparent

In addition, the new timing of the reserve maintenance period has resulted in an easing of the situation with regard to the Italian tax collection date and the end of the reserve maintenance period. The tax collection date

Volume outstanding of main and longer-term refinancing operations

Reserve maintenance period averages



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typically generates a large degree of volatility among the autonomous factors, which made it difficult, in the past, to conduct an accurate allotment policy towards the end of the reserve maintenance period and generally hampered liquidity at the start of the new reserve period. In order to provide bidders in the main refinancing operations with additional information and to grant market participants better insight into the ECB's allotment policy, since the transition to weekly main refinancing operations the ECB has been publishing the "benchmark allotment" on each bidding and allotment day in these operations.[4] This is the allotment amount which allows counterparties to fulfil their minimum reserve requirements without any problems.

Topping up the longer-term refinancing operations

Finally, against the backdrop of overall increasing refinancing needs, the volume of the three longer-term refinancing operations outstanding was raised by €10 billion each to €25 billion at the start of 2004; the liquidity provided by these operations therefore now amounts to €75 billion. As a rule, allotment in the longer-term refinancing operations now takes place on the last Wednesday of each calendar month, with settlement on the following day. The increase also reflects the findings of the public consultation procedure, in which credit institutions expressed the desire to counteract the reduction in the average refinancing maturity – a natural result of shortening the maturity of the main refinancing operations – and to mitigate the higher operational and liquidity management risks associated with consecutive weekly main refinancing operations.

Experience with the variable reserve maintenance period

The Eurosystem set a prolonged reserve maintenance period (from 24 January 2004 to

4 For information on how the benchmark is calculated, see European Central Bank, Publication of the benchmark allotment in the main refinancing operations, *Monthly Bulletin,* April 2004, pp 16-18.

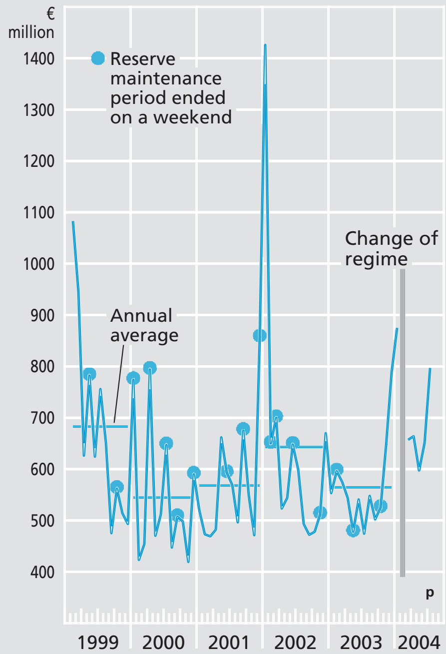
Smooth functioning of the transitional reserve maintenance period ...

9 March 2004) as a transition to the new reserve maintenance period regime. Rather than setting a very short transitional period (24 January to 10 February), the reserve period was extended to just over six weeks, offering the institutions subject to the minimum reserve requirements the advantage of being able to exploit the flexibility of the averaging provision during the transitional period, too. Moreover, the solution appeared logical as the new reserve maintenance period regime, synchronised with the scheduled meetings of the Governing Council of the ECB, will occasionally also result in "long" reserve maintenance periods.

... and of the first regular reserve maintenance periods under the new regime

The transitional period and the first four reserve maintenance periods (now synchronised with the monetary policy meetings of the Governing Council of the ECB) went smoothly. The German credit institutions made the IT adjustments needed to deal with the bookkeeping in the new variable periods in good time, thus avoiding any increase in non-compliance with minimum reserve requirements in the transitional period or in the reserve maintenance periods to date. In addition, since the introduction of its new account management system in January 2004, the Bundesbank has provided each institution subject to the minimum reserve requirement with a minimum reserve overview on each business day; this lists, among other things, the remaining amount of reserves required by the end of the period. Since the spring of 2004 this new process has helped to keep the number of cases of non-compliance with the minimum reserve requirement recorded by the Bundesbank at the traditionally very low level despite the new variable periods.

Excess reserves in the euro area



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Development of the excess reserves

The new regime is intended to stabilise the volatility of the excess reserves, promoting developments which will facilitate liquidity management in the Eurosystem. However, owing to the shortage of observed values, it has not yet been possible to identify any trends. Since a slight change was made to the definition for establishing excess reserves, which has been applied throughout the Eurosystem since January 2004, these figures have been reported (for structural reasons) as approximately €130 million higher. Up to the reserve maintenance period that ended in November 2003 data on excess reserves did not include the balances of credit institutions which fulfilled their minimum reserves requirements through an intermediary (indirect reserve holdings), were not subject to minimum reserve requirements or, after deducting the exemption limit of €100,000, did not have any reserve requirements. Those balances, which do not contribute to the fulfilment of the minimum reserve requirement, are now recorded as excess reserves and have led to the aforementioned increase in the level of excess reserves.

Developments in the open market operations

Speculative underbidding ...

One of the main aims of the changes in the monetary policy framework was to prevent speculative underbidding in the variable rate tenders in the future, ie to avoid situations in which the overall volume of bids is not sufficient to allow the allotment that would be necessary from a liquidity policy perspective. In the past, underbidding occurred when market participants expected rates to be cut within the ongoing reserve maintenance period and, in the hope of a lower minimum bid rate being set in the subsequent main refinancing operations, therefore held back with their bids for the current tender operation. Underbidding led to short-term liquidity shortages and to undesirable upward fluctuations in the money market rates although the market had expected interest rates cuts. This potentially hindered the Eurosystem's liquidity management and helped to weaken the intended monetary signal. Since the transition to the new reserve maintenance period and tender regime in March of this year, there have been no cases of speculative underbidding.

... not an issue in the stable interest rate environment in the first half of 2004

The overall interest rate environment has proved to be very stable since the key interest rate cut in June of last year, with the result that even before the transition to the new monetary policy framework no more speculative underbidding took place.

A new phenomenon – underbidding related to interest rate spread

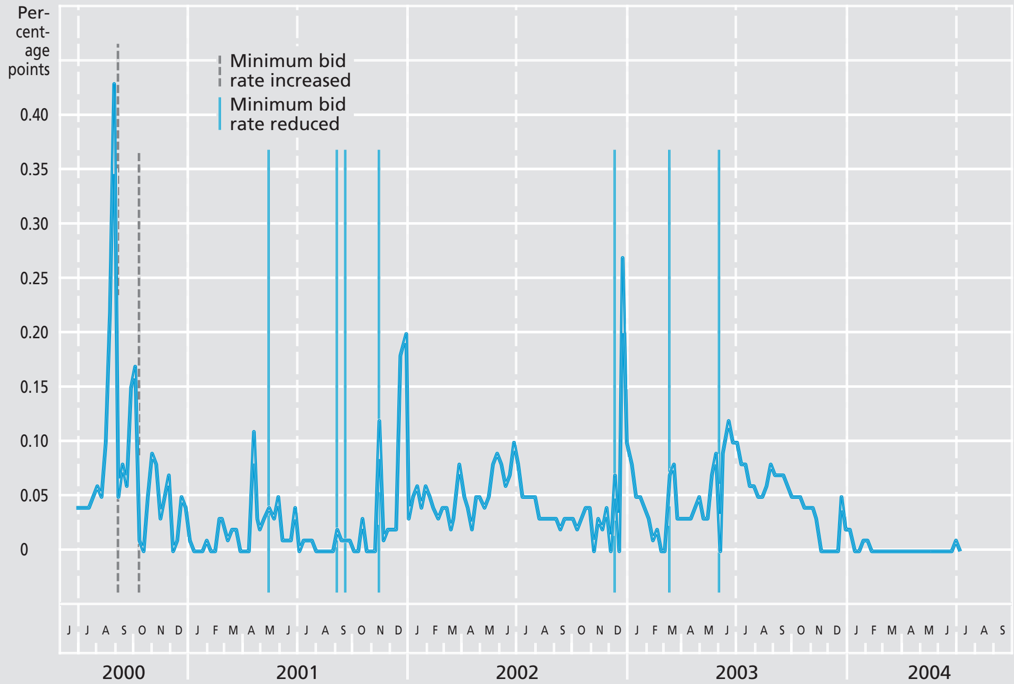
Even so, in the spring of this year slight underbidding occurred twice – this was related, however, to the interest rate spread. Such underbidding can occur when the difference between the short-term money market rates and the marginal interest rate on the main refinancing operations has narrowed to such an extent that, in particular, credit institutions which are normally active in the money market limit their bid volumes considerably since dealing in tender liquidity no longer offers them attractive margins. Underbidding related to the interest rate spread occurred in the main refinancing operations settled on 23 February (ie in the transitional period) and 24 March. These two cases were each preceded by a phase in the money market during which overnight money was at the level of the minimum bid rate or only one or two basis points above it.

No indication of price-driving "safety bids"

During the public consultation procedure of autumn 2002, market participants expressed their concern that eliminating the overlap in the main refinancing operations and the resultant concentration of the entire transfer of liquidity from the main refinancing operations on one day might lead to an increase in the amount of interest rate bids ("safety bids"), which would be reflected in an increased spread between the marginal and the weighted allotment rates and the minimum bid rate. Moreover, if only one, and therefore a completely rotating, main refinancing operation were outstanding, the institutions

Spread between marginal allotment rate and minimum bid rate

Weekly data



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might be inclined to make price-boosting safety bids in order to avoid being given an underallotment or a zero allotment. However, in the first half of 2004 credit institutions' bidding behaviour gave no indication of safety bids being placed. On the one hand, since mid-February 2004 the spread between the marginal allotment rate and the minimum bid rate has been almost consistently at zero, meaning that as a rule each credit institution has always been allotted at least a portion of its bid; on the other hand, owing to the extremely narrow spread between the marginal main refinancing rate and the overnight rate during this period, a potential zero allotment in the main refinancing operation would not have presented any major financial risk to the credit institution concerned.

So far there has also been no confirmation of the concern expressed in the public consultation that, in the future, following the main tender allotments, money market players might find themselves confronted by a situation in which a large volume of central bank credit has to be redistributed but the redistribution might well be hindered by the credit lines set by the institutions in interbank trade.

Timing of the last tender allotment in a reserve maintenance period

Since the transition to the new reserve maintenance period and tender regime, the last main refinancing operation of a reserve period has been regularly allotted seven days before and settled six days before the end of the reserve period; by contrast, before the changeover, the lag between the allotment day of the last tender operation and the end of the reserve period was usually only a few days and only very rarely a whole week.[5] There has thus been an extension of the period of time in which the banks have to deal with greater uncertainty about the adequacy of the liquidity situation at the end of a reserve period. From a liquidity policy perspective, we will have to wait and see if this will lead to a systematic increase in the volatility of the overnight rates towards the end of a reserve maintenance period. The extension of this period of time also increases the risk of errors being made in the Eurosystem's assessment of future liquidity needs and hence to a potential mismatch in the final tender allotment in the reserve maintenance period. This could lead to increased recourse to the deposit or marginal lending facility and to greater fluctuation of the overnight rate towards the end of the period, which in turn could encourage the use of fine-tuning operations. Compared with the previous procedure, however, the new operational framework has not yet led to a significant increase in the use of the standing facilities.

Need for fine-tuning operations

To date, only one fine-tuning operation has been conducted under the new system. On 11 May 2004 – the end of a reserve maintenance period – for one day the Eurosystem absorbed liquidity amounting to €13 billion by collecting fixed-term deposits (by means of a fixed rate tender at 2%). This measure was announced one day in advance. A large amount of excess liquidity had occurred following the last regular main tender in the reserve maintenance period as a result of a gross overestimation of liquidity needs arising from autonomous factors and consequently the overnight rate had fallen well below the official central bank rate of 2%. Immediately after it had been announced that fixed-term deposits would be collected, the overnight rates stabilised and as a result, recourse to the standing facilities generally remained low – in fact, on balance, it was at the lowest level ever seen at the end of a reserve period. All in all, the quality of the assessments of future liquidity needs appears to be good enough to allow the Eurosystem to continue its policy of making very limited use of fine-tuning operations under the new regime, too. This reticence can also be explained by the fact that only a select group of counterparties is eligible to take part in fine-tuning operations, leading to a situation in which, for operational reasons, counterparties are not treated equally. In addition, the very selective use of fine-tuning instruments helps to maintain incentives to trade in the money market (intertemporal arbitrage, risk-taking), ie to maintain the breadth and depth of the interbank money market, with the result that shortages in the short-term money market are always reflected in prices.

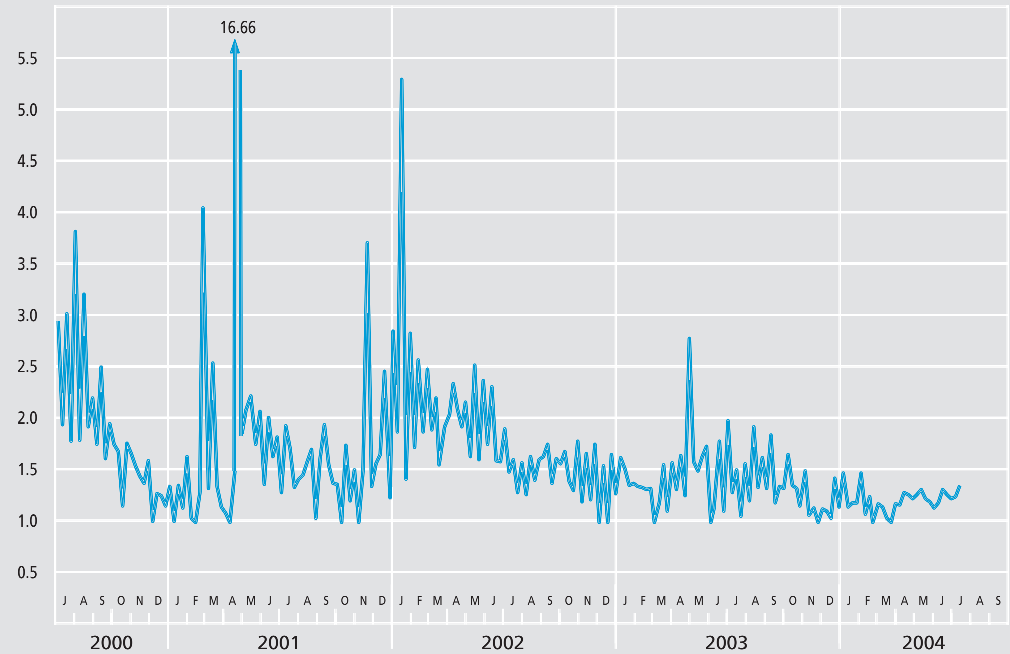
Publication of the benchmark allotment

Since March of this year, the allotment volumes of the main refinancing operations have not deviated (with the exception of the underbid tender settled on 24 March) from the published benchmark allotment. Hence, the ECB reaffirmed its intention to base its allotment decisions closely on current liquidity needs until further notice. Publishing the

5 In order to determine an allotment volume which most closely reflects the estimated liquidity need, particularly in the last tender operation in a reserve maintenance period, in March 2004 the ECB started rounding the allotment amounts to the nearest €½ billion instead of to the nearest €1 billion as was previously the case.

Bid-to-cover ratio
in the Eurosystem's main refinancing operations

Weekly data



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benchmark allotment allows market participants to assess the ECB'S allotment policy more precisely and to gear their bids more efficiently to that policy. Since the start of 2004, the bid-to-cover ratio has stabilised at a low level and is largely free of volatility. Bid-to-cover ratios which remain just slightly above 1 for lengthy periods of time simplify considerably counterparties' bid decisions and result in an appropriate primary allocation of central bank liquidity. By contrast, high and particularly volatile bid-to-cover ratios require bidders to also undertake a tactical assessment with respect to the development of the bid-to-cover ratio and can thus lead initially to a less efficient allocation of liquidity.

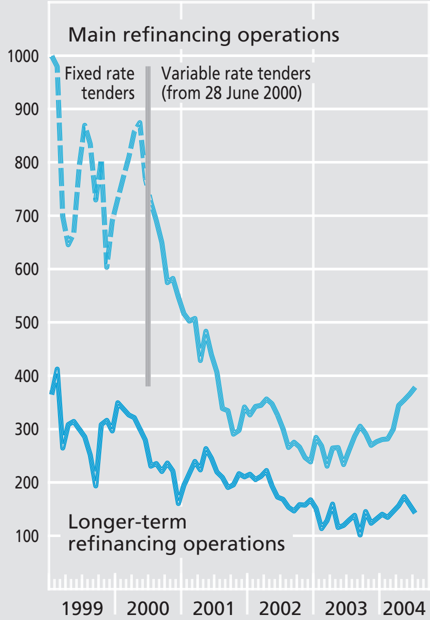
The bid-to-cover ratio stabilised at a low level

Bidding in the main refinancing operations

Bidding activity in the main refinancing operations has increased since the spring of this year. Whereas in 2003 an average of 267 bidders took part in the Eurosystem's main refinancing operations, under the new regime the number of bidding institutions has risen steadily to just under 400, a figure which was last reached in the first half of 2002. The increase in the number of bidders in the main refinancing operations could be due in part to the transition to a weekly maturity and the attendant shorter – and for some credit institutions more attractive – lock-in periods for the collateral which has to be deposited with the central banks. The constellation of the money market rates during the period under review probably also played a role. For instance, the tight spreads between the minimum bid rate, the marginal allotment rate

Number of bidders in main and longer-term refinancing operations

Monthly averages



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and the overnight rate resulted in a considerable reduction of the risks associated with placing bids during a variable rate tender, ie taking what, with hindsight, turns out to be the wrong decision with respect to the interest rate bid or the amount allotted. As a result, bidding directly in a central bank tender became more attractive for smaller credit institutions which are less active in the money market.

Trends in German institutions' recourse to central bank refinancing

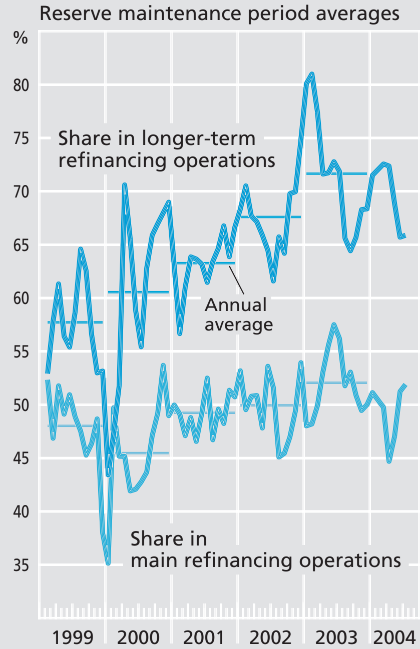
The sharp increase in the number of German bidders is particularly striking. However, this trend contrasts with the occasional fall in the share of Bundesbank counterparties in the volume of the main refinancing operations outstanding. This was due to a considerable temporary decrease in the volume outstanding of German central bank refinancing at a small group of German institutions which traditionally have been particularly active in the money market. In mid-2003, in the run-up to the last interest rate cut, these institutions accounted for just over 60% of the volume outstanding of German refinancing; their share dropped sharply in the spring of 2004 and has since stabilised again at around 40%. The bidding behaviour of these institutions determines to a large degree the trends in central bank refinancing of German institutions in terms of volume and generally exerts a perceptible influence on the cross-border liquidity flows of the German banking system as a whole. Measured in terms of the intra-Eurosystem claims related to TARGET, in the past German credit institutions have mostly been net exporters of central bank liquidity. Owing in part to the declining involvement of several German institutions which are active in the money market, the German banking industry has been a net importer of liquidity since the autumn of 2003. German credit institutions did not become net exporters of central bank liquidity until the end of the period under review, when the German share of refinancing credit expanded again. The bidding behaviour of the leading German money market players in the tender operations since September 2003 was possibly also a reaction to the deteriorating business opportunities in the interbank money market. The Eonia overnight interest rate remained close to the minimum bid rate, thus considerably reducing the margin attainable in the interbank money market, which also led to the aforementioned interest rate spread related underbidding in March 2004. Together with low margins, the occasionally lower bid volumes of the leading German bidders may have led to stronger bidding by smaller German institutions in the tender operations. This suggests that these credit institutions are replacing borrowing in the domestic interbank money markets (they are not used, however, to employing cross-border liquidity to cover their liquidity needs).

Participation in the longer-term refinancing operations

In the public consultation procedure, credit institutions advocated retaining the longer-term refinancing operations because they did not consider unsecured longer-term money market operations or the longer-term interbank repo market to be entirely viable substitutes for longer-term central bank financing. In actual fact, interest in the main refinancing operations has grown; the number of bidders has increased. German credit institutions are still among the most active participants. The relatively favourable allotment rates are also likely to have contributed to the increased attractiveness of the longer-term refinancing operations: the spread between the allotment rates of the longer-term refinancing operations and the three-month Eonia swap rate, which in 2003 was still several basis points, has virtually eroded away.

Bundesbank counterparties' share in open market operations

Reserve maintenance period averages



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Viability of the adjusted monetary policy instruments

Effective monetary policy signals sent by the variable rate tender

In the first months since the transition to the new reserve maintenance period and tender regime, the monetary policy framework has proved effective and completely fulfilled its functions. The ECB's control over the marginal interest rate on the main refinancing operations and the short-term money market rates has remained very effective. The spread between the minimum bid rate and the marginal allotment rate on the main tenders has been close to zero since the beginning of the year. The minimum bid rate has thus been able to fully develop its potential as a monetary policy signal. The introduction of the new reserve maintenance period (now synchronised with the monetary policy meetings of the Governing Council of the ECB) went smoothly. There was no evidence of speculative underbidding or price-boosting safety bids. The new monetary policy framework must, however, still demonstrate its ability to prevent speculative underbidding in an uncertain interest rate environment. The occurrence of interest rate spread related underbidding has to be assessed in the context of the extremely stable interest rate environment of the past few months. To date there has been no systemic increase in recourse to the standing facilities or a rise in the use of fine-tuning operations. This also reflects not least the quality of the assessments of future liquidity needs and that of the liquidity management of the Eurosystem.

The Bundesbank's role in liquidity management by the Eurosystem

Liquidity management a common Eurosystem task

The ECB and the twelve national central banks (NCBs) in the Eurosystem work together closely in managing liquidity. The Governing Council of the ECB sets the schedule and the terms and conditions for the regular open market operations as well as for the standing facilities. The Executive Board of the ECB decides the amount to be allotted in the main refinancing operations and the execution of fine-tuning operations. These decisions are preceded by an in-depth, up-to-date analysis of the liquidity situation in the banking system and the money market. In this context, the Bundesbank forecasts the liquidity needs for Germany, which the ECB then adds together with the amounts indicated by the other NCBs for the purpose of providing an overall analysis of the Euroystem. The ECB takes its decisions regarding the provision or absorption of central bank liquidity as part of the monetary policy decisions of the Governing Council of the ECB on the basis of this aggregate.

Liquidity analysis based on daily financial statement

The daily financial statements of the NCBs and the ECB from the preceding day form the basis for the Eurosystem's liquidity analysis. The Bundesbank transmits its daily financial statement to the ECB electronically on the morning of each TARGET operating day. For this purpose (as well as for a number of other daily electronic data transfers) an information system which has been especially designed for the Eurosystem and which meets the Eurosystem's exacting demands with regard to reliability and security during data transfer is used. From the daily financial statements sent to it as well as from its own daily financial statement, the ECB generates, by the afternoon of the same day, the provisional consolidated daily financial statement of the Eurosystem for the preceding day. A significant amount of information on the current liquidity situation can be gleaned from this daily financial statement and particularly from the changes vis-à-vis the preceding day. This includes, in particular, the credit institutions' central bank balances and their recourse to the marginal lending facility and the deposit facility. The ECB releases this information to the public each day by 9.15 am through wire services. A simplified version of the consolidated financial statement from the preceding Friday is generally released each Tuesday in an ECB press release as the Eurosystem's weekly financial statement and can be viewed on the ECB's website.

Forecasting the liquidity needs of the banking system

However, scrutinising the daily financial statement alone does not provide the information obtained through an in-depth liquidity analysis. In addition, a forecast of the banking system's liquidity needs calculated from the minimum reserve requirement and the autonomous liquidity factors is also essential. Autonomous factors are those factors other than the minimum reserve requirements which determine the liquidity needs and which cannot be controlled directly through liquidity management and are therefore said to be "autonomous". In particular, these include the volume of banknotes in circulation, which ultimately depends on people's demand for banknotes, and general government deposits with the Eurosystem, the volume of which depends on the decisions made by public sector bodies. Other autonomous factors include net foreign assets and the Eurosystem's net assets denominated in euro, items in course of settlement and other autonomous factors (such as accrued interest of the Eurosystem).

The Bundesbank's contribution to the forecast of autonomous factors

Each TARGET operating day, the Bundesbank forecasts the German share of the autonomous factors for that day and for the subsequent days of the ongoing reserve maintenance period – at least ten weekdays in advance. It transmits these data to the ECB electronically together with the required German minimum reserves, which, however, usually change only at the start of a new reserve maintenance period. The ECB consolidates the Bundesbank's forecast with the forecasts by the other NCBs and its own forecast of the autonomous factors affecting the ECB to produce a forecast for the Eurosystem as a whole. Owing to the large German share of the liquidity needs of the euro-area banking system, particular attention is paid to the forecast of the German share in the autonomous factors. For instance, the German share accounted for around 50% of the daily average during the reserve maintenance period from June to July 2004. The ECB publishes the status of the autonomous factors of the Eurosystem for the preceding day by 9.15 am each day through wire services. Average values of the autonomous factors in the Eurosystem and at the Bundesbank for the individual reserve maintenance periods are presented in a simplified form in the Statistical Section of the Bundesbank's *Monthly Report* (pages 14*-15*). In addition, in the February, May, August and November editions of the *Monthly Report* a separate section, entitled "Money market management and liquidity needs", is devoted to the development of the autonomous factors. The forecast of the autonomous factors is always published with the announcement of a main refinancing operation as the average for the days relevant to the maturity of the operation. Since 9 March 2004 an updated forecast has also been published on the allotment day in order to afford the market better insight into the allotment volume.

Capturing and forecasting excess reserves

Credit institutions' excess reserves also play an important role in the liquidity analysis. The credit institutions' central bank balances generally differ from their minimum reserve holdings. To ascertain whether there is sufficient liquidity in the market, the status of both the current and forecast minimum reserve holdings must be taken into account. The Bundesbank therefore captures the portion of the central bank balances which is not used to fulfil the minimum reserve requirement separately and transmits the corresponding daily data to the ECB at least three times during each minimum reserve period. On the basis of these data and the data from the other

NCBs, the ECB elaborates a forecast of the credit institutions' liquidity needs arising from excess reserves. The data at the end of the reserve maintenance period are of particular importance as by far the largest share of the excess reserves is accumulated only on the final days of that period.

Deriving the benchmark allotment

The required reserves, the forecast of autonomous factors and the forecast of the excess reserves together give a picture of the likely development of the need for central bank liquidity in the euro-area money market during the forecast period. With account being taken of the fulfilment of the minimum reserve requirements and provision of funds up to that point in time, the "benchmark allotment" of a main refinancing operation can be calculated from this estimated need, representing the allotment figure which will generally allow the counterparties to meet their minimum reserve requirements without difficulty in the period up to the settlement of the subsequent main refinancing operation.

Qualitative information on the assessment of the liquidity situation

In addition to the quantitative analysis, qualitative information is also vital to an assessment of the liquidity situation. In this respect, the Bundesbank maintains daily contact with important German money market players and prepares this information for the ECB. On a daily basis the Bundesbank contributes the assessment of the most active German institutions in the money market with regard to money market developments, their expectations with regard to further interest rate developments and their interpretation of the Eurosystem's monetary policy operations. If recourse to the standing facilities is relatively high, the Bundesbank analyses the reasons for this demand. In addition, the Bundesbank monitors the money market continuously and, if necessary, contacts its counterparties in order to gather data relative to liquidity which it then forwards to the ECB. The ECB ultimately takes its decisions regarding the provision or absorption of central bank liquidity on the basis of all these data on the liquidity situation.

The Eurosystem's liquidity management to date very successful

The main objective of liquidity management by the Eurosystem has been achieved in the years since the start of monetary union. Measured in terms of the average Eonia rate, short-term money market rates, ie in particular the overnight rate, have been close to the fixed rate or the minimum bid rate in the main tenders. Fairly large divergences have generally occurred only at the end of the reserve maintenance period whenever it was not possible to offset an existing liquidity surplus or a liquidity shortfall in the current period by means of a regular main refinancing operation. Between 2 January 1999 and 6 July 2004 the difference between the fixed rate/minimum bid rate and Eonia was, on average, only 7 basis points, the standard divergence being 17 basis points; all "distortions" at the end of the reserve maintenance period and fluctuations due to speculations about interest rates are included in that figure. In addition, the average very low recourse to the standing facilities of €0.5 billion in the case of the marginal lending facility and €0.4 billion in the case of the deposit facility indicates that the advance estimates of liquidity needs arising from autonomous factors were sufficiently accurate to ensure a long-term balanced liquidity position in the money market, particularly since compliance with the minimum reserve requirement is based on average daily reserve holdings over the maintenance period.

Decentralised organisation of liquidity management a decisive factor for an accurate forecast of the autonomous factors, ...

Despite a concomitant unavoidable need for harmonisation, the decentralisation of liquidity management is a decisive factor in successful liquidity management. Liquidity needs arising from autonomous factors tend to be derived from the NCBs' daily financial statement items. This shows that certain individual autonomous factors are determined by national peculiarities. These national developments of relevance to liquidity can be recorded efficiently through the decentralised structure of liquidity management in the Eurosystem. The accuracy and the associated informational advantages therefore argue in favour of this decentralised approach. This is particularly true of banknotes in circulation, where very different national profiles are apparent, and of the impact of public sector transactions with the NCBs. From the point of view of the Bundesbank it is particularly worth mentioning that since the introduction of the euro banknotes the peaks in the domestic demand for banknotes previously experienced in the main holiday and travel periods have not been as sharp; however, their role in the estimate is not negligible. Moreover, country-specific developments with regard to banknotes in circulation are caused by the national differences in holidays. However, longer-term developments in the demand for banknotes could also lead to differences between the countries.

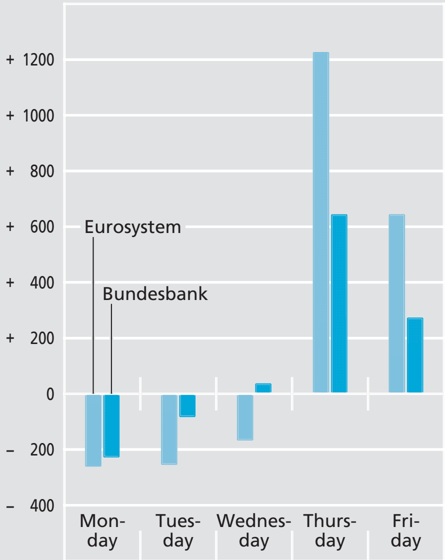
... particularly of banknotes in circulation ...

Banknotes in circulation in the Eurosystem expanded overall by 25.4% between 1 January 2003 and 30 June 2004, while net banknote issuance by the Bundesbank marked an increase of 36.7%. Owing to the particularly dynamic development of the demand for banknotes in Germany relative to the Eurosystem as a whole, the forecast of the further development of this autonomous factor assumes a key importance. The fact that the change in banknote circulation in Germany is proving to be quite unstable is making this difficult to estimate. In the case of the daily changes in banknotes in circulation (particularly relevant to the forecast of autonomous factors of the Eurosystem), the average German share in the same period was 53.3%, while the German share in net banknote issuance was only 38.1%. When it comes to presenting an adequate picture of the development of banknote circulation from which the liquidity needs in the Eurosystem can be estimated, a typical weekly pattern of changes in the demand for banknotes suggests the econometric approach to be taken.

Monday and Tuesday are typically those days on which banknotes in circulation decrease. Wednesday proves to be relatively constant. By contrast, there is normally an increase in banknotes on Thursday and Friday. This pattern can be explained by the demand behaviour of the users, who make most of their purchases on Saturdays. At the start of the week the money flows back to the Bundesbank. It should also be noted that on the days around the turn of the month there is a distinct increase in the demand for banknotes. Deviations from this standard weekly pattern

Weekly pattern of changes * in banknote circulation

€ million



* Average daily changes in the period from 1 January 2003 to 30 June 2004, by weekday.

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are caused by public holidays, school holidays and particularly cash-intensive periods such as Easter and Christmas. These effects are likewise to be taken into account when banknote circulation is estimated. To assist it in estimating banknotes in circulation, for some time the Bundesbank has been using a dynamic banknote model, which shows the daily changes via an autoregressive process, with account being taken of typical weekly patterns and special effects. Banknotes in circulation in Germany is calculated daily on the basis of the model and, if the situation requires, adjustments are made.

... and public sector deposits

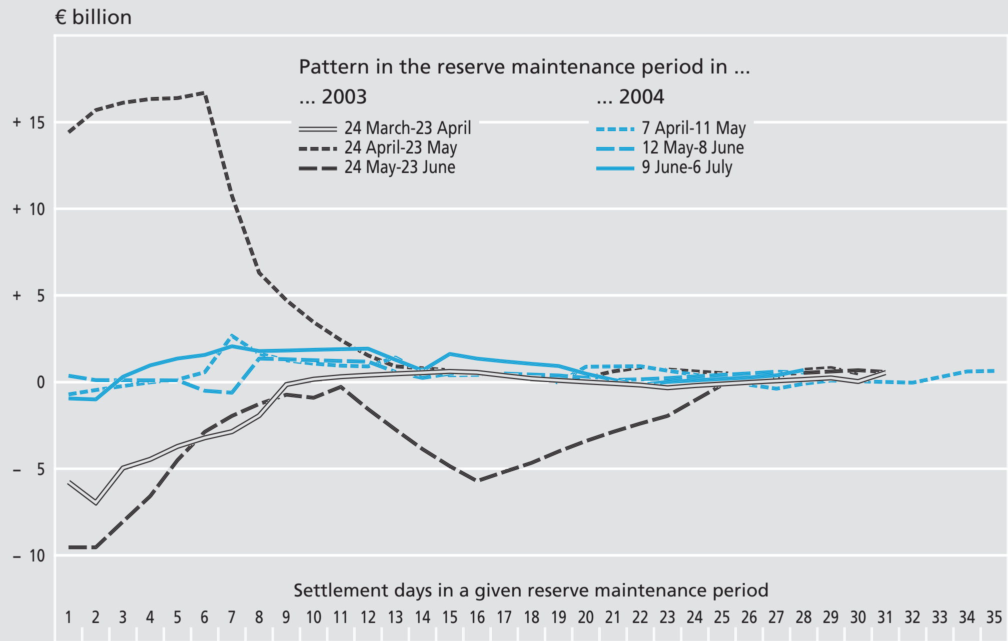
By contrast, government transactions with the NCBs do not play a role for the Bundesbank as the public sector in Germany holds its credit balances in the money market. The situation is different in Italy, for instance, where the public sector holds its balances – which fluctuate widely over time – with the Banca d'Italia, with a correspondingly large impact on the credit institutions' liquidity position.[6] In the former system the widest spread of public sector deposits within the Eurosystem coincided with the changeover of the reserve maintenance period. However, since the changeover to the new regime in March 2004 it now occurs roughly half-way through the period, leading to a stabilisation of the ongoing fulfilment of the reserve requirement by the credit institutions particularly at the start of the period.

Decentralised conduct of open market operations

Although for the execution of open market transactions, there is a single monetary policy framework for all euro-area member states, there are distinct country-specific differences on some points relating, for example, to differences in the national legal systems. The refinancing operations are conducted in Germany, for example, as securitised lending, with the Bundesbank having a right of lien on the collateral but with the debtor retaining ownership, provided that the latter meets any payment obligations. In other countries, however, the refinancing operations are conducted as repos, with ownership of the securities being transferred to the NCB in question for the duration of the operation. There are also national differences with regard to the handling of the eligible assets used as collateral. The Bundesbank uses a pooling system, ac-

6 Further information on the liquidity effects of government transactions with the NCBs in the euro-area member states can be downloaded from the ECB's website at http://www.ecb.int/mopo/implement/liq/html/treas.en.html.

Fulfilment of reserve requirements in the euro area*



* Deviations of the credit institutions' central bank balances from the reserve requirements, as an average of the settlement days in the relevant reserve maintenance period.

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cording to which all collateral submitted by a credit institution is used *en bloc* to cover all kinds of central bank credit, including intraday credit in the context of payment transactions. By contrast, other NCBs use an earmarking system, in which the collateral submitted is allocated to a specific transaction. The great advantage of the pooling system is that changes in the value of the assets submitted as collateral are normally reflected only in fluctuations of that part of the collateral pool that is still available as cover. By contrast, in the earmarking system revaluations can make it necessary for collateral to be recalled or released. This great flexibility of the pooling system facilitates, in particular, the processing of intraday credit, for which, as a rule, no separate submission of collateral is required. Moreover, collateral that is needed by the submitting credit institution for other purposes can be easily exchanged.

There are also differences with regard to the operational criteria that a credit institution is required to fulfil before it can be admitted to refinancing operations at the national central bank. In the interest of striking a balance between obligations (minimum reserves) and entitlements (refinancing), the Bundesbank has established these criteria in such a way as, in principle, to allow all domestic banks subject to the minimum reserve requirement direct access to central bank credit. Although German banks account for only one-third of the euro-area credit institutions subject to the minimum reserve requirement, some 60% of all counterparties authorised to take part in the open market operations and the marginal lending facility come from Germany.

Euro-area enlargement makes greater demands on the efficiency of the liquidity management structure

All this shows that the decentralised structure of liquidity management within the Eurosystem, in which information on the liquidity situation is derived largely by the individual NCBs, decision-making on the measures to be taken is centralised at the ECB and the subsequent implementation of decisions is the remit of the NCBs, is best suited to the special structure of the Eurosystem. This is conditional on there being close cooperation between the institutions concerned. If further countries accede to monetary union, the need for harmonisation will tend to increase. It will depend on cooperation in the enlarged Eurosystem still being organised in such a way as to enable liquidity management to work as well as to date.