

WP/97/178

INTERNATIONAL MONETARY FUND

Monetary and Exchange Affairs Department

**Some Issues in the Design of Monetary Instruments for the Operation of European Economic and Monetary Union**

Prepared by Charles Enoch, Paul Hilbers, and Arto Kovanen<sup>1</sup>

December 1997

**Abstract**

The European Monetary Institute has been working with national central banks of the European Union (EU) to prepare instruments for the operation of monetary policy in Stage 3 of European Economic and Monetary Union. Several publications describing the proposed arrangements have been issued. This paper briefly summarizes the arrangements and identifies some areas in which important decisions still have to be made or refinements introduced—including the choice of counterparties in fine-tuning open market operations; the design of reserve requirements; the signaling function of monetary operations; and payment system relationships with non-EMU participants in the EU.

JEL Classification Numbers: E52, E58

Keywords: Monetary Operations, EMU

Authors' E-Mail Addresses: Cenoeh@imf.org, Philbers@imf.org, Akovanen@imf.org

---

<sup>1</sup>The authors would like to thank Warren Coats, Daniel Dueñas, Sami Geadah, Anne-Marie Gulde, Donogh McDonald, Elizabeth Milne, Nicholas Roberts, and Philipp Rother for comments on an earlier draft. Any remaining errors are of course the responsibility of the authors.

<b>Contents</b>		<b>Page</b>
Summary .....		3
I. Introduction .....		4
II. Overview of Monetary Policy Instruments .....		5
III. Open Market Operations .....		6
IV. Standing Facilities .....		9
V. Minimum Reserves System .....		11
VI. Lender of Last Resort .....		13
VII. Payment System Issues .....		14
A. TARGET .....		14
B. Pricing .....		15
C. Intraday Credit .....		16
D. Opening Hours .....		17
E. Role of the European Central Bank .....		17
VIII. Collateral Issues .....		18
A. Eligibility of Collateral .....		18
B. Transfer of Collateral .....		20
IX. Conclusions .....		21
 Text Tables		
1. ESCB/ECB Operating Procedures .....		7
2. Characteristics of Eligible Assets .....		19
References .....		23

## SUMMARY

The European Monetary Institute (EMI) has been working with national central banks of the European Union to identify and prepare the set of instruments that may be used in the operation of monetary policy in Stage 3 of European Economic and Monetary Union (EMU), scheduled to start at the beginning of 1999. The EMI has only advisory powers and thus can be definitive in the choice of monetary instruments only where there is consensus; final decisions will be made once the European Central Bank is established. Some of the operational modalities also remain to be decided. Nevertheless, considerable progress has been made, and the EMI has in the past few months provided detailed guidance in a number of publications as to how monetary policy is likely to operate.

This paper briefly summarizes the arrangements. In many respects they will represent the state of the art in the conduct of monetary policy, and they reflect the intensive efforts of the EMI and national central banks over the past few years. In a few aspects, however, the paper suggests that there is scope for refinement. For one thing, it will be important to include a wide range of counterparties even for fine tuning open market operations. Another major issue is whether reserve requirements will be imposed and, if so, whether relying on end-of-the-month data for assessing liability will lead to "window dressing" by the banks and distort both the statistics and the liability for reserve requirements. Third, how to use rate changes to signal monetary authorities' intentions needs to be carefully considered in order to avoid ambiguity. Fourth, there remain issues concerning the relationship between the euro and non-euro countries in access to and use of the new pan-EU payment system, TARGET.

## I. INTRODUCTION

Under the terms of the Treaty of Maastricht (Article 109f), the European Monetary Institute (EMI) was established to prepare for Stage 3 of European Economic and Monetary Union (EMU). One important part of its mandate was to develop in advance of the earliest possible date for the start of Stage 3 (at that point the beginning of 1997) a framework for the operation of monetary policy for the European System of Central Banks (ESCB) in Stage 3.<sup>2</sup> Under the statutes attached to the Treaty of Maastricht, the ESCB is to act “in accordance with the principle of an open market economy with free competition, favoring an efficient allocation of resources...”<sup>3</sup> The EMI worked to this mandate, and published the results in January 1997<sup>4</sup> (denoted in this paper as the “Report”).

The construction of the framework was constrained by the fact that the EMI has no decision-making powers, but can only advise. Decisions will have to be taken by the Governing Council of the European Central Bank (ECB) which will be established when the decisions are made to proceed to Stage 3 and which countries will participate at the start of Stage 3; this is now expected for May 1998. Thus, the EMI has been able only to be definitive in its discussion on the choice of instruments insofar as there has been consensus amongst all the members of the European Union (EU)<sup>5</sup>. Where there have been differing views, the EMI’s role has been to identify and clarify the issues. Therefore the EMI has been preparing a “menu” of options from which the ECB will choose how to operate. Despite this constraint, a remarkable amount of common ground has been achieved, and the proposed framework has been fleshed out in a fair degree of detail. With Stage 3 now scheduled to start at the beginning of 1999, the EMI has been able to devote time to broaden the areas of consensus, and to conduct important additional technical work. This has resulted in a number of technical papers, and in September 1997 in the publication of “General documentation on ESCB monetary policy instruments and procedures” (denoted as the “Documentation”).<sup>6</sup>

The results of this work have been impressive, and in many regards the EMI will have created a state-of-the-art monetary infrastructure for EMU. Work is continuing to ensure that the

---

<sup>2</sup>The ESCB will comprise the European Central Bank and the National Central Banks (NCBs) of the member states of the European Union.

<sup>3</sup>Article 2 of the Statute of the ESCB/ECB.

<sup>4</sup>European Monetary Institute (1997a).

<sup>5</sup>Much of the work has been conducted by committees which have involved, in addition to EMI staff, representatives from each of the fifteen central banks of the member countries of the EU.

<sup>6</sup>European Monetary Institute (1997b).

transition to Stage 3 will be as smooth as possible. Naturally, there are a number of issues that remain to be addressed, or where it seems that further refinement may be possible. This paper focusses on some of these issues. Broadly, the objective is to identify areas where important decisions have still to be taken, as well as those where there seems to be scope to improve the effectiveness of the operation of a monetary instrument, improve the transparency of a monetary operation, or increase the clarity of the signal of the authorities' interventions.<sup>7</sup>

## II. OVERVIEW OF MONETARY POLICY INSTRUMENTS

The design of monetary instruments has reflected the desire for decentralization in the operation of policy in two regards. First, an important role for the NCBs is to remain in the execution of policy. Second, decisions regarding the implementation of policy need to be taken by the ECB Governing Council, which includes the Governors of the NCBs of member states that participate in EMU as well as the ECB Executive Board, and hence generally should have a timescale consistent with the frequency of meetings of the Board, presumed to be approximately monthly.<sup>8</sup>

The main instrument of monetary operations is likely to be open market operations (OMOs). These will be determined by the ECB and operated through the NCBs according to a regular calendar, with weekly auctions of reverse operations with two-weeks maturity.<sup>9</sup> In addition, the instruments reflect the need to buttress the "self-stabilizing properties" of the system, so that the market itself will moderate volatility in liquidity and interest rates. Thus there are likely to be two standing facilities—a Lombard facility through which banks can obtain liquidity (against eligible assets) overnight, and a deposit facility through which banks can deposit their surplus funds overnight—which will set a ceiling and a floor to overnight market

---

<sup>7</sup>Portes (1996) and Enoch and Quintyn (1996) provide earlier discussions of the operating framework for EMU. There are also related issues that are not taken up in this paper, but have been covered extensively elsewhere. These include, among others, the choice of monetary policy strategy for the ESCB/ECB, the coordination between monetary and exchange rate policies in EMU, and the implications of EMU for the international monetary system. For instance, see European Monetary Institute (1997a), and Masson, Krueger, and Turtelboom (1997).

<sup>8</sup>Of course, if necessary, it is always possible to call additional meetings, or arrange teleconferencing, at short notice.

<sup>9</sup>The ECB will decide and announce the volume or interest rate for the auctions. The NCBs will thereupon collect bids from institutions in their respective countries, and will pass them on to the ECB which will determine which bids have been successful. Precise operational modalities—for instance, the scope of the ECB to determine the cut-off point once the bids have been received—remain to be decided.

interest rates. There may also be a system of reserve requirements in which banks will be able to average their monthly minimum reserve balance on a daily basis.

These core facilities may be supplemented by additional instruments to meet short-term fluctuations in liquidity or other monetary objectives that cannot be achieved through the main instruments identified above. The Report and Documentation provide a “menu” from which the ECB will make the final choices. Amongst these are “fine tuning tenders,” in which the ECB will be able to solicit bids to provide or withdraw liquidity at short notice between the regular tenders; there will be a longer term refinance facility, under which securities with three months maturity will be purchased or sold through monthly auctions; and the ECB may also operate with foreign exchange swaps. The proposed arrangements are summarized in Table 1.

### **III. OPEN MARKET OPERATIONS**

The main refinancing operations will play a pivotal role in pursuing the aims of steering interest rates, managing financial system liquidity, and signaling the stance of monetary policy. These liquidity-providing operations will provide the bulk of refinancing to the financial sector and will be executed weekly through standard tenders, with maturity of two weeks, according to a predetermined, published calendar. All eligible counterparties fulfilling the general eligibility criteria may submit bids.<sup>10</sup>

Longer-term refinancing operations will be executed monthly, with a maturity of three months. These will provide additional longer-term liquidity to the financial sector; they will encompass only a limited portion of the liquidity provided by the ESCB, thus emphasizing the role of weekly tenders as the main instrument to manage liquidity. The intention will be that developments in these operations should not send a signal to the market about the authorities' policy stance, so the ESCB will normally act as a price-taker in these monthly refinancing tenders (i.e., these operations will be usually executed as variable interest rate tenders). Eligibility criteria for the counterparties will be the same as for the main refinancing operations.

Further, the ESCB may carry out operations to adjust the structural positions of the banks vis-à-vis the ESCB. Examples where this might be appropriate could include shifts in currency demand.

---

<sup>10</sup>If a minimum reserve system is introduced, all institutions subject to this requirement would be eligible counterparties for the ESCB standing facilities and OMOs.

Table 1. ESCB/ECB Operating Procedures

<b>Open Market Operations</b>	
<b>• Main refinancing</b>	
Frequency	Weekly
Maturity	Two weeks
Transactions	Reverse transactions, fully collateralized. Executed through standard (variable/fixed rate) tenders
Function	Provision of the key interest rate signal
<b>• Longer-term refinancing</b>	
Frequency	Monthly
Maturity	Three months
Transactions	Reverse transactions, fully collateralized. Executed through standard (variable/fixed rate) tenders
Function	Provision of longer-term refinancing
<b>• Fine-tuning</b>	
Frequency	Variable
Maturity	Variable
Transactions	Reverse transactions, foreign exchange swaps, collection of fixed term deposits, and outright transactions. Executed through quick tenders or bilateral procedures
Function	Interest rate smoothing. Provision or absorption of liquidity
<b>• Structural operations</b>	
Frequency	Variable
Maturity	Variable
Transactions	Reverse transactions, issuance of debt certificates, and outright transactions. Executed through standard tenders or bilateral procedures
Function	Management of structural transaction position of the banking sector. Provision or absorption of liquidity
<b>Standing Facilities</b>	
<b>• Marginal lending (Lombard) facility</b>	
Maturity	Overnight
Interest rate	Generally above the tender interest rate, while providing a ceiling for market interest rates
Collateral	Full collateral required
<b>• Deposit facility</b>	
Maturity	Overnight
Interest rate	Generally below the tender interest rate, while providing a floor for market interest rates
<b>Reserve Requirement<sup>1</sup></b>	
Maintenance period	One month
Reserve base	End of calendar month balance sheet data on liabilities
Lag	One month, or less (depends on the chosen end-day)
Averaging	Yes
Carry-over	Not permitted
Remuneration	Has not been decided
Uniform reserve ratio	Has not been decided
Eligible assets	Correspondent account balances with the NCBs or indirectly through an intermediary
Penalty for noncompliance	A premium over the interest rate charged for the Lombard facility or an obligation to establish a non-interest bearing deposit with the ECB or the NCBs
Coverage	Presently only credit institutions; broader group requires amendment of ESCB/ECB Statute

<sup>1</sup>Awaits a decision by the ECB.

Fine-tuning operations may be carried out if necessary to manage fluctuations in the market. Such operations would be conducted on a short-term ad hoc basis, either to provide or absorb liquidity. Fine-tuning operations would normally be executed through quick tenders or bilateral procedures (which would involve no tendering) and would take the form of reverse transactions; quick tender operations would normally be conducted in a decentralized manner by the NCBs with a more limited number of counterparties than the regular tenders.<sup>11</sup>

An interesting set of issues arises as to the choice of counterparties for the ECB in these operations. The Report makes clear that generally the ECB should be dealing with a very wide set of counterparties—probably all banks in the EU, as well as possibly some nonbank financial institutions. For fine-tuning operations, however, the Report notes that operations would be conducted with a more restricted set of counterparties. The arguments given are twofold: first, that there would be insufficient time to contact all potential counterparties, since the operations would be conducted very quickly, perhaps within an hour from announcement of tender to announcement as to which bids had been successful; and second, that those receiving funds through the fine-tuning tender would be in a position to pass the funds very quickly onto the system.

Given modern technology, the entire tender process will presumably be conducted electronically. A tender will be announced through Reuter's screen, or on the Internet. Similarly, bids will be collected and ranked electronically. It seems unclear why electronic facilities should not be able to process bids from the entire set of institutions that are counterparties for the general tender within the hour that is likely to be the period within which the entire fine tuning tender is to be conducted. Thus institutions that are not in a position to respond so quickly will not submit any bids, but they will be self-selecting and not subject to administrative exclusion by the ECB. Similarly, those institutions that are likely to make the most competitive bids are those that are best placed to make use of the liquidity that they obtain and to pass it on rapidly to the rest of the system; the auction process itself will provide the selection function, and it is not fully clear why the ECB should seek to determine the selection process.

The Documentation suggests that there will be instances where the required liquidity infusions will have to be so rapid that the ESCB will have to handle this on a bilateral basis with a designated counterparty. The lack of competition in the choice of counterparty is to be met by choosing counterparties in bilateral arrangements by a rotation scheme. Such a process of course does not restore competition, but merely adds importance to the means of selecting eligible counterparties and rotation formulae. Again, the need for any bilateral arrangements is not fully clear.

---

<sup>11</sup>In exceptional circumstances, bilateral fine-tuning reverse operations may be executed by the ECB, upon the decision of the Governing Council of the ECB.



In addition, the ESCB is to conduct longer term refinancing operations, in the form of reverse transactions with three month maturities. However, "the ESCB does not, as a rule, intend to send signals to the market and therefore normally acts as a rate taker." The desire not to send signals to the market seems very valid, since one would not wish to dilute the strength of the signals being generated in the regular tenders. However, the mere fact that the ESCB will be creating a monetary instrument with this maturity and without any intention to create a signal suggests that this market may come to provide an undiluted, and thus important, signal of market conditions.<sup>12</sup>

#### IV. STANDING FACILITIES

As noted above, two standing facilities will be at the disposal of the ESCB: a marginal lending facility (the Lombard facility) and a deposit facility. These facilities will be of overnight maturity and will be available to counterparties at their own initiative.<sup>13</sup> They will be administered on a decentralized basis with their features harmonized across the ESCB.

Overnight liquidity will be provided at a pre-specified interest rate against eligible collateral. In normal circumstances, the interest rate on the Lombard facility would be above market interest rates, and thereby define the ceiling for the overnight interest rates in the market. All financial institutions fulfilling the general eligibility criteria will be eligible to access this facility. Access will be granted through the NCB in the country in which the financial institution is established, on all days when the national payment and securities settlement systems are operational.<sup>14</sup> At the end of each day, counterparties' intraday debit positions on their settlement accounts with the NCBs will be automatically converted into overnight credits, payable at the opening of the next business day. Except for the requirement that all ESCB lending is fully collateralized, there will be no limit to the amount of credit provided to eligible counterparties through this facility.

---

<sup>12</sup>This might perhaps be regarded as a converse of Goodhart's Law under which any aggregate being targeted becomes distorted by the targeting. In this case the absence of any official influence on the rate suggests that the results of this tender will become an important signal of market conditions.

<sup>13</sup>The ESCB may limit or suspend access to the facilities at its own discretion in exceptional circumstances.

<sup>14</sup>Multiple access is possible for institutions which have been established in more than one member state.

Counterparties will be able to deposit funds overnight with the NCBs for remuneration at a pre-specified interest rate (this could be zero). The interest rate on the deposit facility<sup>15</sup> will define the floor for overnight interest rates in the market. The ECB may seek to establish a procedure under which counterparties should request end-of-day access to the deposit facility, but any such procedure is unlikely to have a significant effect since financial institutions would anyway be able to automate the necessary initiation procedures.

Together, the Lombard and deposit facilities will define a corridor for market interest rates to limit the volatility of these rates. This may be of particular importance at the start of Stage 3 when the demand for euro may be unstable and interest arbitrage imperfect. A narrow corridor provides an automatic operating tool to limit interest rate volatility in the market and reduce the need for the ESCB to engage in fine-tuning operations. However, there are drawbacks if the corridor is too narrow. In particular, this could undermine the development of a liquid market for the euro, as there is less incentive for financial institutions to manage their liquidity through the interbank markets. The practical importance of this factor is not clear. One argument is that given the narrow margins in the European money markets (the bid/ask spread is around 5 basis points), corridor limits need to be only a very small distance from market interest rates to make the use of the standing facilities penal for the financial institutions. In practice, the optimal width of the corridor—including its width around market bid/ask spreads—is an empirical matter, and currently there is considerable variation in the width of the corridor among those EU central banks that operate with them.

The ECB is thus likely to have to exercise a fair degree of judgment in determining the initial width of the corridor at the start of Stage 3. In addition, the means by which the ECB moves the corridor is likely to be important. There are several options in this regard. For instance, the corridor could be moved automatically in line with changes in the weekly repo interest rate. In this case, the only policy signal would be provided by the weekly repo rate, not the corridor. Alternatively, the ECB may determine that the Lombard and deposit interest rates will be shifted independently of the weekly repo rate, either together so that the width of the corridor is left unchanged, or that one of the interest rates be moved so that the width of the corridor varies.

While central banks have in the past used several of these variants, to nuance their message on the stance of monetary policy, in the case of the ECB with many market participants with no experience of this system, there could be a risk, particularly at the start, that complicated signals would be misinterpreted by the market.<sup>16</sup> Therefore, at the beginning the ECB may

---

<sup>15</sup>There will be no subsidized discount facility.

<sup>16</sup>Furthermore, since the ECB will likely adopt a monetary or inflation targeting strategy, an additional signal will be provided by the announcement of the target, and the degree to which the ECB acts to ensure its achievement.

wish to be relatively straight forward in its actions, and indeed even explain them explicitly to the public.

## V. MINIMUM RESERVES SYSTEM

The Report provides technical details on how the ECB could operate a system of reserve requirements. While there is as yet no consensus on the desirability of having reserve requirements, and a decision in this regard will therefore need to await the establishment of the ECB, three purposes are identified: stabilization of money market interest rates (through a reserve requirement with an averaging provision), creation or enlargement of a structural liquidity shortage, and control of monetary expansion. The first of these is considered to be the most important.

A minimum reserves system can enhance daily liquidity management by financial institutions subject to the requirement and contribute to more stable interest rates. If combined with an averaging provision, the financial institutions would be able to average their holdings of required reserves over the maintenance period and smooth out fluctuations in daily liquidity through the reserve account. Among other things, this might reduce both recourse to standing facilities and the need for ESCB fine-tuning operations. The actual level of the required reserve ratio could be relatively low, but would need to be higher than the working balances of the financial institutions in order to perform the smoothing function. There is no intention to use reserve requirements as a prudential instrument.

Data for the 15 EU member countries suggest that the combined position of the banks vis-à-vis the ESCB is likely to result in a structural deficit.<sup>17</sup> Therefore the objective to create a structural deficit position may be less relevant in practice. However, if the minimum reserves system is introduced, it may be used to enlarge institutions' demand for central bank reserves. This may become a relevant issue if there is a significant shift away from coins and banknotes toward electronic payment means in Stage 3.

On the assumption that there will be reserve requirements, the reserve base will be defined in relation to the end-of-month balance sheet information, which will be the basis for calculating the required reserve holdings for the maintenance period which starts during the following calendar month and covers one month. The reporting lag is 15 days. The ECB will decide what rate of remuneration, if any, should be paid on the required reserves. Compliance with reserve requirements will be assessed with regard to average daily balances held at the ESCB. There is to be no carry-over provision across maintenance periods (i.e., financial institutions will not be able to make up any shortfall in the current reserve holding period in the

---

<sup>17</sup>Escrivá and Fagan (1996).

subsequent period). Penalties for non-compliance may involve either the imposition of a premium over the interest rate on the marginal lending facility, or an obligation to establish a non-interest bearing deposit with the ESCB.

The reserve ratio will be determined by the ECB, which may apply a uniform ratio to all liabilities included in the reserve base, or may differentiate across categories of depositor (e.g., different reserve ratios may apply to residents' and nonresidents' liabilities) or maturities of eligible liabilities (e.g., demand and time deposits may be assigned different reserve ratios). The EU Council is to determine the maximum permissible reserve ratio, while the ECB will decide the actual ratio; this could be zero.

Two issues are worth noting. Unless the reserve requirements are remunerated at close to market interest rates, they will amount to a tax on the banks. Insofar as near-banks are conducting business similar to that of the banks, this will create an uneven playing field and lead to disintermediation from the banking system. The ESCB/ECB Statute specifies that the ESCB "may" levy reserve requirements on "credit institutions" but does not give power to levy such requirements more widely. It seems that this is an area where market developments over the past six years may have made the Maastricht provisions outdated, since—for instance—money market funds have been growing rapidly in a number of EU countries, even where there are no significant reserve requirements being levied. It will be an important issue for the ESCB to consider how widely any reserve requirements will have to be levied; insofar as they will be levied more widely than just on banks, there will need to be an amendment to the ESCB/ECB Statute.

An issue arises concerning the definition of the reserve base against which the required reserves must be maintained. Although banks will be able to average their reserve requirement on a daily basis over the one-month holding period, the definition of the reserve base will be determined "within the framework of the ECB's money and banking statistics."<sup>18</sup> For institutions subject to full reporting requirements, the end-month balance sheet data will therefore be used to determine the reserve base for the coming month. This means of calculation is significantly less sophisticated than that at present employed in a number of EU countries. For instance, in Spain the requirement is based on a daily average of banks' liabilities over the reference period; in Germany the requirement derives from averages of weekly balance sheet data.

The higher the level of required reserves, and the lower the rate of remuneration, the greater the incentive for banks artificially to depress the level of their reported liabilities over the end-month reporting point (for instance banks may conduct repo operations across the end-month with institutions outside the ESCB reporting area). Such "window dressing" has long been

---

<sup>18</sup>European Monetary Institute (1997b), page 49.

evident in cases where banks become subject on a “lumpy” basis to some imposts.<sup>19</sup> There is thus a risk that banks will indulge in such practices under EMU,<sup>20</sup> so that the aggregate level of reserves held will be reduced and the burden probably redistributed; such an effect would also contaminate the monetary statistics, rendering them unreliable, especially in the early stages of EMU when the extent of the distortions would be difficult to judge.

## VI. LENDER OF LAST RESORT

The globalization of the banking industry is certain to intensify following the introduction of the euro. As a result, bank solvency problems in one country could more easily have implications for the stability of the financial system beyond national borders. This increases the importance of proper coordination, both between national bank supervisory authorities and between them and the ESCB, with regard to any policy interventions aimed at ensuring financial system stability.

Under the Maastricht Treaty, the responsibility for bank supervision will stay with the national supervisory authorities. The basic tasks of the ESCB as defined in Article 105(2) of the Treaty do not include any reference to bank supervision. On the other hand, Article 105(5) of the Treaty notes that the ESCB should “contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system.” Furthermore, Article 105(6) of the Treaty notes that the EU Council, if unanimous, may “confer upon the ECB specific tasks concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings,” while Article 25(1) of the Statute of the ESCB/ECB states that the “ECB may offer advice to and be consulted by the Council, the Commission, and the competent authorities of the member states on the scope and implementation of Community legislation relating to the prudential supervision of credit institutions and to the stability of the financial system.”

Given the somewhat ambiguous, but nevertheless quite pervasive, references to prudential issues in the context of EMU, it is important that the relationships between national supervisory authorities, especially those not in the NCBs, and the ESCB should be clarified in order to ensure that the ESCB has a good understanding of banking sector developments.<sup>21</sup>

---

<sup>19</sup>Reportedly, Japanese banks have been particularly adept at such activities, over end-quarter reporting dates.

<sup>20</sup>Similarly, there would be a risk of window-dressing if it were to be decided to apply non-uniform reserve requirements on bank liabilities.

<sup>21</sup>Currently, in about one half of EU member states bank supervision is not the responsibility

There will need to be some assessment both of the policies and of the modalities of any lender-of-last-resort intervention. For instance, if a systemically-important bank runs into liquidity difficulties, the ESCB will need to be confident that it knows how to respond, and that it has the operational and legal capacity to do so. It also needs to consider whether and how it will offset the monetary impact of any liquidity infusion.

As regards the ESCB's more regular operations, the Documentation notes that the ESCB will have powers to eliminate any institutions from counterparty lists on prudential grounds. It remains unclear at this stage, however, how these "grounds" will be defined, and whether the ECB is able to make an independent assessment in this regard, or will rely instead on NCBs and other supervisory authorities, or conceivably on private market credit rating agencies.

## VII. PAYMENT SYSTEM ISSUES

The European payment system will be a key element of EMU, by providing the link between the different national money markets. It will thereby support the integration of these markets and the unification of interest rates. In fact, a well-functioning intra-European payment system is crucial for the implementation of a single monetary policy. For this purpose, an interbank transfer system is being developed, under the acronym TARGET (Trans-european Automated Real-time Gross settlement Express Transfer system).

### A. TARGET

This system will not only support European monetary policy, but it will also contribute to the development of an efficient and secure payment system within Europe, offering EU commercial banks a system able to provide continuous intraday finality for individual transfers. It consists basically of two elements:

- A national Real-Time Gross Settlement (RTGS) system in all member countries;
- A system that interlinks these national systems.

At present most European countries already have an RTGS system in place, although the use of these systems varies widely, and some countries are still developing their systems. The TARGET system is scheduled to be fully operational by the end of 1998, after having been tested both nationally (for the national RTGS components) and internationally (for the interlinking elements); the simulation phase will begin in July 1998 and all NCBs will be ready

---

<sup>21</sup>(...continued)

of the NCB. However, even where they are formally separate, there is generally a relationship between the NCB and the bank supervisory authority to facilitate the exchange of information between them.

for this phase by September 1998 at the latest.<sup>22</sup> A TARGET task force coordinates progress and reports to the EMI Working Group on EU Payment Systems. The legal documentation for TARGET, including a description of the system and its parts and objectives, will be completed in the first half of 1998.

Once Stage 3 has started, national payment systems, including national RTGS systems, will be allowed to use both the national currency and the euro. The basic principle regarding the use of the currency—national or euro—is that there will be “no prohibition and no compulsion.” It is likely that in some countries there will be a preference for a gradual shift toward the use of the (non-cash) euro, whereas in others a “big bang” may be favored. It is important to note that as of the first day of Stage 3 all transfers through TARGET will be in euro, and that all debit positions resulting from these payments will need to be fully collateralized. This may increase demand for collateral in Europe, which will be accommodated by accepting a broad range of collateral, including both tier one and tier two paper (see below).

### **B. Pricing**

The use of TARGET will be mandatory for all monetary operations in the EMU, but it is not intended to be the only cross-border large value payment system in Europe after 1998. Alternatives will likely continue to be the use of correspondent banks, either directly or in association with international netting or clearing house schemes.<sup>23</sup> Whether TARGET will carry most of the payments made will depend largely on the price. It has been agreed that the costs for developing and maintaining the TARGET system will have to be fully covered by fees from its users. Furthermore, the pricing should create a level playing field for all participants, and be compatible with European competition laws.

It seems hard to determine the relevant costs, and also an appropriate price level, without knowing the volumes likely to pass through the system. It has been agreed, however, that the single transaction fee for cross-border payments will be between euro 1.50 and 3.00; the exact fee will be decided by the ECB Governing Council on the basis of additional information. It has also been agreed that there will be equal pricing for cross border payments. Prices for the national use of RTGS systems may vary, although they are not supposed to vary greatly, so as to assure equal treatment of participants. With different additional services, such as queuing systems, available in some countries, there are likely to be variations in the overall price of settlement.

---

<sup>22</sup>European Monetary Institute (1997c and d).

<sup>23</sup>With regard to the European Banking Association’s (EBA) clearing system, it is envisaged that the EBA will open a central settlement account at the ECB, and may also open settlement accounts with NCBs. It should be noted that to contain systemic risks, all large value transfer systems in Europe have to settle in central bank money.

No decision has yet been taken regarding the pricing formula, i.e., whether there should be an access fee, a periodic fee, a transaction fee, a value related fee, or a combinations of these fees. However, it has been agreed that the pricing formula should not stimulate the use of more risky systems, such as netting schemes that do not comply with the BIS (Lamfalussy) standards. Before mid-1998 the possibility of applying different fee structures to participants on the basis of their use of TARGET will be analyzed, although such options may not be available at the start of Stage 3. After experience has been gained with the new system, the option of introducing different prices for transactions during the day—in particular to create an incentive for banks to finalize payments early in the day—will be studied as well.

### **C. Intraday Credit**

Intraday liquidity will be provided by NCBs through two facilities: fully collateralized intraday overdrafts and intraday repos, which can be considered equivalent. There will be no charge for intraday credit, not only because this is considered irrelevant from a monetary perspective, but also because it may hinder the smooth functioning of the system. The provision of collateral or the use of repos will ensure there is no credit risk to NCBs in providing intraday credit.

An issue that has not been solved yet is related to the availability of intraday credit to NCBs from non-euro countries.<sup>24</sup> An important consideration is that these credits may spill over into overnight credit, thereby having monetary implications. Three options are being considered to avoid such a spill-over:

- an earlier cut-off for intraday credits in non-euro area RTGS systems to provide participants with the opportunity to finance shortfalls in the money market; the earlier cut-off time would not apply to the processing of payments by non-euro NCBs, but to their use of intraday credit in euro. The ECB will decide on the time of this deadline, if this option is chosen by the Governing Council;
- unlimited collateralized intraday credit to participants in non-euro area RTGS systems, but a system of high penalties, supplemented by non-pecuniary sanctions, for debit positions at the end of the day that would discourage such positions; and
- limits on intraday credit; in the most extreme case these limits, which apply to credit granted to non-euro area NCBs, could be set at zero.

The advantage of the first option would be that it would probably be least disturbing in terms of its impact on monetary policy, since it would avoid idle balances located in non-euro countries, thereby contributing to the smooth functioning of the euro money market.

---

<sup>24</sup>It should be noted that all EU member countries are expected to participate in TARGET, including those countries that do not participate in EMU.



In any case, the practical relevance of any limitations for most commercial banks in non-euro countries may be limited, due to their ability to process their payments through their branches in the euro area. Furthermore, it should be noted that such limitation does not seem to be fully in line with the general principle of market orientation underlying the EMU framework, while it may create an incentive for banks to utilize riskier cross-border settlement systems.

#### **D. Opening Hours**

TARGET will be open from 7 a.m. until 6 p.m. "European Central Bank time", which is the local time in the home city of the ECB. National RTGS systems may be opened earlier for local transactions. For most countries, this will represent an important broadening in comparison to the opening hours of their present payment and settlement systems. This reflects a worldwide trend toward longer opening hours.<sup>25</sup> As a result, the overlap in opening times between the major international payment systems will increase with the introduction of TARGET.

Furthermore, TARGET will be open on all days except Saturdays, Sundays and the only two common European holidays: Christmas and New Year's Day. NCBs will have the flexibility to close their national systems during national holidays when required by law or when all banks are closed.<sup>26</sup> Banks will be asked how much they expect to be using the system during national holidays in order for central banks to be able to determine their staffing. For customer payments (both for local and cross-border transactions), the cut-off time will be one hour before the general TARGET closing time, with the remaining hour being available for interbank payments and settlement.

#### **E. Role of the European Central Bank**

The ECB will perform the following three functions in the payment system area:

- it will provide end-of-day and possibly other control procedures for TARGET; normally this will include the conduct of end-of-day control procedures after 6:00 p.m.,<sup>27</sup>
- it will provide settlement services to cross border large-value net settlement systems;

---

<sup>25</sup>Since December 8, 1997, the U.S. Fedwire system has been open from 12:30 a.m. until 6.30 p.m. Eastern Time. Longer opening hours are not only more convenient for global trading, but may also reduce foreign exchange settlement risk. In fact, the possibility of opening TARGET before 7 a.m. to further reduce this risk will be studied and discussed with EU credit institutions.

<sup>26</sup>European Monetary Institute (1997c).

<sup>27</sup>European Monetary Institute (1997e).

- it will process payments for its own account, related to monetary and foreign exchange operations as well as the management of its own funds (capital and reserves). However, it has been agreed that at the start of Stage 3, the ECB could execute only fine-tuning operations under exceptional circumstances, and occasional foreign exchange interventions.

In addition, the ECB will (possibly) maintain accounts for its institutional customers, excluding credit institutions. Payments stemming from these functions will be handled by the ECB Payment Mechanism. It has been decided that the ECB will not hold settlement accounts for credit institutions located within the EU area (these will be held with NCBs), and there is a presumption—the ECB Governing Council, however, may reconsider this—that the ECB will not open accounts for credit institutions located outside the EU area.

## VIII. COLLATERAL ISSUES

### A. Eligibility of Collateral

All credit operations between the ESCB/ECB and the financial institutions will require collateral, either in the form of transfers of ownership of the underlying assets (in the case of outright transactions and repurchase agreements) or in the form of a pledge granted over relevant assets (for collateralized loans). The underlying assets will have to fulfill certain criteria to be eligible for ESCB monetary policy operations (see Table 2). Two separate categories will be established in this regard. No distinction will be made between these two tiers with respect to the quality of assets and their eligibility for different types of ESCB monetary policy operations, except that tier two assets will not be normally used in outright transactions. Both tiers will include public and private paper. Tier one collateral will essentially include assets that have euro area-wide acceptability and liquidity; tier two collateral will include assets that may have national or regional acceptability and liquidity. NCBs will be able to determine tier two assets; they will also be responsible for any financial losses associated with credit provided on the basis of these assets. The specific national eligibility criteria for tier two assets are subject to approval by the ECB.

Several risk control measures will be introduced for the purpose of protecting the ESCB against the risk of financial loss if underlying assets have to be realized owing to the default of a counterparty. First, the ESCB will apply initial margins to the underlying assets used in liquidity-providing reserve transactions. A specified margin will be applied for intraday/overnight credits, while a higher margin will be applied for credits of more than one day. Second, the ESCB will apply valuation haircuts<sup>28</sup> on the underlying assets, to be differentiated according to the residual maturity of the debt instrument. Third, the ESCB may require a specific margin to be maintained over time on the underlying assets used in liquidity-providing operations. If the value of the underlying asset falls below a certain level, the

---

<sup>28</sup>A “haircut” is the difference between the market value of a security and its collateral value.

Table 2. Characteristics of Eligible Assets

Criteria	Tier One	Tier Two <sup>1</sup>
Type of asset	<ul style="list-style-type: none"> <li>• ESCB debt certificates</li> <li>• Other marketable financial obligations</li> </ul>	<ul style="list-style-type: none"> <li>• Marketable financial obligations</li> <li>• Nonmarketable financial obligations</li> <li>• Equities traded on a regulated market</li> </ul>
Settlement procedures	<ul style="list-style-type: none"> <li>• Assets must be centrally deposited in book-entry form with NCBs or a CSD fulfilling ECB minimum standards</li> </ul>	<ul style="list-style-type: none"> <li>• Assets must be easily accessible to the NCB which has included them in its tier two list</li> </ul>
Type of issuer	<ul style="list-style-type: none"> <li>• ESCB</li> <li>• Public sector</li> <li>• Private sector</li> <li>• International and supra-national institutions</li> </ul>	<ul style="list-style-type: none"> <li>• Public sector</li> <li>• Private sector</li> </ul>
Financial soundness	<ul style="list-style-type: none"> <li>• The issuer (guarantor) must be deemed financially sound by the ECB</li> </ul>	<ul style="list-style-type: none"> <li>• The issuer/debtor (guarantor) must be deemed financially sound by the NCB which included the asset in its tier two list</li> </ul>
Location of issuer	<ul style="list-style-type: none"> <li>• EEA<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Euro area</li> <li>• Location in other EEA countries can be accepted subject to ECB approval</li> </ul>
Location of asset	<ul style="list-style-type: none"> <li>• Euro area</li> </ul>	<ul style="list-style-type: none"> <li>• Euro area</li> <li>• Location in other EEA countries can be accepted subject to ECB approval</li> </ul>
Currency of denomination	<ul style="list-style-type: none"> <li>• Euro<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Euro<sup>3</sup></li> <li>• Other EEA or widely traded currencies can be accepted subject to ECB approval</li> </ul>
Memorandum item: Cross-border use	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• For “domestic” assets: yes</li> <li>• For “foreign” assets<sup>4</sup>: possibly restricted</li> </ul>

Source: EMI (1997b).

<sup>1</sup>The cross-border use of “foreign” tier two assets might be restricted so that counterparties may use them only for receiving credit directly from the NCB which has included them in the tier two list.

<sup>2</sup>The requirement of location in the European Economic Area (EEA—the EU plus Iceland, Liechtenstein, and Norway) does not apply to international and supra-national institutions.

<sup>3</sup>Euro or, in the transitional phase, the national denominations of the euro.

<sup>4</sup>“Foreign” assets are defined as assets fulfilling at least one of the following three criteria: they are issued by entities located outside the euro area; they are not denominated in euro; and they are not located in the euro area.

counterparty has to provide additional assets (or cash). Finally, the ESCB may also apply exposure limits vis-à-vis issuers/debtors or guarantors, it may require additional guarantees by financially-sound entities in order to accept certain assets, and it may exclude certain assets from use in its monetary policy operations (this restriction applies mainly to tier two assets). The risk control measures for tier one and tier two assets are essentially similar. For tier two assets the measures are compiled by the NCB subject to ECB approval. Margins and haircuts for these assets will be at least as stringent as for tier one assets. In addition, NCBs may apply limits, require additional guarantees, and decide to exclude certain assets from their tier two list.

A number of operational issues concerning tier one and tier two assets remain to be decided. Amongst them is how to evaluate the credit risk of tier two paper that is non-marketable, and whether to rely on outside credit rating agents to assess the credit risk or to establish an “in-house” credit rating system in those NCBs that presently do not perform this function. While initial margins and valuation haircuts will likely be harmonized to facilitate the operational efficiency of the ESCB's monetary policy, decisions remain to be taken as regards the size of these margins. Also, the precise criteria to determine whether an asset will be included in tier one or tier two need to be clarified. Each NCB has an incentive to include in tier one as many assets as possible, since these assets would meet the euro-area wide eligibility criteria and therefore any losses derived from their use would be shared across the euro-area, while the default risk associated with the use of tier two paper would be borne by the NCB which included the asset in its tier two list. It is also not yet clear to what extent eligibility criteria for tier two collateral will be harmonized across NCBs. Differences in criteria across NCBs could lead to differences in access to ESCB facilities between financial institutions: it may be the case that counterparties to ESCB credit operations may have a preference to first use their tier two assets as collateral for these operations.

The Documentation also suggests that for longer-term refinancing operations the NCBs will have a choice which assets they will consider eligible, subject to approval by the ECB Governing Council. For instance, an NCB might accept only private debt instruments as collateral, or require a minimum quota of these assets. Such restrictions, if applied tightly, might limit access to these operations.

## **B. Transfer of Collateral**

ESCB counterparties may use eligible assets on a cross-border basis (i.e., an asset located in one country may be used for credit operations with the ESCB in another country in the euro area). For this purpose a mechanism called the Correspondent Central Banking Model (CCBM) has been developed, under which the NCBs act as custodians for each other in respect of securities accepted in their local depository or settlement system. The model may

be used for all tier one assets and for marketable tier two assets.<sup>29</sup> While the precise procedure of the CCBM depends on whether the eligible assets are earmarked for each transaction or whether they are held in a pool, the NCBs will only transfer funds to counterparties after they are certain that the counterparties' securities have been received by the correspondent NCB (counterparties may pre-deposit assets with the correspondent NCB for the account of their home central bank to meet settlement deadlines).

Depending on both the jurisdiction and national operating systems, the NCBs will allow for the pooling of underlying assets, in which case the counterparty makes a pool of underlying assets available to the NCB to cover the related credits, thus implying that the underlying assets are not linked to a specific credit operation. Alternatively, the NCB may require that assets be earmarked for each individual transaction, in which case each credit operation will be linked to specific identifiable assets. In the pooling system, the assets included in the pool are subject to daily valuation whereas in the earmarking system the valuations are carried out at least on a weekly basis (the settlement date of the main refinancing operation will be used as the valuation date). At least in the beginning there will be no trading between banks and NCBs in different countries.

## IX. CONCLUSIONS

The EMI and the NCBs have made good progress in preparing for Stage 3 of EMU. A broad "menu" of efficient, market-based monetary instruments has been developed, out of which the ECB Governing Council can make its selection. Details of the instruments have been spelled out in the Documentation, which will facilitate remaining preparatory work, including the further harmonization of monetary instruments during the period between now and the end of 1998. This careful and balanced approach has added to the transparency and credibility of the monetary unification process.

In further developing and selecting the instruments, a number of issues remain to be resolved. A major issue will be whether or not reserve requirements will be included in the set of instruments to be used. In order not to impose an additional reporting burden on the financial institutions, the proposed system is to rely on end-month data for assessing the liability for reserve requirements. This, however, will provide scope for window dressing, as has been the experience in other countries, which may subsequently reduce the information content of these same end-of-month data. If reserve requirements were to be introduced, this aspect would argue for relatively low levels of required reserves or remuneration at close to market rates.

---

<sup>29</sup>It may be possible to include certain types of non-marketable tier two assets in the CCBM. In general, tier two assets must be easily accessible to the NCB which has included the asset in its tier two list.

Another issue relates to the use of instruments for signaling purposes. In modern financial markets, where turn-over is high and rates react quickly to news, uniform and clear signals from central banks have become increasingly important as an instrument of monetary policy. This will be particularly true within the self-stabilizing framework that has been selected for the EMU, which includes both open market operations and standing facilities that define a corridor for interest rate movements. In this connection it will be important to make clear to the market how to interpret changes in rates determined or influenced by the ESCB.

The selection of counterparties for open market operations is important to make sure that monetary operations have the desired results. In general, a wide range of counterparties, all financially sound and secure, will maximize the effectiveness of monetary measures in terms of affecting market conditions. Moreover, it will be important to create a level playing field to avoid any institution or group of institutions from dominating the market. Therefore, it may be considered to define a relatively broad group of counterparties, even for fine-tuning operations. Modern telecommunication techniques increase the possibility even for relatively small players to quickly react to, and take part in, these operations.

The cross-border payment system will be a key element in the future European monetary and financial system. Not only will it need to be safe and efficient, it will also need to ensure that local money market conditions are instantly and continuously linked to conditions elsewhere in the Union in order to guarantee a unified euro interest rate. A large amount of high quality work has been put into developing the TARGET system, which is ready for testing. A number of decisions still need to be made, including the treatment in terms of intraday credit of banks in EU countries not participating in EMU. Some of the proposed limitations seem not to be fully in line with the adoption of a market-based framework for EMU, and are unlikely to have a substantive effect, given free movement of capital and the presence of virtually all major financial institutions in more than one EU country.

The next phase in the preparation for the operational framework for EMU will be one of deciding on a number of remaining issues and testing the options that have been selected. It will be important to continue to maintain the transparency of the decision and preparation process, so as to guide not only the ECB and the NCBs but also their future counterparties in EMU.

### References

- Enoch, Charles, and Marc Quintyn, 1996, "European Monetary Union: Operating Monetary Policy," *Finance and Development*, No. 33 (September), pp. 28–31.
- Escrivá, J.L., and G.P. Fagan, 1996, "Empirical Assessment of Monetary Policy Instruments and Procedures (MPIP) in EU Countries," Staff Paper No. 2 (May), European Monetary Institute.
- European Monetary Institute, 1997a, *The Single Monetary Policy in Stage Three: Specification of the operational framework* (January).
- \_\_\_\_\_, 1997b, *The Single Monetary Policy in Stage Three: General documentation on ESCB monetary policy instruments and procedures* (September).
- \_\_\_\_\_, 1997c, *Second Progress Report on the Target Project* (September).
- \_\_\_\_\_, 1997d, *Technical Annexes to the Second Progress Report on the Target Project* (September).
- \_\_\_\_\_, 1997e, *End of Day Procedures in Target* (September).
- Masson, Paul, Thomas Krueger, and Bart Turtelboom (eds), 1997, *EMU and the International Monetary System*, proceedings of a conference held in Washington, D.C., International Monetary Fund.
- Portes, Richard, 1996, "Implementing EMU," *American Economic Review*, Papers and Proceedings No. 86 (May), pp. 139–42.