

## The integration of the German money market in the single euro money market

Since the transition to the single monetary policy of the Eurosystem on January 1, 1999, central bank interest rates have been unified and the banking sector has been supplied with central bank money by means of unified monetary policy operations. It goes without saying that the Eurosystem can gear such operations only to the total liquidity of the banking sector in the euro area. However, the traditional purely national distribution of central bank money no longer suffices to ensure that the liquidity created by the refinancing operations ultimately becomes available precisely where it is needed. An efficient liquidity redistribution system throughout the euro area is therefore required as well: the smooth functioning of cross-border money trading, of cross-border liquidity/interest-rate arbitrage and of the payment infrastructure needed for the purpose is vital for the implementation and operation of a single monetary policy.

Both the integration of the European interbank money market and the German segment of that market are examined in the present article. As there is a direct connection between the creation and distribution of central bank money, the article is preceded by an analysis of initial experience of the "new" monetary policy instruments.

## The money market as the operational point of departure of the central bank, and initial experience of the range of monetary policy instruments of the Eurosystem

Money-market management by the central bank is a combination of interest-rate and liquidity management. The transmission of monetary stimuli starts in the money market and works through the other credit and financial markets, as intermediate stages, to the real economic sphere. In the execution of monetary policy, the monetary policy instruments and procedures that are to be analysed in more detail in the following pages play differing roles.

*Focus on a few instruments*

The range of policy instruments envisaged for the operational framework of the Eurosystem is quite extensive, compared with the Bundesbank's policy instruments.<sup>1</sup> Not least owing to the existence of a minimum reserve system acting as a liquidity buffer, however, not all of them actually have to be employed. The concentration on a few regular and standardised operations not only is conducive to transparency but also facilitates the direct participation of smaller banks in monetary policy operations. In the euro area, banks have, on balance-sheet grounds (i.e. not counting the minimum reserves), a "structural" need for refinancing by the central bank system. By introducing minimum reserves, the Eurosystem further reinforced the banking system's dependence on refinancing to the tune of just over € 100 billion (with Germany accounting for approximately one-third), and thus put money-market and

interest-rate management on a sustainably sound footing. Altogether, the refinancing operations total some € 185 billion (annual average in 1999).

## Changes in the minimum reserve system

Just as under the Bundesbank's system, the minimum reserves are designed in such a way as to act as a general and individual liquidity buffer. Minimum reserve requirements have to be complied with only as a daily average of the maintenance period, viz. from the 24<sup>th</sup> of the month until the 23<sup>rd</sup> of the following month. Hence credit institutions can tolerate daily changes in their central bank balances in the course of the maintenance period, in the expectation that such fluctuations will balance out on average over the period. On the one hand, this makes daily fine-tuning of the overall liquidity situation by the central bank, and thus fine-tuning measures with an "exclusive" range of banks, largely unnecessary. On the other hand, the minimum reserve system gives credit institutions scope for individual liquidity operations, taking due account of interest-rate expectations.

*Buffer function of the minimum reserves*

German credit institutions are familiar with the mode of operation of a minimum reserve system. That applies, for example, to the fact (still apparent today) that the overnight interest rate – given the buffer function of the minimum reserves – responds in a characteristic way to the given provision of liquidity; in

<sup>1</sup> See European Central Bank, The single monetary policy in Stage Three. General documentation on ESCB monetary policy instruments and procedures, September 1998, and Deutsche Bundesbank, *Informationsbrief zur EWWU*, Nr. 15 (available in German only).

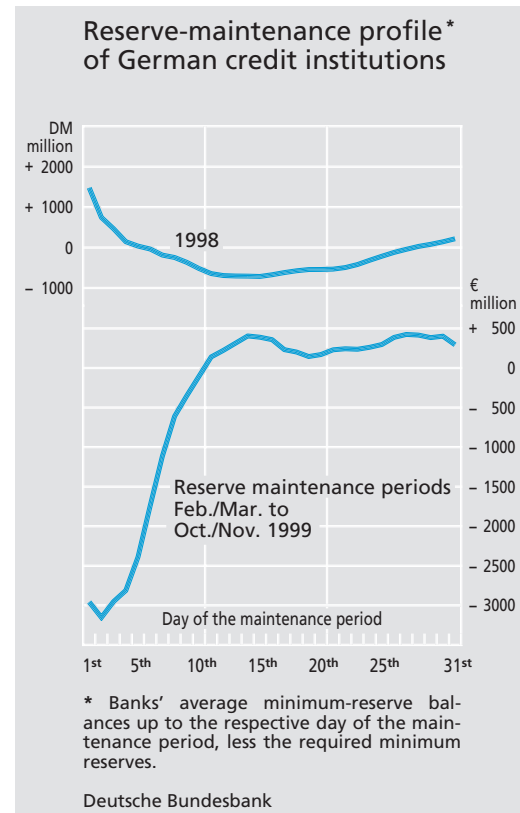
other words, if the daily or average balances are high relative to the required reserves, it tends to fall, and vice versa.

Upon the launch of monetary union, however, some changes supervened for German banks, too. A special new feature, besides the shifting of the start of the minimum reserve periods (which last for one month, as before) from the 1<sup>st</sup> to the 24<sup>th</sup> of a month, is the payment of interest on the required minimum reserves at the rate applied to main refinancing operations. In this way, inducements to circumvent minimum reserve obligations disappear. This is the more significant for Germany as a financial centre since the minimum reserve requirements for the German banking system increased by nearly one-third upon the launch of monetary union.<sup>2</sup>

*Changed maintenance profile*

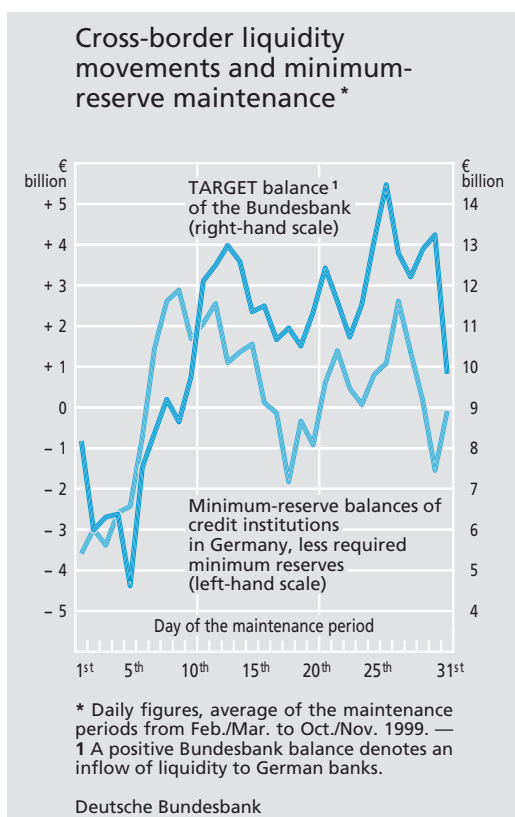
Another thing that has changed, from the German point of view, refers to the typical pattern of minimum reserve compliance (see the adjacent chart), with several factors having played a role: payments are now cleared by the Bundesbank largely without a float. Formerly, large surpluses arose owing to the float, especially at the beginning of the maintenance period. Moreover, the reserve maintenance period has not coincided with the calendar month since the beginning of last year. In general, German credit institutions now usually enter the maintenance period with a substantial level of under-compliance, from which the average balances gradually "recover" in the further course of the period.

The reserve maintenance profile in the euro area as a whole, by contrast, is already closer to the required reserves at the start of the



period. An explanation of this difference may be provided by the inflows and outflows of liquidity in the field of German banks' cross-border payments, which have a marked impact on credit institutions' daily balances at the Bundesbank (see the chart overleaf). In view of the size of their liquidity buffer, German banks are evidently not obliged immediately to offset a liquidity outflow in payments at the beginning of a reserve maintenance period – such as seems to be "typical" on account of TARGET movements from outside the euro area. On the other hand, especially the liquidity-absorbing tax payment date in

<sup>2</sup> The key reasons for that were the extension of the reserve requirements to include bank debt securities with maturities of up to two years (previously: up to less than two years), the abolition of what was known as "overall offsetting" when ascertaining the reserve requirements vis-à-vis non-residents, and the setting of a reserve ratio of 2% all round (previously 1½% for savings deposits).



Italy around the turn of the reserve maintenance period appears to give rise to cross-border money-market trading on the part of German banks – at least if banks’ ideas of the maintenance profile, which are mainly affected by interest-rate expectations, do not stand in the way.

### Interest-rate corridor determined by standing facilities

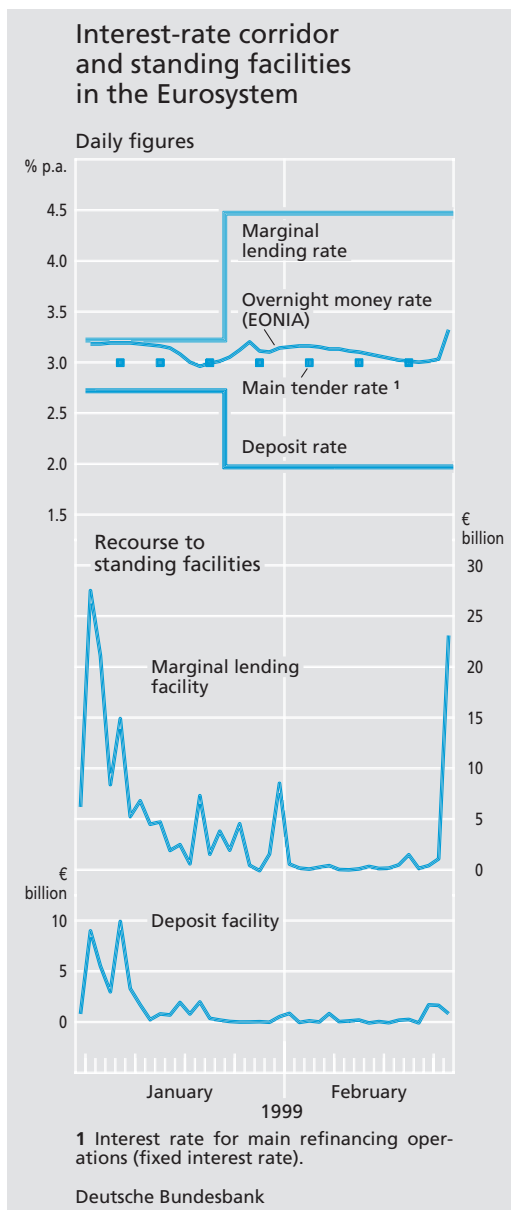
The stabilising function of the minimum reserve system for the money market is supplemented by the two standing facilities of the Eurosystem, namely the marginal lending facility and the deposit facility, which form the “interest-rate corridor” for fluctuations in the overnight rate.<sup>3</sup> Whereas, in its function, the marginal lending facility corresponds to the

Bundesbank’s former lombard loan facility, the instrument of the deposit facility is new to credit institutions in this country. Thanks to that facility, credit institutions can invest surplus liquidity overnight, albeit at an interest rate which is distinctly below the main lending rate.

In the first few weeks of monetary union, the ECB Governing Council kept the interest-rate corridor narrow, at 2.75 % and 3.25 %. As the chart on page 19 shows, during that period there was on some days simultaneous heavy recourse to the marginal lending facility and the deposit facility, since liquidity redistribution through the market – especially that across national borders – still had to get properly warmed up. Simultaneous recourse to both facilities is an indication of poor functioning of the market. However, the heavy recourse to both standing facilities was fairly soon reduced to an unavoidable frictional level of recourse, particularly after the interest-rate corridor had been widened to 2 % to 4.5 % by the ECB Governing Council. The only notable feature remained the often heavy recourse to the deposit facility around the final day of the reserve maintenance period. Before the launch of monetary union, the Bundesbank had tended to leave the balancing of random fluctuations in liquidity at the end of a reserve period to lombard loans,

*Initially narrow interest-rate corridor in January 1999*

<sup>3</sup> The capping of the overnight rate by the marginal lending rate applies, strictly speaking, to collateralised money market operations since collateral is required for recourse to the marginal lending facility as well. If, in exceptional cases, the interest rates for collateralised and uncollateralised operations diverge by more than just a few basis points, then the uncollateralised EONIA rate could theoretically exceed the marginal lending rate. In practice, this has not occurred yet (not even under the exceptional circumstances of the millennium change).



thus showing a preference for a tight liquidity supply on the last day of the period. In contrast to that approach, in the course of last year the ECB tended to supply the money market with abundant liquidity, so that substantial recourse to the deposit facility and declines in the overnight rate were often recorded towards the end of the reserve maintenance period.

## Main tenders as the prime source of liquidity

Liquidity is supplied in the Eurosystem, except in the special case of marginal lending, through open market operations with, as a rule, two-week and three-month maturities. The greater part of these operations, at just under € 140 billion (annual average) or three-quarters of the volume of refinancing, is made up of main refinancing operations, which are offered at weekly intervals and run for two weeks each. The average number of participants in this form of refinancing amounted to 775. 545 of the bidders came from Germany, accounting, on an annual average, for about one-half of the amount allotted.<sup>4</sup> This reflects the heavy liquidity requirements of the German banking system, not only in absolute terms but also relative to the banking system of the entire euro area, mainly owing to the large amount of DM currency in circulation.

*Three-quarters of the volume of refinancing*

<sup>4</sup> The number of counterparties admitted to standard open market operations (credit institutions subject to reserve requirements and satisfying the operational/technical conditions set by the respective national central bank for such operations) amounts in the euro area to just over 2,500 (out of a total of just under 8,000 banks in all). In Germany alone – reflecting the divergent German banking structure – roughly 1,550 out of about 3,000 banks are admitted, i.e. about one-half. Thus, the fairly decentralised German banking system provides roughly two-thirds of the institutions admitted to the main and basic tenders of the Eurosystem. That is, however, some 750 banks fewer than were admitted to the securities repurchase transactions of the Bundesbank up to the end of 1998. This decline is accounted for, first, by the continuing merger process in the savings bank and cooperative bank sectors, and especially by the fact that participation in the tender procedure of the Eurosystem presupposes a link to the Automatic Bidding System (ABS), which, even though it does not pose any major technical or cost problem, has not been effected by a number of institutions.

*Collateralisation  
methods  
"updated"*

From the German standpoint, the main tenders link up seamlessly with the preceding securities repurchase transactions of the Bundesbank with the same maturities. The Bundesbank seized the opportunity thus offered to update the method of collateralisation and to make it more convenient for credit institutions. The earmarking of underlying assets for a particular transaction was replaced by what is known as the "pooling" solution. The salient feature of this mode of collateralisation is simply that the total pool of assets in the pledge account must at all times at least cover the total amount of funds outstanding; the level of "free" collateral marks out the scope for intra-day credit in payments. The newly created option of cross-border recourse to collateral likewise contributes to the more convenient settlement of refinancing operations.

*Fierce bidding  
race at times*

In 1999, all main refinancing operations were offered in the form of fixed-rate tenders, with the interest rate announced in advance.<sup>5</sup> In expectation of a scaling-down (a phenomenon with which German credit institutions are quite familiar), the banks in all member states submitted very large bids, thus setting a "bidding race" in motion. This race was fostered not least by the fact that the necessary collateral is to be furnished only upon the crediting of the allotment amount and not already at the time of submission of the bid. The low allotment ratios – for a long time in the second half of the year, around 4% to 7% – are regarded as a disadvantage, and criticised, by the national banking systems in the euro area that deplore a low residual stock of collateral for central bank refinancing purposes.

The Eurosystem responded to the bidding race by providing ample liquidity. The object was to keep the overnight rate consistently near the main tender rate, in order to deprive credit institutions of an incentive for overbidding. Although this had the desired effect in a number of cases, a radical change in bidding behaviour has not been achieved. This is probably because, in the case of a fixed-rate tender, (partially) refraining from two-weeks' refinancing from the central bank because of more favourable terms in the overnight money market (which may last only a few days) constitutes too high an interest-rate risk for a bank. It is, after all, noticeable that, at the beginning of a reserve maintenance period, the overnight money-market rate quickly settles down again above the main tender rate even if it "slumped" markedly beforehand.

The most obvious, and presumably best, option for coming to terms with the overbidding phenomenon would be a transition from fixed-rate to variable-rate tenders, using what is known as the "US-style" allotment method. Under that system, there is no incentive for the bidding banks to submit bids at an unrealistically high level because every credit institution successful in such a tender is charged the interest rates it has bid. However, such a change can only be contemplated if it is appropriate in monetary policy terms as well.

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<sup>5</sup> The interest rate for main refinancing operations was 3% at the beginning of last year; it was lowered to 2.5% by decision of the Governing Council dated April 8 and raised to 3% again by decision of the Governing Council dated November 4.

## Basic tenders

The second type of regular open market operation is the longer-term refinancing operation running for three months, which, at an annual average of € 47 billion last year, accounted for roughly one-quarter of the liquidity supplied. Up to the end of October 1999, € 15 billion was allotted in each of the monthly basic tenders, so that a total of € 45 billion was outstanding in all at all times. In the light of the millennium change, however, the three operations in the months of October, November and December 1999 were each increased to € 25 billion. Compared with the two-weekly main tenders, participation in the "long-dated tranches" is lower; it averaged only 314 bidders, 190 of them from Germany. The latter accounted on average for about 60 % of the allotments, i. e. slightly more in percentage terms than in the case of main tenders. Basic tenders are regularly conducted in the form of ("US-style") variable-rate tenders of pre-announced size, with the result that no monetary signalling effect is exerted by the (marginal) allotment rate.

*Instrument of  
longer-term  
liquidity  
management*

In functional terms, this basic refinancing instrument embodies a number of features of the erstwhile rediscount credit of the Bundesbank. It is designed to appeal to credit institutions which are less active in the money market, and which are interested in more long-term liquidity management. Judging by experience to date, however, the proportion of smaller institutions in Germany in longer-term refinancing operations is actually rather lower than in the case of main tenders.

## Fine-tuning instruments

The operational framework of the Eurosystem is completed by a number of fine-tuning instruments that can be wielded quickly and flexibly, such as foreign exchange swaps or very-short-term operations in the form of so-called "quick tenders". Fine-tuning was employed for the first time on January 5, 2000, in the shape of a quick tender (see below). The Bundesbank, too, used to be reluctant to resort to fine-tuning instruments in the past. Besides the buffer function of the minimum reserves, the swift transmission of liquidity via ultra-modern payment systems and the professionalisation of liquidity management among money-market players have helped to lessen the need for fine-tuning.

## Payment infrastructure for the single inter-bank money market

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In the period prior to monetary union, the structure of the money market and market practices were, of course, marked by national features. However, the introduction of the single currency and the associated payment infrastructure gave a strong impetus to harmonisation and the integration of the national money markets, so that it is meanwhile legitimate to speak of a close interlinking of the hitherto national money-market segments.

A single money market in the euro area with uniform interest rates and efficient cross-border liquidity equalisation is an essential prerequisite of monetary stimuli affecting the

*TARGET as a  
contribution to  
money-market  
integration*



banking system of the entire euro area. By instituting the TARGET system for cross-border payments, the Eurosystem itself made a major contribution to integrating the money market.

The payment system TARGET links together all 15 national real-time gross systems of large-value payments in the European Union, and thus makes possible the same-day settlement of cross-border payments. On the German side, the Bundesbank's ELS gross system has been connected to TARGET. To ensure the maximum availability of cross-border payments, TARGET closes only on the two EU-wide public holidays of Christmas Day and New Year's Day, and this year also on Good Friday, Easter Monday, May Day and Boxing Day.<sup>6</sup> The system regularly remains open for interbank payments until 6 p.m. (and on the last day of the reserve maintenance period, half-an-hour longer) in order to ensure the same-day settlement of final balances from money-market trading and from other payment systems.

*Interaction of  
payment  
systems*

Besides the gross system TARGET, a number of Europe-wide payment systems operate on a net or hybrid basis. At the close of business, the balances of these payment systems must be settled via TARGET, since that is the only system through which the Europe-wide transfer of central bank money is possible. The interaction of several payment systems, and above all the movement of intra-day liquidity between the systems, posed difficulties in the first few weeks of monetary union. In particular, the coexistence of net and gross payment systems creates something of an "incentive

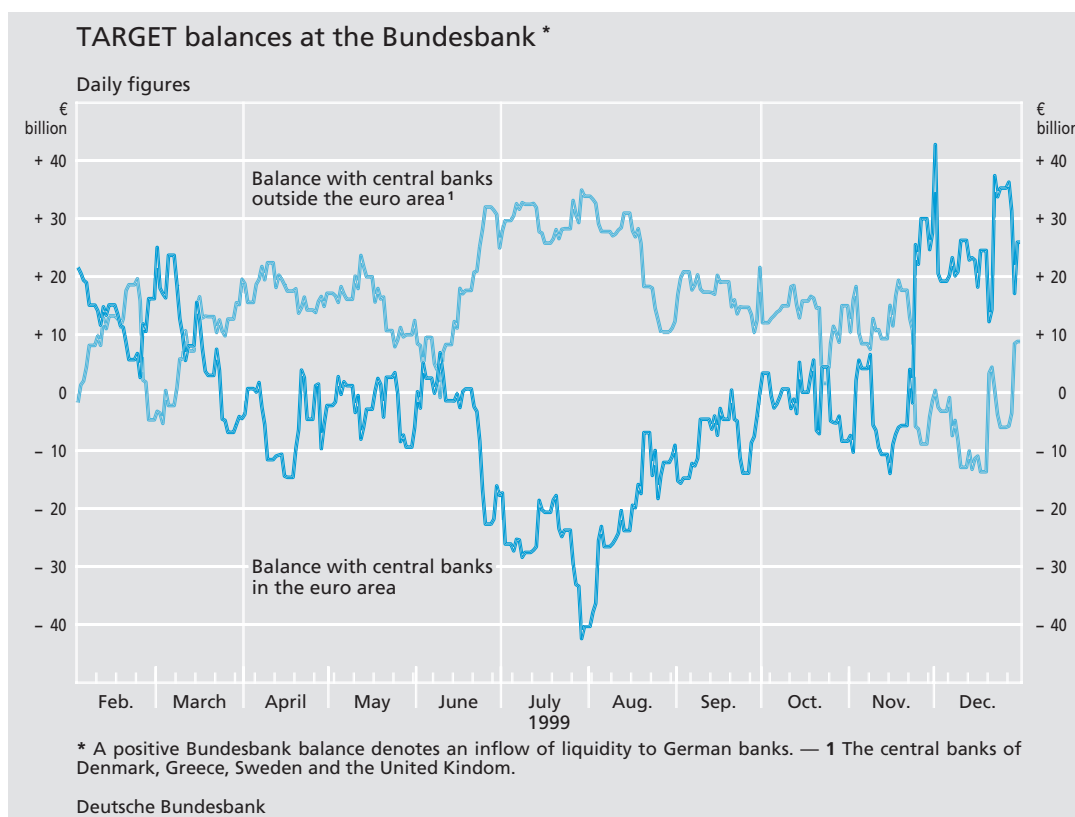
dilemma" for the banks engaged in payments, as a result of which delays may occur in payments, which may well have an impact on interbank money-market rates. For outgoing payments, it may appear advantageous to use a liquidity-conserving net system in which cover does not have to be provided until the balances are finally offset. For incoming payments, by contrast, a gross system has advantages for the recipient, since it results directly, on account of the immediate execution, in an inflow of funds, and the immediate finality provides security.<sup>7</sup> In this connection, a trend is evident not to deliver payments until the later part of a day. As a result, some money-market activity has shifted perceptibly into the afternoon and towards the close of banking business. Hence, in January last year, the Eurosystem had to respond to difficulties in the interaction of the systems on several occasions by lengthening the opening hours of TARGET. In the meantime, however, these teething troubles have largely been overcome. The same goes for the shortcomings that emerged in the first few months in the ESCB and among other participants.

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<sup>6</sup> I. e. even in countries/banking systems in which these are not public holidays, cross-border payments via TARGET are not available.

<sup>7</sup> Whereas, in net systems, incoming and outgoing payments are netted prior to final execution and only the balance is offset, in gross systems every single payment is executed. The upshot of this is that, on the one hand, more liquidity is tied up in gross systems; on the other hand, if cover is available, the immediate execution and finality of the transfer can be guaranteed. In net systems, by contrast, there is in principle a risk that, if the final balances of one or more participants are not settled, the entire settlement will have to be unwound.





### Germany as a turntable for liquidity

*Cross-border  
liquidity  
movements*

The efficiency meanwhile achieved in payments seems to enable German banks to play something of a redistributive role between TARGET member countries outside and inside the euro area. Thus, the German money market regularly receives funds in cross-border payments, especially from the financial centre London. These liquidity inflows generally show, as the above chart illustrates, a distinct simultaneity to same-day outflows to member states of the monetary union. That suggests that the German money market acts as a turntable, redistributing liquidity between the “outs” and the “ins”.<sup>8</sup> It appears, however, that the simultaneity of inflows and outflows may also be interrupted, especially at times when opportunities for arbitrage arise

within a reserve maintenance period – typically, therefore, in connection with the weekly main tenders of the Eurosystem. Apparently, the banks succeed at such times in building up or running down minimum reserve balances quickly by activating their cross-border trading.

### Trends in the uncollateralised interbank money market

The creation of a euro money market resulted in a considerable widening and deepening of

<sup>8</sup> It should be noted, however, that it is not possible to distinguish between turnover from customers' operations and turnover from money-trading activities on the strength of the payment balances.

### Change in turnover in the uncollateralised money market

2nd quarter of 1999 against 4th quarter of 1998; in %

Maturity	Germany	Euro area
Overnight money	61	43
Tom next	52	3
1 week	59	-24
2 weeks	68	3
1 month	-7	-18
3 months	-57	-38
6 months	-68	-55
9 months	-84	-66
1 year	150	-10
Total	38	16
Memo item:		
Approximate market share of the German segment	.	28

Source: Survey by the Bundesbank and other national central banks of the Eurosystem among the banks that are most active in the money market.

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liquidity in comparison with the DM-denominated money market.

*Growth of turnover...*

Contract volumes and turnover in the uncollateralised money market rose sharply in 1999, as compared with the national markets in 1998. In Germany the average volume of individual contracts virtually doubled. In particular, cross-border transactions between the major market players in the euro area may run into the billions.

*... particularly at the short end*

Although comprehensive statistics on turnover in interbank money-market trading are lacking, a survey among the most active institutions in the money market showed that the movement of turnover in the money market is heavily dependent on maturities. At the short maturities, turnover increased especially

steeply; that in overnight money in Germany alone by about 60 %, and in the euro area by approximately 40 % (see the adjacent table). In this connection it is striking that, in the second half of 1999, the German EONIA panel banks progressively increased their EONIA turnover and, virtually in parallel, their share in the aggregate turnover of all EONIA panel banks: in December that share was nearly twice as high as in the first half of last year (see the chart on page 25). That reflects the growing significance of German banks in European money-market liquidity adjustment. Unlike the conditions in overnight money and one-week money operations, uncollateralised turnover in the time-deposit sector with maturities of one month and more has declined, in part markedly. That goes both for the entire market and for the German market segment. The decrease in the time-deposit sector is at least partly due to the tendency to collateralise longer-term money-market transactions. In countries which previously had no minimum reserve requirements, the enhanced demand for short-term liquidity-management operations may have reinforced the rise in the short maturities.

The increases in turnover in the very short-term money-market segment are being accompanied by an increasing Europeanisation of money-market trading. The institutions surveyed now transact more than one-half of their business across national borders. An indication of the significance of cross-border money-market trading is provided by the turnover in TARGET, which averages about € 350 billion a day. Cross-border arbitrage ensures that the overnight money rates in the national financial

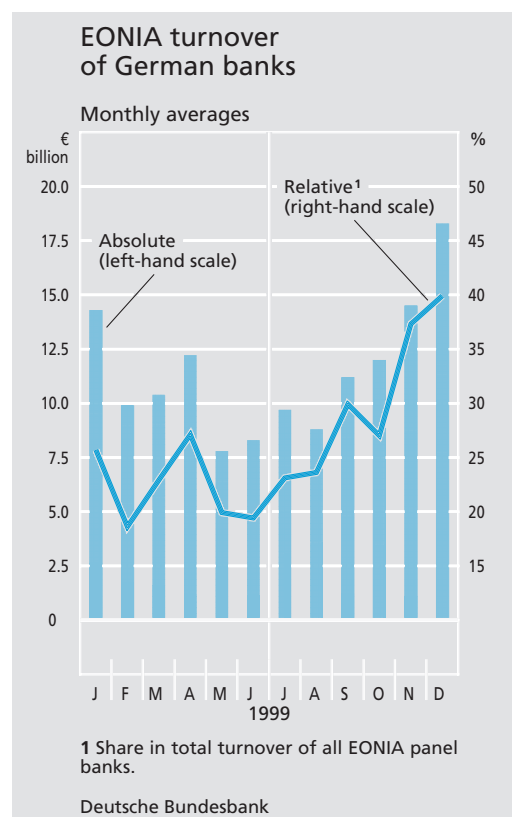
centres of the euro area do not normally differ by more than two to three basis points.

*Uniform cross-border standards, but ...*

In connection with the ongoing money-market integration, national market practices are beginning to give way to uniform standards. Even so, credit institutions domiciled in Germany are continuing to lend one another call money, i. e. "until further notice", in interbank trading. In cross-border trading, by contrast, pure overnight credit is standard practice. The rapid integration of the money market is mirrored by the swift acceptance of the new reference interest rates EONIA for overnight money and EURIBOR for time deposits. EURIBOR and EONIA are based on a broad panel of reporting banks.<sup>9</sup> These rates have quickly supplanted the euro LIBOR as the reference rate for the euro area.

*... two-way split in the interbank market persists*

Notwithstanding the high degree of integration of the European money market, national money markets still perform some specific functions. For instance, a large part of interbank liquidity redistribution still takes place initially in the national market segment, with the result that cross-border trading is not fully activated until afterwards. Moreover, specifically in Germany smaller institutions (especially savings banks and cooperative banks) traditionally act as part of their associations. Some medium-sized institutions, too, often have their field of operations primarily in the regional or national sphere. The comparatively low participation of smaller and regional banks in cross-border money-market trading therefore reflects a kind of assignment of roles in the German money market that is nothing new. In this context, the larger institutions that are more active in the money



market perform the function of redistributing central bank liquidity. They lend on such funds, at a certain premium, to smaller and medium-sized banks. The premiums paid by these smaller institutions for this service have not (yet) changed significantly following the launch of monetary union, presumably because – as indicated – there is no pronounced cross-border competition in this sector.

### Trends in the collateralised interbank money market

Despite the strong growth of the uncollateralised money market, collateralised money-market trading is continuing to expand. In

<sup>9</sup> Including some branches of major international banks in the euro area.

the repo market (where securities are sold temporarily for money, subject to a repurchase agreement), throughout the euro area – as the survey revealed – turnover in 1999 increased over 1998 even more strongly than in the uncollateralised money market, namely by about one-quarter (compared with 16% in the uncollateralised market). Much as in the case of the uncollateralised money market, money-market players in Germany report that the contract sizes of repos, too, have doubled since the launch of the euro.

*Repo  
operations*

In monetary policy terms, repos are interesting because they link the money market with the time-deposit market, the spot securities market and the forward securities market. From the angle of banking business, repo operations provide an opportunity to reduce credit risk and the cost of funds. Thus, the lender can save capital charges in comparison with uncollateralised operations, provided that (public sector) securities not requiring capital backing are used. For the borrower, a reduction in the cost of funds is possible on account of the low credit risk of the securities serving as collateral. The repo rate is normally below the rate for uncollateralised loans of the same maturity.

In Germany, a significant repo market did not evolve until relatively late. Structurally, this owes something to the universal banking system, since universal banks – unlike, say, pure securities firms – can procure funds by means of deposit business, and are not required to fall back on repos. The exemption of liabilities arising from repo operations from minimum reserve requirements in December 1996

greatly stimulated repo activity on the part of German credit institutions. An additional boost to such activity was given by the launch of monetary union, since collateralisation is attractive in the light of risk considerations for operations with a fairly large range of foreign counterparties, especially since bilateral limits, such as are needed in the uncollateralised market, become superfluous. Moreover, repos are often a matter of course to foreign counterparties because that type of transaction is well-established in their national markets. By contrast, uncollateralised operations continue to predominate in money-market trading between German counterparties.

The repo market in the euro area is less homogeneous and less integrated than the uncollateralised money market. In part, that is because there are two different motives for repo operations. Operations in which the lender is intent on obtaining a particular security are rather to be assigned to the capital-market side. Such repo operations for what is known as “special collateral” depend very heavily on its availability, and therefore attract different repo rates from operations behind which there is no demand for specific securities. In the case of so-called “general collateral”, the key factor for the borrower is the motive of obtaining liquidity, i.e. the money-market side of the repo operation.

Most special collaterals are not readily available everywhere in the euro area. The problem of availability is exacerbated by the fact that, in the case of cross-border repos, clearing and settlement on the security side are not yet working as smoothly as on the money

*Less integration  
than in the  
uncollateralised  
money market*

## Securitised money market

€ million, nominal value

End of year or month	Outstanding amount of debt securities with agreed maturities of one year or less				Memo item: Outstanding amount of bonds issued by residents, total
	Debt securities issued by non-banks			Debt securities issued by banks	
	Total	Public issuers	Enterprises		
1992	18,450	10,494	7,957	14,857	1,018,245
1993	13,778	8,146	5,632	11,640	1,201,397
1994	10,253	7,161	3,092	12,792	1,362,498
1995	5,069	2,129	2,940	12,173	1,467,559
1996	15,161	12,131	3,030	11,577	1,589,465
1997	15,843	11,695	4,148	14,173	1,721,134
1998	15,368	11,820	3,549	28,704	1,888,832
1999 January	16,679	11,495	5,184	21,354	1,920,169
February	16,621	11,413	5,208	22,730	1,935,019
March	17,376	11,356	6,020	23,451	1,952,853
April	17,997	11,201	6,796	26,669	1,976,159
May	17,724	11,147	6,577	27,494	1,995,996
June	17,389	11,135	6,254	29,507	2,002,988
July	17,020	11,126	5,894	29,910	2,021,236
August	18,211	11,067	7,144	36,779	2,041,289
September	19,080	10,979	8,101	44,088	2,066,538
October	19,994	11,001	8,993	47,715	2,083,193

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side because the settlement infrastructure still does not have the high degree of integration of the payment infrastructure. Moreover, the standardisation of market practices is turning out to be very much more difficult than in the uncollateralised money market – not least because repo operations in the respective national markets are subject to varying legal and tax requirements.

### Securitised money markets and money-market derivatives

While the unsecuritised money market is dominated by banks, the markets for money-market paper and for derivative instruments display distinctly mixed structures among the market participants. Very often, non-banks

(such as industrial enterprises, insurance companies and especially public sector borrowers) are heavily involved in these markets. However, the separate national segments show substantial differences, both from one another and with respect to their integration in the market as a whole. Notably money-market paper is often held until maturity by the investor, with the result that the respective secondary market is often comparatively illiquid. Moreover, as in the repo market, there are legal, technical and tax impediments to integration. In Germany, compared with other countries, the securitisation of shorter-term financing operations remains of little significance (see the above table), despite having increased somewhat of late.

### Change in turnover in interest-rate swaps

2nd quarter of 1999 against 4th quarter of 1998; in %

Maturity	Germany	Euro area
1 week	88	115
2 weeks	104	125
1 month	82	86
3 months	143	72
6 months	113	37
9 months	131	144
1 year	154	115
> 1 year	23	25
Total	93	72
Memo item: Approximate market share of the German segment	.	39

Source: Survey by the Bundesbank and other national central banks of the Eurosystem among the banks that are most active in the money market.

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Money-market  
paper issued  
by public  
authorities ...

On the non-bank side, the public sector is by far the largest issuer of short-term debt securities. The six-month Bubills introduced in 1996, with an outstanding total of regularly € 10 billion, were joined in November 1999 by Federal discount notes (*Bundeskassenscheine* – also known as “cash bills”). These very short-term securities are used as a flexible liquidity-management instrument by the Federal Government. The outstanding volume of such securities is limited to € 5 billion. Definite statements on the buyer structure of this instrument cannot be made as yet since so little experience is available. But it is safe to assume – as in the case of Bubills – that the interest of foreign institutional investors is strong.

Private enterprises' commercial paper programmes continue to play a relatively minor role in Germany. Given the persistently favourable overall macroeconomic environment, with low levels of inflation, longer-term modes of financing traditionally predominate in Germany; in addition, enterprises have close relations with their principal (universal) bankers. In future, however, the German market is likely to be stimulated by the more sophisticated foreign markets for commercial paper and a generally increasing trend towards securitised lending. In the field of short-term bank debt securities, a distinct upturn has been discernible since the second half of 1998. This may have owed something to the fact that the minimum reserves to be held on outstanding paper have been earning interest since the beginning of last year. This means that the competitive disadvantage suffered by short-term bank debt securities (in relation, say, to commercial paper) as a result of the non-remuneration of the minimum reserves has disappeared.

Rather like the collateralisation of money-market operations, the increased use of money-market derivatives is a trend which, while not caused by monetary union, was presumably reinforced by it. Derivatives open up opportunities for arbitrage and for the flexible management of interest-rate risks with a low capital input. Since the launch of monetary union, the market for derivatives has become perceptibly deeper and more liquid. For instance, total turnover in interest-rate swaps in the euro area has increased by over 70% (see the above table); German market participants actually report a doubling

... enterprises ...

... and the  
banking sector

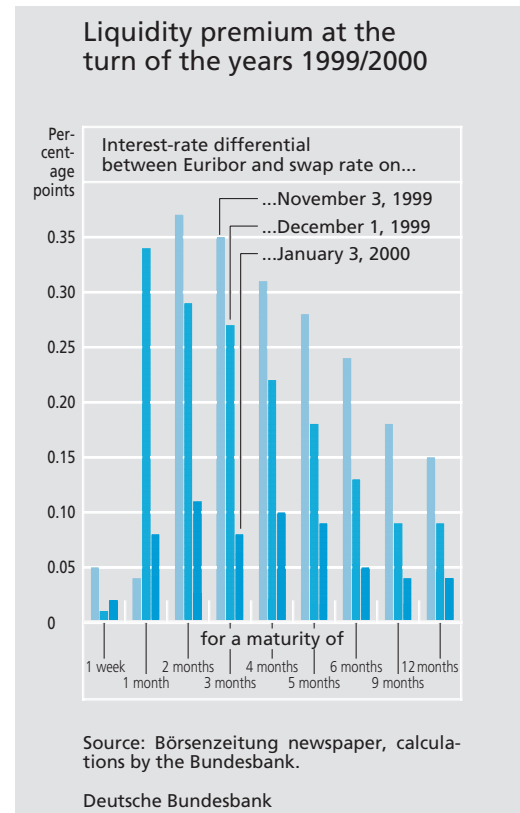
Money-market  
swaps very  
buoyant

of their turnover. The rapid integration of this market segment – the German banks surveyed transact 70 % of their swaps across national borders – is largely due to the rapid acceptance of uniform reference interest rates, and thus to a harmonisation effected by market players themselves. As a mirror image of the growth of overnight money turnover in the uncollateralised spot market, there was a concentration on EONIA swaps in derivatives trading. The largely market-driven standardisation of the swaps facilitated the emergence and use of an EMU-wide uniform swap-rate curve. Since the banks use swap-rate curves to evaluate financial instruments, the integration of the swap market is impinging on other segments of the financial markets. The deepening of liquidity has meanwhile led to a narrowing of bid/offer spreads to one to two basis points. However, the emergence of uniform contract standards is not yet quite concluded, which suggests that some saving potential in transaction costs still exists.

In the case of exchange-traded money-market futures, the three-month EURIBOR future has turned out to be the most liquid instrument. At the turn of the year, twelve months ago, it superseded its forerunners denominated in national currencies, such as the euro-DM contract.

### The millennium change in the money market

By coping with the millennium change without problems on the whole, the “youthful” euro money market passed yet another test.



That is the more remarkable since, for a prolonged period in 1999, substantial premiums were charged for liquid funds beyond the end of the year. This is reflected in the differential between rates for time deposits and money-market-swap rates (see the above chart). Since in the case of swaps, unlike time deposits, a loan amount is not transferred, but only “marginal balances settled”, the increase in the interest-rate differential beyond the “normal” level unaffected by the millennium change probably constitutes quite a close approximation to the premiums paid for liquid funds around the turn of the millennium. Such premiums always materialised in the maturities which included the millennium change, and reached their peak in October/November 1999. At that time, the “fear-of-the-millennium premium” aroused expect-

*Initially high premiums for money beyond the end of the year*



ations – at least in arithmetical terms – of double-digit interest rates for overnight money beyond the turn of the millennium. In subsequent weeks, however, the premiums declined, apparently because the risks were rated ever-lower. Even so, before Christmas, rates of 5 % to 6 % were still being expected for overnight money beyond the end of the year. In point of fact, the EONIA rate over the turn of the year, at 3.75 %, actually remained below the marginal lending rate of the Eurosystem. And as early as the first trading day in the year 2000, money-market rates largely returned to normal again.

*Millennium  
change passes  
off smoothly*

The Eurosystem had pointed out at an early date that the available monetary policy operational framework would enable the millennium change to be coped with without major problems and, in particular, would permit a smooth transition in terms of liquidity.<sup>10</sup> Year 2000 compliance was checked in a (further) key area by means of extensive tests of the TARGET system.<sup>11</sup> Such compliance was also borne out by reality: the payment systems in the euro area worked without disruption after the millennium change. In line with this picture, the increase in currency in circulation in the euro area in December was only about 3 percentage points above the rise observed in the preceding year. Both among the public at large and among the banks, cash was held as a precaution prior to the millennium change only on a limited scale.

*Excessive  
liquidity...*

By sharply increasing the final main tender extending beyond the turn of the millennium, the Eurosystem ensured that the supply of liquidity at the beginning of the year 2000 was

abundant. That was actually accentuated at the end of the year by the banks resorting to the marginal lending facility (€ 11.4 billion from December 30 to January 2, accompanied by recourse to the deposit facility amounting to € 2.6 billion). That primarily reflected a preference which the banks had expressed early on – citing risk considerations – for liquidity equalisation at the end of the year from the central bank direct. This goes particularly for German credit institutions, which accounted for the greater part of the recourse to the standing facilities at the end of last year. The excessive liquidity (as measured by “normal” conditions) was increased still further in the first few days of January by changes in some market-related liquidity factors. Against this background, the Eurosystem offered the banks time deposits on January 5 by means of a “US-style” variable-rate quick tender in order to mop up “excess” liquidity from the money market. One of the reasons why this very first fine-tuning measure by the Eurosystem was necessary was that it was not possible to effect the usual adjustment of liquidity by means of main tenders after it was decided as early as September last year not to conduct a main refinancing operation during the first week of the year 2000 in order to free a period that was deemed to be critical from transactions.<sup>12</sup>

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<sup>10</sup> See European Central Bank, The transition to the year 2000 and the demand for central bank liquidity, Press Release dated August 11, 1999.

<sup>11</sup> See European Central Bank, Demonstration of TARGET year-2000 compliance, Press Release dated September 27, 1999.

<sup>12</sup> See European Central Bank, Indicative calendar for the Eurosystem's tender operations in the year 2000, including an adjustment to smooth the century-date change, Press Release dated September 23, 1999.

*... absorbed by  
fine-tuning ...*

After the advance notice of the quick tender of January 4 (running from January 5 to 12), specifying a maximum bidding-rate of 3 % and an absorption total of about € 35 billion (approximately one-half as large as a main tender), the overnight money rate, which had previously fallen below the main tender rate (of 3 %), rose again above that level. Overall, the fine-tuning counterparties showed little interest in the quick tender: just over € 14 billion was bid (and allotted); the marginal and likewise the weighted average allotment rate was around 3 %. German banks showed great restraint in bidding for that quick tender, since they had already cut back their fund-raising through main and basic tenders

towards the end of 1999 and, instead, had opted for shorter-term borrowing in the inter-bank market and, as mentioned, through the standing facilities. Owing to this more precise procurement of liquidity they – unlike the banking system in the remainder of the euro area – had no liquidity overhang after the turn of the year. In view of the excess liquidity remaining overall after the quick tender, the EONIA rate initially fell again to 2.9 %. It was not until the reduction of the subsequent first main tender of the present year (dated January 12), compared with the expiring operation of this kind, by € 57 billion, to a total of € 35 billion, that the banking system's liquidity supply finally returned to normal.

*... and by  
reducing the  
main tender*

