

The main features of the monetary policy frameworks of the Bank of Japan, the Federal Reserve and the Eurosystem

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1. Introduction and summary

This paper presents the main aspects of the monetary policy instruments and procedures of the Bank of Japan, the Federal Reserve and the Eurosystem.² In particular, it describes the monetary policy objectives, the minimum reserve systems, the demand for central bank balances and the main autonomous factors affecting their supply, the types of open market operations, the standing facilities available, the range of counterparties able to participate in monetary policy operations, the eligible assets used as collateral and, finally, the overnight interbank markets, whose interest rates are strongly influenced by central bank policies.

The attached tables present simplified balance sheets and the main features of reserve requirement systems and open market operations of the three central banks. In addition, some charts are annexed, describing the development of the main official interest rates in the course of 2000 as well as the behaviour of the overnight rate in relation to both the amount of central bank balances and the monetary policy operations of the three central banks.

All three central banks share the same general framework for implementing monetary policy. Commercial depository institutions³ request balances with the central bank to settle wholesale financial transactions and, in addition, reserve requirements are imposed on them to hold minimum balances over predefined maintenance periods. The supply of such balances is directly influenced by open market operations, arranged at the discretion of the central bank, but may also be influenced by a variety of autonomous factors outside the control of the central bank. In general, short-term rates are controlled by using open market operations to achieve an appropriate supply of balances relative to the demand. All three central banks have standing facilities so that commercial depository institutions may borrow directly from the central bank when balances are in short supply. While the three central banks share the same general framework for implementing policy, there exist many differences in institutional details and in specific operating practices. These differences are more a reflection of historical traditions than explicit design choices. In the past, all three central banks have adapted their institutional frameworks to changing circumstances, and in the future operating practices are expected to evolve further.

2. Objectives of monetary policy operations

The monetary policy operations of the three central banks considered here, particularly their open market operations, have a direct influence on the overnight interest rate applied to the trading of funds between financial institutions for the adjustment of their balances with the central bank. In Japan this

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² The Eurosystem refers to the European Central Bank and all 12 national central banks which are members of the euro area.

³ The terms “banks”, “commercial depository institutions” and “credit institutions” are used interchangeably in this review.

interest rate is referred to as the call rate, in the euro area it is called the EONIA rate (euro overnight index average), and in the United States it is the federal funds rate. These interest rates are sometimes informally called interbank rates, although participation in these markets may not be limited to depository institutions.⁴ Short-term interbank rates are one of the channels through which monetary policy decisions are transmitted to the economy, and two of the central banks currently set an explicit objective for the overnight interbank rate, commonly called the target rate.

Under normal circumstances, the main operating objective of open market operations conducted by the Bank of Japan (BOJ) is to keep the overnight call rate in line with the target set at each Monetary Policy Meeting of the Policy Board. In March 2001, the BOJ adopted new procedures for money market operations whereby the balance of current accounts held by financial institutions at the BOJ, instead of the overnight rate, is set at the operating target.⁵ In either case, the target is announced to the public immediately after each meeting. In the Federal Reserve (Fed), the Federal Open Market Committee (FOMC) directs open market operations to meet a specified target for the overnight federal funds rate. After a meeting, the FOMC immediately announces whether a change in the target rate has taken place. The European Central Bank (ECB) does not have an official operating target. Generally, it signals the monetary policy stance through its regular main refinancing operations (MROs), executed in the form of either fixed or variable rate tenders. In the former the applied rate signals the monetary policy stance, while in the latter this is effected through a minimum bid rate.⁶ Normally, the provision of central bank balances leaves the interbank rate near the midpoint of the band formed by the rates on the standing facilities.⁷ This midpoint has coincided with the fixed rate of the main refinancing operation (after April 1999) or the minimum bid rate applied since the main refinancing operation has been conducted as a variable rate tender.

In all three central banks, open market operations, and certain other market-related activities, are carried out by a trading arm, hereinafter referred to as the “Trading Desk”.⁸ The Trading Desk at each central bank is directly accountable to the policymaking body.

3. Demand for central bank balances

The term “central bank balances” refers to the deposits of private financial institutions active in money markets that are held in accounts at the central bank, sometimes called current account balances. These balances are closely related to a concept of “reserves” which is used by all three central banks, but it is not identical in each case, as will be outlined below. In the Eurosystem and the Fed, central bank deposits are largely held by depository institutions subject to reserve requirements, although there are exceptions. At the BOJ, a broader set of financial institutions active in the money markets maintain accounts with the central bank, including securities companies, securities finance companies and money market dealers.⁹

Demand for central bank balances in each currency area may be divided into two broad categories: demand stemming from explicit reserve requirements, and all other sources of demand, sometimes

⁴ The overnight rate is of the greatest relevance for this discussion, although longer maturities are available in these markets, which are described in more detail in Section 9.

⁵ The target balance was initially set at around JPY 5 trillion before it was increased to JPY 6 trillion in August 2001. Since these amounts are well above the required reserve balance (about JPY 4 trillion), the overnight call rate stays around zero under normal circumstances. As such, the new procedures intend to achieve the same monetary easing effect of a “zero interest rate policy”, while preserving a market mechanism as much as possible. The BOJ announced that the new procedures would continue until the consumer price index registers either 0% or an increase year on year.

⁶ The mechanics of open market operations are described in more detail in Section 5.

⁷ The administration of the borrowing and lending facilities of the three central banks is reviewed in Section 6.

⁸ As the Eurosystem has recourse to the national central banks of the euro area in carrying out open market operations, a Trading Desk, in the true sense, does not exist at the ECB.

⁹ Balances held by some institutions that are active in the money markets are sometimes considered a factor that negatively affects the supply of reserves, but in this paper these holdings are treated as a positive component of the demand for central bank balances.

called demand for excess balances. As used in this paper, the concept of excess reserves includes balances held by financial institutions active in the money market that are not subject to reserve requirements.

3.1 Demand for central bank balances deriving from reserve requirements

All three central banks impose reserve requirements on depository institutions, which can be satisfied by holding balances at the central bank. The key features of the structure of reserve requirements are summarised in the first table of Annex 1. For the BOJ and the Eurosystem, reserve requirements can only be satisfied by holding balances at the central bank. For the Fed, in calculating the level of total required balances, allowance must be made for the portion that can be met with vault cash.¹⁰ Banks within the Federal Reserve System may also establish a required clearing balance, which affects the demand for balances in a way that is virtually identical to reserve requirements.¹¹

Reserve requirements plus, if any, clearing balance requirements are an important component in the institutional framework of all three central banks for driving interbank rates. Indeed, total required balances represent the largest source of demand for central bank balances, and they are known with complete certainty, at least before the maintenance period ends. The ability of banks to “average” their balance holdings within a maintenance period so as to meet requirements helps moderate the impact that daily variations in the actual supply of balances outside the control of the central bank would have on interbank rates.

Average levels of total required balances for 2000 are presented in Annex 1. By themselves, these aggregate values do not reveal the flexibility that banks subject to balance requirements have in averaging their holdings of central bank balances over a maintenance period. This flexibility depends on the level of requirements, in the aggregate and at the level of the individual institution, as well as on the length of each maintenance period, and must be measured against the volatility and unpredictability both of financial payment flows and of the aggregate supply of balances. In all three areas, the ability to average balances to meet requirements is limited by the prohibition on ending any given day in a debit position.¹²

3.2 Other demand for central bank balances

Normally, desired holdings are, on average, very close to the level of total required balances. They are never too low because there are penalties for failing to meet minimum reserve requirements, and they are never too high because excess balances earn no interest. But some other uses of central bank balances, beyond the need to meet requirements, generate demand for balances in excess of requirements, which Trading Desks must be able to anticipate by accurately steering interbank rates.

¹⁰ The Fed allows each bank to satisfy its reserve requirements with currency held on the bank’s premises, which is referred to as vault cash. Each depository institution’s level of “applied vault cash” in a maintenance period is calculated as the average value of the vault cash it held during an earlier computation period, up to the level of its reserve requirements. Thus, the level of applied vault cash is lagged and known prior to the start of each maintenance period. Applied vault cash is included in official measures of reserves.

¹¹ Banks may agree, at their discretion, to hold additional balances at the Fed within each two-week reserve maintenance period to meet a clearing balance requirement. Unlike the balances held to meet reserve requirements, banks are, de facto, remunerated at a market rate for the balances they hold to meet their clearing balance requirement. Explicit interest is not paid, but compensation is paid in the form of income credits that can be applied against charges for various priced services offered by the Fed. Banks are sometimes motivated to establish a clearing balance requirement in order to improve the flexibility they have in managing their accounts at the central bank without incurring the opportunity cost of holding (non-remunerated) excess reserves. All balances are held in a unified account. At the end of each two-week period, the Fed determines whether a bank has satisfied its clearing balance requirement, based on a bank’s average holdings of balances that were not used to meet reserve requirements.

¹² The carry-over provisions, which are unique to the Fed, provide some flexibility for averaging balances across maintenance periods.

3.2.1 *Payment and settlement-related uses of central bank balances*

In all three currency zones, financial payments are settled when balances are transferred between the central bank accounts of financial institutions that are parties to a transaction. The settlement procedures and the closely related overdraft policies are described in this section, along with their impact on demand for central bank balances.

The transfer of central bank balances via electronic payment systems is the primary mechanism by which financial transactions are settled in all three currency areas. Fedwire in the Federal Reserve and TARGET (the Trans-European Automated Real-time Gross settlement Express Transfer system) in the Eurosystem are real-time gross settlement (RTGS) systems. Net settlement systems exist in both areas, but these other systems settle their end-of-day balances in central bank money through the above networks. In Japan, RTGS was introduced for the funds transfer system of BOJ-NET, the online-based settlement system that the BOJ provides, at the beginning of 2001. BOJ-NET is linked to separate networks for cheque clearing, yen-based foreign exchange transactions and interbank domestic funds transfers that are settled at designated times once a day. In the Fed and the Eurosystem, banks dominate the settlement process, acting as intermediaries for other financial institutions that do not have central bank accounts. At the BOJ, other financial institutions, which are not subject to minimum reserve requirements, can still hold central bank accounts and have direct access to BOJ-NET, through which they can effect the settlement of funds and government securities. However, membership of the networks for cheque clearing, yen-based foreign exchange transactions and interbank domestic funds transfers is limited to depository institutions.

All three of the central banks have adopted different policies to reduce their exposure to daylight overdrafts. In the euro area, the participating national central banks administer their own practices, which take one of two general forms. First, daylight overdrafts are permitted as long as adequate collateral is on hand at the national central bank in question. Second, the national central bank may provide intraday credit through repurchase agreements (through an automatic mechanism) with no interest charged. In all cases, at the end of a day, any remaining debit positions are automatically treated as a request for use of the Eurosystem's marginal lending facility.

In the Fed, daylight overdrafts are permitted, subject to caps. Securities-related overdrafts can be excluded from the caps by pledging collateral. A fee of 27 basis points (quoted on an 18-hour day) is charged against an institution's average daylight overdraft position. A penalty of 4 percentage points in excess of that day's effective federal funds rate is applied against any end-of-day overdraft. Larger banks typically opt to cover these overdrafts by borrowing at the discount window. However, some smaller banks either may not actively manage their accounts late in the day or may not have collateral pledged to the window and may, occasionally, end the day with an overdraft and pay the penalty rate.

Under the newly introduced RTGS system, the BOJ extends intraday credit to counterparties in the form of daylight overdrafts against eligible collateral that has been pledged in advance. No interest is charged on the overdrafts. For financial institutions that fail to clear overdrafts at the end of the day, a penalty rate (6 percentage points in excess of the official discount rate) is applied. In practice, however, most of the major counterparties are entitled to access the Complementary Lending Facility,¹³ through which the BOJ extends loans at the official discount rate upon request, thereby avoiding end-of-day overdrafts.¹⁴

Since daylight overdrafts are granted by the BOJ against eligible collateral, demand for eligible assets has increased dramatically. Against this background, the BOJ established, upon the introduction of RTGS, a "standing collateral pool" against which daylight overdrafts are extended to counterparties. The standing collateral pool allows counterparties to use eligible assets very efficiently.¹⁵

¹³ The Complementary Lending Facility was introduced in the middle of March 2001. In terms of purposes and functions, it is very similar to the marginal lending facility of the ECB.

¹⁴ Unlike the ECB, debit positions at the end of the day are not automatically treated by the BOJ as a request for use of the Complementary Lending Facility. Financial institutions that want to use the Facility have to make requests to the BOJ by the deadline, currently set at 30 minutes before the closing time of BOJ-NET.

¹⁵ In the standing collateral pool, a linkage between the BOJ's credit and specific assets is not required as long as the total value of the eligible collateral in the pool is large enough to cover the exposure of the counterparty concerned. As a result, substitution of collateral, including across various types of financial assets, is widely permitted. The standing collateral pool is also used as collateral for the outright purchase of bills.

The concentration of settlement transactions at particular times of the day can give rise to strong demand for intraday balances, depending on how binding daylight overdraft policies are. In all three currency areas, total required balances are usually sufficient to satisfy even the highest intraday demand for balances, although this is difficult to measure objectively. But on some days, when settlements of payments are particularly heavy, demand for higher levels of excess balances does seem to appear in all three areas, although to a lesser extent in the euro area. However, the higher daily demand for balances on these days can usually be offset with lower balances on other days within the maintenance period, and banks end up holding, on average, minimal levels of excess balances.

3.2.2 Other sources of demand for excess balances

Institutions that do not have access to immediately available funds in the interbank market may hold levels of balances in excess of requirements as a precautionary source of liquidity to meet contingencies. This may apply, in particular, to smaller banks. In the Fed, excess balances are held predominantly by smaller institutions and for many years have averaged about USD 1 billion (currently about 10% of total balances). In the Eurosystem, excess reserve holdings as a portion of total balances are much lower (in the order of 0.5% to 0.7% of total reserves). This is likely to be due to the possibility of making overnight deposits with the Eurosystem at the end of the day. In all three areas, the opportunity cost of holding balances in excess of requirements usually keeps their demand to a minimum, as long as the reserve requirement is well above the balances that are needed for a smooth settlement of funds. But when the opportunity cost effectively becomes zero, as in Japan at the moment, the demand for excess balances may become extremely large. Accordingly, the very high levels of excess balances provided by the BOJ throughout 1999 until mid-August 2001 coincided with an interest rate of practically zero.

4. Main autonomous factors affecting the supply of central bank balances

Autonomous factors outside the direct control of the Trading Desk affect the available supply of balances at all three central banks. In large measure, open market operations are designed to neutralise their effects. Each central bank devotes resources to forecasting their movements so as to help calibrate its operations. In the case of the BOJ, forecasts of key factors for the following day are released to the public every evening. In the Eurosystem, when the MRO is announced the ECB also publishes a forecast of the expected liquidity needs of the banking system for the period from the day of the announcement until (and including) the day before the settlement of the following main refinancing operation.

In the case of the Fed and the BOJ, where daily swings in autonomous factors are larger relative to the size of the balances, the central banks conduct market operations almost every day in order to smooth liquidity conditions. In the Eurosystem, on the other hand, where central bank balances are large enough to absorb daily fluctuations of autonomous factors, the ECB usually intervenes in the market once a week. Because of the differences in levels of balances, the behaviour of autonomous factors is most relevant on a daily horizon for the BOJ and the Fed, while the weekly horizon is the most relevant for the ECB.

The balance sheets of all three central banks, presented in Annex 2, itemise the major autonomous factors for each bank. The composition of each balance sheet reflects a host of historical circumstances unique to each central bank. However, in all three cases, the largest single liability is banknotes in circulation (currency). Banknotes in circulation are also fairly volatile in all three areas (Annex 3). Currency movements follow strong seasonal patterns in all three areas (although experience at the ECB is still fairly limited), which improves their predictability. Nevertheless, in the euro area and the United States this factor is relatively difficult to predict on a daily basis.

Perhaps the most volatile factor at all three central banks is the Treasury balance, or government deposits. In absolute size, government deposits are normally very small in the Fed, and of moderate size at the BOJ and in the Eurosystem. But their magnitude can swing dramatically around peak government payment or receipt dates. The ECB and the Fed report that this factor is perhaps the most difficult one to forecast on a short-term basis, even though dates when government inflows and outflows are highest are known well in advance. In the case of the BOJ, the Treasury funds are

projected fairly precisely in most cases, since all funds transactions related to the Treasury are conducted through the BOJ. Even so, swings in the Treasury funds are often significant relative to the level of the required balances, leading to some difficulties in conducting market operations.

The ECB and the Fed report that the “float”, or items in the process of collection, can also be volatile and difficult to predict. The BOJ and the Fed also maintain deposit or investment facilities for foreign central banks, which are autonomous factors affecting the supply of reserves that can be difficult to predict. In the Eurosystem, some national central banks also manage deposits or investment facilities for foreign central banks and international organisations, but these amounts are relatively stable and the size of their daily fluctuations is fairly predictable.

5. Open market operations and operational practices

Open market operations are the main instruments used in steering interest rates and managing liquidity in all three currency areas, as recalled above. The BOJ is the most active in this field, conducting operations more than once a day. The Fed typically acts in the market daily, while the Eurosystem usually conducts open market operations only on a weekly basis (see Annex 4 for a comparison of the open market instruments).

5.1 The Bank of Japan

The open market operations of the BOJ can be classified in two broad categories: fund-providing and fund-absorbing operations. Several market instruments can be used for providing temporary liquidity, such as purchases of short-term government bills or commercial paper under repurchase agreements. Temporary liquidity provision also takes the form of borrowing of securities against cash collateral (so-called JGB repos). In addition to these types of operations, the BOJ also conducts outright purchases of bills, against the standing collateral pool.¹⁶ Among all the instruments mentioned above, purchases of short-term government bills under repurchase agreements are the most frequently used. The maturity of all these operations ranges, in most cases, from one week to three months, although it can be extended, except for purchases of commercial paper, to six months (operations with a maturity of less than one week are also available). As regards more permanent funds provision, the BOJ conducts outright purchases of government bonds regularly (currently twice a month), so that the amount bought is consistent with the net increase in banknotes in the long run. For short-term funds provision, there has been a shift of emphasis from open market operations using commercial bills to those using government securities. The instruments used for absorbing funds are mainly sales of short-term government bills under repurchase agreements and outright sales of bills issued by the BOJ.

All operations are conducted through multiple price (American) auctions and settlement can be on the same day or on some future date. The instruments used for same day settlement are purchases or sales of government bills under repurchase agreements, outright purchases of bills, or BOJ bill sales. As the purpose of the open market operations is to guide the level of the overnight rate, there is no attempt to affect any particular market in which the operations are conducted; instead, practical considerations influence the choice of instruments to be used.

The interbank market opens at 8.30 am. At around this time the Director of the Financial Markets Department and other staff concerned from the Trading Desk meet to decide on the details of the operations to be conducted on the day. At 9.20 am, the BOJ announces the operations being settled on the same day. Operations that are being settled on future dates are announced at 9.30 am, 10.10 am or 12.10 pm, depending on the types of instruments. In most cases, propositions for operations are collected within an hour of the announcement, and auction results are released as

¹⁶ For outright purchases of bills, the BOJ purchases “master bills” (bills issued by a counterparty only for the purpose of the BOJ’s operations) backed by the standing collateral pool. Therefore, in terms of their function, the bill purchasing operations can be considered a variety of the BOJ’s loan against the pooled collateral, for which interest rates are determined through competitive auctions.

soon as possible thereafter. The interbank market usually closes at 5 pm (on the days when government bills/bonds are issued in the market, the closing time is extended by 60 or 90 minutes depending on the types of securities issued).

5.2 The Federal Reserve

The Fed conducts its open market operations in Treasury securities and debt obligations of government agencies and government-sponsored enterprises. A multiple price (American) auction format is used for all transactions. Repurchase agreements on these securities are used to add reserve balances on a temporary basis. The maturities of the repurchase agreements range from overnight to three months. In practice, most repurchase agreements are under one week and overnight is the most common maturity. However, over the past year the Fed has increasingly used term repurchase agreements of about 28 days to help meet underlying reserve needs and to offset seasonal swings in currency and other autonomous factors. Repurchase agreements are predominantly for same day settlement, but forward operations are sometimes arranged. The Trading Desk exercises considerable judgement in selecting the specific maturities of the repurchase agreements it uses to address day-to-day reserve needs, recognising that the same daily pattern of reserve supply can be achieved through many combinations of repurchase agreements of different size and maturity. When draining reserves on a temporary basis, the Fed, for operational convenience, uses mainly matched sale-purchase agreements of Treasury bills, overnight being the most common maturity. These are, however, arranged far less frequently than repurchase agreements. Outright purchases of Treasury securities in the secondary market are used to increase reserves on a permanent basis. The specific issues purchased are chosen on the basis of broad portfolio considerations. For operational convenience, each outright purchase of securities is limited to either bills or to a specified maturity range of coupon-bearing issues.

The interbank market opens informally at 8 am. At 9.10 am, there is an informal telephone discussion between staff at the New York Fed and at the Board of Governors, reviewing forecasts and presenting the Trading Desk's proposed market actions, shortly after a complete set of reserve estimates is first available. At 9.20 am, a conference call begins with the participation of staff at the New York Fed, staff of the Board of Governors and a regional Reserve Bank President who is a voting member of the FOMC. Money market conditions and reserve projections are reviewed, and the Manager's proposed open market actions are presented to the FOMC representative for approval.

Most temporary operations that are designed predominantly to affect the supply of reserves on a particular day are usually arranged in the morning around 9.30 am, to take advantage of the greater market liquidity at that time. The timing of permanent operations is more flexible. Most outright purchases are arranged for next day settlement and are executed before noon, after which time the futures market for Treasuries closes and the cash market for Treasuries becomes less liquid. However, operations arranged for same day delivery-versus-payment settlement must be completed prior to the closing of the securities wire transfer system at 3 pm. The interbank market for federal funds closes at 6.30 pm. The direction and duration of the projected reserve imbalances drive the choice of operations.

5.3 The Eurosystem

Although the Eurosystem also has a wide variety of market instruments available to affect the level of reserve balances, so far it has resorted almost exclusively to its regular operations. Of these, the main refinancing operations, are the most important, since they are the only ones used to signal the stance of monetary policy. They are executed every week and have a maturity of two weeks. The other regular operations, with a maturity of three months, are aimed at providing longer-term financing to the counterparties. The latter operations provide approximately 25% of the reserve supply by the ECB. Until June 2000 the main refinancing operations were executed through fixed rate tenders. However, as a reaction against severe overbidding which had occurred under the fixed rate tender procedure, the Eurosystem decided to switch to variable rate tenders with a multiple rate (American) auction format from the end of June 2000. The minimum bid rate announced for these operations signals the monetary policy stance, which was previously indicated by the fixed rate. Longer-term operations have always been executed in the form of variable rate tenders (using the American auction method). In these latter operations, the ECB does not send signals to the market and therefore normally acts as a rate-taker. Longer-term operations are executed regularly each month.

In addition to regular operations, the Eurosystem can also conduct fine-tuning operations and structural operations. The fine-tuning operations can be executed in the form of reverse operations, foreign exchange swaps, outright purchases or sales and the collection of fixed-term deposits. Fine-tuning reverse transactions, foreign exchange swaps and the collection of fixed-term deposits are normally to be executed through quick tenders, although the possibility of using bilateral procedures is not excluded. Outright purchases or sales are conducted through bilateral procedures. The Eurosystem may also execute structural operations in the form of reverse transactions or the issuance of debt certificates aimed at adjusting the structural liquidity position of the Eurosystem vis-à-vis the financial sector.

A wide range of collateral is accepted for the operations. The regular operations are usually settled on T+1, while the fine-tuning operations can be settled on the same day.

The euro area interbank money market opens at 9 am CET. A Liquidity Committee, consisting mainly of liquidity managers and senior management of the ECB's Directorate General Operations and Directorate General Economics, meets every day at 10.15 am to discuss market developments and the liquidity situation. Every Tuesday two Executive Board members participate in the meeting of the Liquidity Committee, which on that day makes a proposal to the Executive Board on the allotment in the main refinancing operation. On Tuesday morning, counterparties have to submit their bids to their national central bank by 9.30 am. The bids are then sent to the ECB to be compiled by the ECB's Front Office at 10.35 am. The Executive Board's allotment decision is published via wire services at 11.20 am. The interbank market closes at 6 pm CET.

6. Standing facilities

The Eurosystem provides its counterparties with two standing facilities: one for providing and one for draining reserves, which also set a corridor for the fluctuations of the overnight interest rate. The BOJ recently introduced a standby lending facility, known as the Complementary Lending Facility, which is designed to complement market operations initiated by the BOJ. The Fed does not offer facilities for draining reserves and also uses more discretion than the Eurosystem in providing funds for temporary liquidity needs of counterparties.

6.1 The Bank of Japan

In March 2001, the Bank of Japan introduced the Complementary Lending Facility, through which it extends loans to counterparties at their request against eligible collateral. The official discount rate is applied to the loans. The maturity of the credit is overnight, although it can be extended up to five business days. Since the official discount rate is higher than the operating target for the overnight call rate, it provides a ceiling on the overnight call rate.

In order to access the Facility, counterparties have to make a request to the BOJ 30 minutes before the closing time of the funds settlement system of BOJ-NET.¹⁷

Collateral for the Facility is currently managed separately from the standing collateral pool, which is used for daylight overdrafts as well as bill purchasing operations. Types of collateral accepted for the Facility are basically the same as those for the standing collateral pool, although some types of financial assets, such as commercial bills, are excluded for technical reasons. By the middle of December 2001 the collateral for the Facility will be fully merged with the standing collateral pool, enabling counterparties to use eligible collateral more efficiently.

In addition to the Complementary Lending Facility, the BOJ can also extend loans to counterparties against eligible collateral at its own discretion, if deemed necessary, to ensure the smooth functioning and stability of the financial market.

¹⁷ The deadline will be extended by 15 minutes in the middle of December 2001 when computerised procedures are introduced.

6.2 The Federal Reserve

Borrowing at the Federal Reserve's discount window may be used to meet temporary liquidity needs arising from short-term fluctuations in assets and liabilities. All institutions subject to reserve requirements have access to the discount window, including domestic commercial banks, US branches and agencies of foreign banks and savings institutions. The Fed provides discount loans at its own discretion. Borrowing must be for an approved reason – typically to avoid unexpected overnight overdrafts or unexpected shortfalls that would leave the institution deficient in meeting reserve requirements. Institutions must seek other reasonably available sources of funds before turning to the discount window.

Each of the 12 regional Reserve Banks operates a discount window facility for eligible institutions in its district, subject to the same policies in all districts. The maturity of the credit is mostly overnight. The rate is the basic discount rate approved by the Board of Governors.

In addition to ordinary discount window loans, the Fed also provides seasonal borrowing programmes for small institutions and an extended credit facility for banks experiencing longer-term liquidity needs arising from exceptional circumstances.

6.3 The Eurosystem

The Eurosystem provides two standing facilities, a marginal lending facility and a deposit facility. There are two ways to access the marginal lending facility: first, at the end of the day, any remaining intraday debit positions of counterparties on their settlement account with the national central bank are automatically considered a request for use of the facility. Second, counterparties may also access the marginal lending facility on their own initiative by making a request to the national central bank during the day or, at latest, 30 minutes after the actual closing of time of TARGET. All credit institutions subject to reserve requirements can, in principle, access the marginal lending facility. The interest rate applied is currently 1 percentage point higher than the minimum bid rate of the main refinancing operation. There is no limit to the amount of credit that can be extended against eligible assets. Since the maturity of the credit is overnight, in normal circumstances, the marginal lending rate provides a ceiling for the overnight rate. Each of the 12 national central banks within the Eurosystem operates the marginal lending facility for eligible institutions in its country. The Governing Council of the ECB exercises authority over the administrative procedures to ensure uniform practices across the euro area.

As regards the deposit facility, counterparties can use it to make overnight deposits with national central banks. The interest rate of the deposit facility provides, in normal circumstances, a floor for the overnight market interest rate. Currently the rate of the deposit facility is 1 percentage point lower than the minimum bid rate of the main refinancing operation. To access the deposit facility, the counterparty must send a request to the national central bank during the day or, at the latest, 30 minutes after the actual closing time of TARGET. Counterparties fulfilling the general eligibility criteria may access the deposit facility.

7. Counterparties

The Fed and the BOJ both have relatively few counterparties, less than 100, even if the range of eligible institutions in both countries is wider than in the euro area. As regards the Eurosystem, all of the approximately 7,500 credit institutions subject to reserve requirements are eligible, in principle, to participate in the regular operations and standing facilities of the Eurosystem. But less than half of them fulfil the operational criteria required by the national central banks for accessing monetary policy operations and only about 600 institutions actually participated in them in 2001.

7.1 The Bank of Japan

The counterparties of the BOJ differ somewhat, depending on the type of operation in question, but all of them fall into one of the following categories: banks, securities companies, securities finance companies and money market brokers (Tanshi companies). Furthermore, all must have a current account at the BOJ. Additional conditions that counterparties need to meet are that they have access

to BOJ-NET, that their creditworthiness satisfies certain standards and that they are recognised as major players in the money market.

Depending on the type of operation, the number of counterparties varies from about 30 to 50.¹⁸ They are selected and reviewed about once a year, through a public application process based on selection guidelines that are publicly disclosed. Counterparties are expected to bid actively on the BOJ's offer, to process transactions expeditiously and accurately and to provide market information or analysis useful to the BOJ in implementing monetary policy.

7.2 The Federal Reserve

For open market operations, the Fed relies on a well defined set of counterparties, called primary dealers, of which there are currently about 25. Primary dealers must be either a commercial banking organisation or a registered securities dealer in good standing with their regulator, and they must comply with minimum capital standards. Financial institutions that comply with the primary dealer requirements are eligible to apply to become a counterparty.

Primary dealers are expected to provide satisfactory performance in three areas: to make reasonably good markets for the Fed Trading Desk's open market operations, to provide meaningful support for the issuance of US Treasury securities (including participation in primary auctions) and to communicate market information to the Trading Desk on conditions in financial markets valuable in the formulation and implementation of monetary policy.

7.3 The Eurosystem

All credit institutions subject to minimum reserve requirements are, in principle, eligible counterparties of the Eurosystem, assuming that some basic requirements are met. The most important of these are that the credit institutions must be financially sound, be subject to harmonised supervision by national authorities and fulfil the operational criteria specified by the relevant national central banks (eg hold a securities settlement account for liquidity-providing operations). Counterparties participating in fine-tuning operations must meet some additional requirements, the most important of which are activity in the money market as well as trading desk efficiency and bidding potential.

Currently, about 7,500 credit institutions are subject to reserve requirements; more than 3,000 of these have access to standing facilities and about 2,500 are eligible for participation in regular open market operations. About 200 of them have been selected by the national central banks to participate in fine-tuning operations.

8. Eligible collateral¹⁹

All credit operations with the three central banks have to be covered by collateral. Although the spectrum of eligible collateral is broadest in the euro area, government securities represent the bulk of eligible assets in all three currency areas.

8.1 The Bank of Japan

Different types of assets are eligible for the monetary policy operations and other types of credit of the Bank of Japan.

¹⁸ All types of market operations are conducted at the BOJ's headquarters except for the outright bill purchasing operations at all offices, a type of operation that was introduced in July 2001 in order to facilitate smooth provision of funds across the nation. In this type of operation more than 120 financial institutions, including a large number of regional banks, are eligible as counterparties.

¹⁹ An article published in the April 2001 issue of the *ECB Monthly Bulletin* gives more detailed information on the eligible assets available in the euro area.

- The standing collateral pool is used for both daylight overdrafts and bill purchasing operations. After the reform taking place by the middle of December 2001, it will also cover the BOJ's credit extended through the Complementary Lending Facility. Owing to such versatility, the standing collateral pool is also referred to as the "common collateral". Types of collateral to be accepted in the standing collateral pool are stipulated in the Guidelines on Eligible Collateral, which prescribe principles concerning the BOJ's collateral policy. They include not only public debt, such as government bonds/bills, government-guaranteed bonds, municipal bonds and foreign government bonds (denominated in yen), but also private debt, such as commercial bills, corporate bonds, asset-backed securities and loans on deeds, the eligibility of which is examined by the BOJ in advance.
- For repurchase agreements, the BOJ accepts commercial paper issued by non-financial companies and short-term government bonds.
- For borrowing of securities against cash collateral (JGB repos), long-term government bonds (10-year, 20-year) as well as medium-term government bonds (two-, four-, five- and six-year) are accepted as eligible assets.

8.2 The Federal Reserve

The range of assets accepted by the Fed as collateral in its open market operations is comparatively narrow but the outstanding supply is much greater. It encompasses direct obligations of the US Treasury and securities that are direct obligations of, or fully guaranteed as to principal and interest by government agencies, including government-sponsored enterprises. Within this set of collateral, the Trading Desk may not accept securities with certain characteristics, such as structured notes, for operational reasons. The Fed's counterparties, the primary dealers, collectively hold roughly USD 1.5 trillion of Fed-eligible securities that they finance through repurchase transactions. The outstanding supply of these securities is much larger, perhaps as much as four times this amount.

By contrast, the Fed accepts a wide range of assets at the discount window. In addition to the assets already mentioned, these include certain collateralised mortgage obligations, obligations of state and other political subdivisions, corporate bonds, one- to four-family residential mortgage notes and commercial, industrial or agricultural notes. A common list of assets eligible for the discount window is used by the 12 Federal Reserve Banks. Given the diverse nature of discount collateral, it is very difficult to estimate the supply of eligible collateral, but it is quite clear that it is much greater than the amount of collateral eligible and available for open market transactions.

8.3 The Eurosystem

The Eurosystem accepts the same type of collateral for both its open market operations and the marginal lending facility, as well as for intraday credit for payment systems purposes. In order to take account of the still existing differences in the financial structure across member states, assets eligible for the credit operations of the Eurosystem encompass a very wide range of different instruments. Notably, in addition to marketable debt instruments, non-marketable debt instruments and even some equities are eligible. No distinction is made between these assets in terms of quality, and all fulfil the minimum eligibility criteria of the Eurosystem. All types of eligible assets can be used indiscriminately for monetary policy operations by all counterparties across the euro area. In total there are approximately EUR 6.4 trillion of eligible assets.

Essentially for purposes internal to the Eurosystem, however, a distinction is made between two categories of eligible assets, referred to as "Tier 1" and "Tier 2":

- Tier 1 consists of assets fulfilling uniform euro area-wide eligibility criteria established by the ECB.
- Tier 2 consists of additional assets for which eligibility criteria are established by the national central banks, subject to the minimum eligibility criteria established by the ECB.

9. Key financial markets in the implementation of monetary policy

Since the policy rate in Japan and the United States is the announced level of the overnight interest rate, the most important market in defining the stance of monetary policy in these countries is the uncollateralised overnight money market. The Eurosystem, too, pays close attention to the behaviour of the overnight rate, although this is not an operational target of the Eurosystem.

9.1 The Bank of Japan

The major participants in the uncollateralised overnight call money market are the city banks which have the largest share as borrowers, while regional banks act as major lenders. Other important players include investment trusts, trust banks and specialised money market brokers. Most trades are settled on the same day, although settlement on T+1 and T+2 is also possible. The most closely related markets to the uncollateralised overnight market are the collateralised call market and euro-yen market.

Because of the wide fluctuations in the autonomous factors and the lack of a single market which is liquid enough, the BOJ conducts monetary policy operations in several markets. The most important of these are the market for short-term government bills, the repo market and the market for commercial paper. A relatively large weight has been attached to operations in the market for short-term government bills, because of the recent rapid growth of this market.

9.2 The Federal Reserve

In the United States the uncollateralised overnight market is called the federal funds market. It is the interbank market for direct transfers and trades of balances in Federal Reserve accounts. Most large trades are arranged through brokers and trading is dominated by large banks. Many of these maintain correspondent relations with other institutions, with which they may directly arrange federal funds trades. Smaller banks typically arrange trades directly with counterparties, rather than through the brokers. The vast majority of wholesale transactions are for same day settlement and carry a maturity of one business day. But forward trades and term transactions, though generally short-term, are common. In recent years, the daily volume of overnight transactions arranged through major brokers has averaged between USD 50 billion and USD 70 billion.

The most closely related market that participants can use for borrowing and lending is the market for overnight eurodollar transactions, which are unsecured dollar-denominated transactions that settle on the accounts of offshore institutions. The rates in the two markets are usually identical. The domestic repo market may also serve as an alternative financing market. The availability of collateral creates some differences in interest rates and participants between the markets.

Most open market operations are conducted in the repo market for government securities. The largest cash lenders in this market include, among others, mutual funds, corporations, insurance companies and municipal authorities. The largest routine borrowers of cash are government securities dealers. Banks are able to participate in the repo market, but the collateral requirement can be a limiting factor. Settlement is mostly on the same day, but forward transactions are common. Maturities range from overnight to one year, although shorter-term transactions are the most common, especially overnight. The trading volume averages around USD 600 billion per day.

9.3 The Eurosystem

The key instrument in signalling the stance of monetary policy of the Eurosystem is the main refinancing operation, the maturity of which is two weeks. However, the Eurosystem also pays very close attention to the overnight market, as evidenced by the fact that the two standing facilities of the Eurosystem set a corridor for the fluctuation of the overnight rate. The overnight market is by far the most active and the overnight reference rate (EONIA), which is calculated by the ECB, is widely used in interbank transactions (ie through the overnight interest rate swap market).

The uncollateralised overnight money market is largely characterised by a two-tier structure, ie larger banks, also acting across the border, act as intermediaries for the smaller banks. The interbank money market is essentially an over-the-counter market and involves few intermediaries such as brokers.

Settlement normally takes place on T+2 for deposit, repo and swap transactions, with the exception of overnight and tom/next transactions, which are settled on T and T+1 respectively. The bulk of the transactions take place at the very short end of the money market curve. According to the data available, it is estimated that the overall average volume of daily transactions of the largest banks amounts to approximately EUR 60 billion.

The two most closely related markets used by participants for borrowing and lending are the repo market and the foreign currency swap market. Each of them is estimated to represent slightly less than half the size of the unsecured money market. As regards the repo markets, mutual funds, corporations, insurance companies and other institutional investors act as cash lenders/borrowers, together with credit institutions.

10. Conclusion

The operational frameworks used by the Bank of Japan, the Federal Reserve and the European Central Bank for implementing monetary policy rely on similar fundamental characteristics. They allow the three central banks to clearly signal their monetary policy stance, even if the tools at work are different, and to steer closely short-term money market interest rates, which are the operational instrument. Open market operations are the main instrument for implementing monetary policy but, owing to the weight of tradition, the different sizes of the refinancing needs and the non-comparable features of the minimum reserve systems, the type and frequency of open market operations vary widely between the three central banks. They share the desire to remain neutral towards the financial markets, but the approaches chosen to achieve this objective are quite different. The Federal Reserve conducts regular operations in a limited set of markets for relatively small amounts; the Bank of Japan has diversified the set of markets in which it operates to spread the large amount and very high frequency of monetary policy operations it carries out; the European Central Bank executes weekly operations for large amounts without referring to any specific market segment, owing to the very wide range of assets taken as collateral. The technical features of the open market operations, as well as those of the standing facilities used by the three central banks, are therefore quite different. But the structural changes at work in the respective financial markets, such as the growing role of the repo market in Japan and the euro area and the shrinking public debt in the United States, should trigger further adaptations of the operational frameworks of the three central banks. This may facilitate a convergence of their operational procedures and practices, thus reinforcing the analogies which derive from their similar fundamental principles.

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Annex 1

Key elements of reserve requirements			
	Bank of Japan	European Central Bank	Federal Reserve
Covered institutions	Depository institutions (city banks, regional banks, etc)	All credit institutions	Depository institutions (banks, thrifts, etc)
Covered liabilities having a non-zero requirement ratio and some other liabilities	Time deposits, other deposits, bank debentures, money in trusts, and foreign currency deposits	Overnight deposits, deposits with a maturity of up to two years, debt securities with a maturity of up to two years, and money market paper	Transactions deposits
Key requirement ratios	Ratios range from 0.05% to 1.20%	2% on all the above liabilities	10% top marginal requirement ratio applies to most deposits
Maintenance period structure	One month, starting on the 16th day of each month and ending on the 15th day of the following month	One month, starting on the 24th calendar day of each month and ending on the 23rd day of the following month	Two-week periods, beginning on every other Thursday
Required reserve computation period	Partly lagged. Based on average deposits over the entire calendar month in which the maintenance period begins	Fully lagged. Based on balance sheet data from the end of the nearest calendar month preceding the start of the maintenance period	Fully lagged. Based on average deposits in the two-week period beginning 30 days before the start of the corresponding maintenance period.
Eligible assets for satisfying requirements	Central bank balances held during the maintenance period only.	Central bank balances held during the maintenance period only	Central bank deposits held during the maintenance period, plus vault cash (up to the level of requirements) held during the required reserve computation period.
Remuneration on assets held to satisfy requirements	None	Interest is paid at the average rate of the ECB's main financing operations over the maintenance period	None
Carry-over provisions	None	None	Up to 4% of requirements of one maintenance period may be met with balances held in the following period; balances in excess of 4% of requirements in one period may be applied to meeting requirements in the following period
Penalty structure for failing to meet reserve requirements	3.75 percentage points plus the official discount rate	2.5 percentage points plus the marginal lending rate. Banks typically opt to borrow at the marginal lending facility instead	2 percentage points plus the discount rate is levied against reserve deficiencies beyond the carry-forward amount. Banks typically opt to borrow at the discount window instead.
Penalty structure for ending a day in overdraft	A penalty of 6% plus the official discount rate is applied to the any account deficit at the end of the day. The Complementary Lending Facility, in which the official discount rate is applied, is preferred instead.	Debit positions at the end of a day are automatically considered as a request to the marginal lending facility	A penalty of 4% plus the average federal funds rate for the day is applied to any account deficit at the end of each day. Larger banks typically opt to borrow at the discount window instead

Average reserve levels for maintenance periods (2000)

	Bank of Japan in trillions of yen	European Central Bank in billions of euros	Federal Reserve in billions of dollars
Reserve requirements	4	112	40
Applied vault cash	.	.	36
Required clearing balances	.	.	6
Total required balances	4	112	10
Total balances above requirements (excess)	1.1 ¹	0.7	1

¹ Includes about 0.4 trillion yen of excess reserves at institutions subject to reserve requirements and about 0.7 trillion yen of balances held by financial institutions not subject to requirements.

Annex 2

Bank of Japan's balance sheet

Assets

(in billions of US dollars, exchange rate: USD 1 = JPY 100)

Items	Application to BOJ	30 March	30 June	30 Sept	30 Dec
1. Cash/coins	Cash	3	3	3	2
2. Gold	Gold	4	4	4	4
3. Foreign exchange reserve	Foreign exchange	37	38	35	37
4. Liquidity provisions as monetary policy operations		833	705	697	820
(1) Temporary liquidity provisions		436	332	367	507
a. Regular operations/lending conducted at the central bank's discretion	Outright purchase of commercial bills ¹	20	5	18	40
	Purchases of commercial paper under repurchase agreements	39	19	12	36
	Purchases of Treasury bills (TBs)/financing bills (FBs) under repurchase agreements	289	243	255	248
	JGB repos	79	62	81	184
	Loans	–	–	–	–
	Outright purchase of TBs/FBs	8	2	–	–
	(Securities sold under repurchase agreements)	(21)	(6)	(–)	(4)
		<small><off-balance sheet></small>			
b. Lending/discount facilities used upon request of financial institutions	Commercial bills discounted, etc	0	0	0	0
(2) Permanent liquidity provisions (securities held outright)	Outright purchase of JGBs ²	397	373	330	312
	(Sales to government agencies or other institutions under repurchase agreements) ³	(77)	(100)	(147)	(180)
		<small><off-balance sheet></small>			
5. Other liquidity provisions	Other loans ⁴	13	8	7	7
	Loans to Deposit Insurance Corp	3	–	0	1
6. Securities acquired through operations other than open market operations	FBs (underwritten)	52	3	8	3
7. Other financial assets	Deposits with agencies	36	9	11	1
	JGBs in custody ⁵	77	60	80	180
	Other financial assets	6	8	8	10
8. Other assets (non-financial)	Premises and equipment	2	2	2	2
Total assets		1,066	837	856	1,068

¹ The BOJ purchases “master bills” (with maturity of less than six months) issued by financial institutions for short-term liquidity provisions. Master bills must be collateralised by eligible assets such as eligible commercial bills issued by non-financial institutions, certificates of JGBs, book-entry government bonds, etc. ² Figures include TBs underwritten in exchange for JGBs (long-term government bonds) at their maturity (converted into shorter issues). ³ The BOJ sells JGBs that have been acquired through outright purchase operations to government agencies (Trust Fund Bureau of the Ministry of Finance, etc) and foreign central banks under repurchase agreements for investment facilities. ⁴ Loans to financial institutions other than those used for monetary operation purposes. Most of these are loans to financial institutions that are facing temporary liquidity problems. ⁵ Until March 2001, JGB repo transactions were double-counted on both sides of the balance sheet. When supplying liquidity by JGB repo operations, JGB transactions were appropriated as “JGBs in custody” on the asset side and “JGBs borrowed” on the liability side, while cash transactions were appropriated as “cash collateral” on the asset side, and “current deposits” on the liability side.

Liabilities and capital side

Items	Application to BOJ	30 March	30 June	30 Sept	30 Dec
1. Banknotes in circulation	Banknotes	571	553	557	634
2. Current account deposits of financial institutions		183	52	52	68
(1) Reserve deposit (required and excess reserves)	Reserve balances				
	Excess reserve	132	45	52	54
(2) Required clearing balances	None	–	–	–	–
(3) Other balances	Deposits held by institutions NOT subject to the reserve requirement system, etc ¹	51	7	0	14
3. Liquidity absorption as monetary policy operations		38	51	22	28
(1) Deposit facility	None	–	–	–	–
(2) Bills and certificates issued	BOJ bills sold	38	51	22	28
(3) Reverse transactions	None	–	–	–	–
4. Government deposits	Deposits of the Japanese government	130	64	89	94
5. Other deposits	Foreign central bank account	0	0	0	0
6. Other liabilities and capital	JGB securities borrowed	77	60	80	180
	Accrued liabilities, capital, reserves, etc	67	57	56	64
Total liabilities and capital		1,066	837	856	1,068

¹ Securities companies, securities finance companies, money market brokers (Tanshi companies), etc.

Federal Reserve's balance sheet

Assets

(in billions of US dollars)

Items	Application to Fed	30 March	30 June	30 Sept	30 Dec
1. Cash/coins		0.5	0.7	0.8	0.9
2. Gold		11.0	11.0	11.0	11.0
3. Foreign exchange reserve ¹		14.5	14.6	15.3	15.4
4. Liquidity provisions as monetary policy operations		525.8	532.5	529.2	555.3
(1) Temporary liquidity provisions		24.0	27.4	17.7	43.5
a. Regular operations/lending conducted at the central bank's discretion	RPs outstanding	23.7	26.9	17.3	43.4
b. Lending/discount facilities used upon request of financial institutions	Loans to depository institutions (discount window, special liquidity facilities, etc)	0.2	0.5	0.4	0.1
(2) Permanent liquidity provisions (securities held outright)	Securities bought outright ²	501.9	505.1	511.5	511.8
5. Other liquidity provisions		0	0	0	0
6. Securities acquired through operations other than open market operations		0	0	0	0
7. Other financial assets ³		29.3	27.8	27.8	29.4
8. Other assets (non-financial) ⁴		1.4	1.4	1.4	1.5
Total assets		582.6	588.0	585.6	613.5

¹ Measured at original cost. ² Permanent liquidity provisions correspond to total securities, including securities on loan. Excludes securities sold and scheduled to be bought back under matched sale-purchase agreements with foreign accounts. These amounts were USD 17.8 billion on 30 June, USD 18.5 billion on 30 September, and USD 39.2 billion on 31 December. ³ Calculated as a residual. ⁴ Bank premises.

Liabilities and capital side

Items	Application to Fed	30 March	30 June	30 Sept	30 Dec
1. Banknotes in circulation	Federal Reserve notes ¹	534.9	541.9	538.8	563.5
2. Current account deposits of financial institutions		18.2	18.5	17.6	19.0
(1) Reserve deposit (required and excess reserves)		-	-	-	-
(2) Required clearing balances		-	-	-	-
(3) Other balances		-	-	-	-
3. Liquidity absorption as monetary policy operations		0	0	0	0
(1) Deposit facility	None	0	0	0	0
(2) Bills and certificates issued	None	0	0	0	0
(3) Reverse transactions		0	0	0	0
4. Government deposits		4.4	6.2	8.5	5.1
5. Other deposits		0.3	0.3	0.3	1.6
6. Other liabilities and capital ²		24.8	21.1	20.4	24.2
Total liabilities and capital		582.6	588.0	585.6	613.5

¹ Banknotes in circulation excludes about USD 27.0 billion of Treasury currency outstanding. ² Calculated as a residual.

Consolidated Eurosystem's balance sheet

Assets

(in billions of US dollars, exchange rate: EUR 1 = USD 0.9388)¹

Items	Application to Eurosystem	End-March ²	End-June ³	End-Sept ⁴	End-Dec ⁵
1. Cash/coins	Coins of the euro area	0.9	0.9	0.9	0.9
2. Gold	Gold and gold receivables	108.6	113.8	117.3	109.9
3. Foreign exchange reserve ¹	Net foreign reserve assets (claims denominated in foreign currency - liabilities denominated in foreign currency - counterpart of the special drawing rights allocated by the IMF)	250.1	245.5	261.5	238.9
4. Liquidity provisions as monetary policy operations		189.4	220.2	216.2	252.2
(1) Temporary liquidity provisions					
a. Regular operations/lending conducted at the central bank's discretion	Open market operations (main refinancing operations + longer-term refinancing operations + fine-tuning/structural reverse operations + other lending)	189.3	220.1	216.2	251.6
b. Lending/discount facilities used upon request of financial institutions	Marginal lending facility	0.1	0.1	0.0	0.6
(2) Permanent liquidity provisions (securities held outright)	Structural/fine-tuning outright transactions	–	–	–	–
5. Other liquidity provisions	None	–	–	–	–
6. Securities acquired through operations other than open market operations	(1) General government debt denominated in euros	55.4	55.4	55.3	54.1
	(2) Securities of the euro area denominated in euros	23.8	23.6	24.1	24.4
7. Other financial assets		41.3	42.6	42.9	41.2
8. Other assets (non-financial)		41.0	41.4	39.1	43.6
Total assets		710.5	743.2	757.3	765.3

¹ Exchange rate at 29 December 2000. ² Figures from *Weekly Financial Statement* published at the end of March (data from 31 March 2000). ³ Figures from *Weekly Financial Statement* published at the end of June (data from 30 June 2000). ⁴ Figures from *Weekly Financial Statement* published at the end of September (data from 29 September 2000). ⁵ Figures from *Weekly Financial Statement* published at the end of December (data from 29 December 2000).

Liabilities and capital side

Items	Application to Eurosystem	End-March	End-June	End-Sept	End-Dec
1. Banknotes in circulation	Banknotes	326.6	334.0	333.1	348.6
2. Current account deposits of financial institutions		103.3	112.9	107.9	116.7
(1) Reserve deposit (required and excess reserves)	Reserve balances + excess reserves	103.0	112.7	107.7	116.6
(2) Required clearing balances	None	–	–	–	–
(3) Other balances	Deposits held by institutions not directly contributing to the reserve requirement ¹	0.3	0.2	0.2	0.1
3. Liquidity absorption as monetary policy operations					
(1) Deposit facility	Deposit facility	1.0	0.1	0.4	0.2
(2) Bills and certificates issued	Debt certificates issued ²	5.9	5.9	4.3	3.6
(3) Reverse transactions	None	–	–	–	–
4. Government deposits	Liability to general government denominated in euros	45.7	57.8	51.0	50.1
5. Other deposits	None	–	–	–	–
6. Other liabilities and capital ²	Liabilities to non-euro area residents denominated in euros, other liabilities to euro area residents denominated in euros, revaluation accounts, capital and reserves, and other liabilities	227.9	232.6	260.6	246.0
Total liabilities and capital		710.5	743.2	757.3	765.3

¹ Current account holdings from institutions that are not subject to minimum reserve requirements or that, although being subject, do not have to fulfil them because they are below the lump sum allowance or because they use an intermediary for that purpose. ² Debt certificates issued by several national central banks before the start of European Monetary Union and therefore inherited from Stage 2.

Annex 3

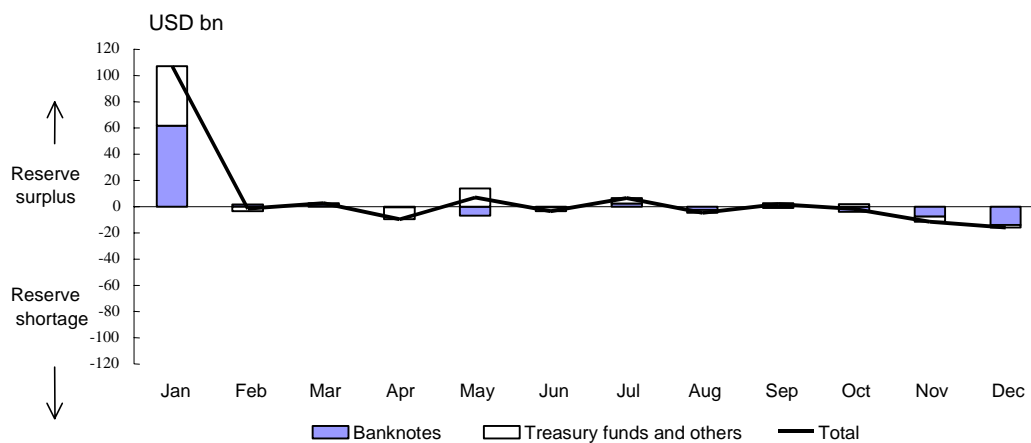
Daily changes in key autonomous factors affecting the supply of balances (2000)

Average/maximum absolute change in daily level in the indicated period	Bank of Japan All of 2000 in millions of US dollars	European Central Bank All of 2000 in millions of US dollars	Federal Reserve All of 2000 in millions of US dollars
Banknotes	2,966/20,275	534/3,006	931/8,087
Treasury balance (government deposits)	8,030/64,223	1,926/20,192	1,404/23,434
Float (items in the course of settlement)	.	268/2,122	839/9,677

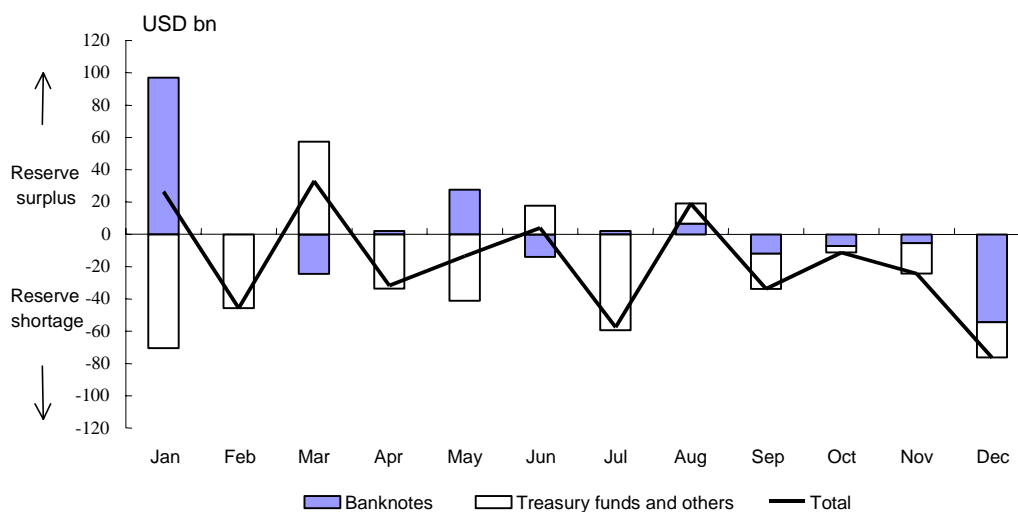
Note: Exchange rates taken on 29 December 2000: EUR 1 = USD 0.9388, USD 1 = JPY 114.35.

Comparison of autonomous reserve factors (2000)

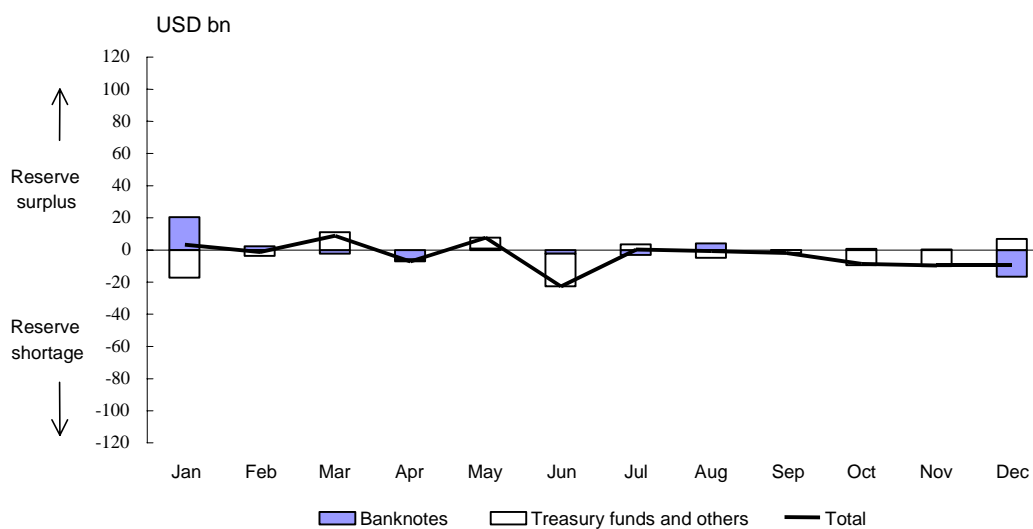
Federal Reserve



Bank of Japan



Eurosystem



Note: (a) Using publicly available information ECB: *Consolidated financial statement of the Eurosystem*; Fed: *Factors affecting reserve balances*; BOJ: *Sources of changes in current account balances at the Bank of Japan* (monthly). (b) To calculate the monthly change in autonomous factors, the following identity is applied: Change in the amount outstanding of market operations (including loans and other facilities) + change in autonomous factors = change in reserve balances. Then, the monthly change in autonomous factors is further divided between two categories: changes due to “banknotes” and changes due to “Treasury funds and others”. (c) A “reserve surplus” indicates that the change in autonomous factors over the month has been liquidity-providing. A “reserve deficit” indicates that the change in autonomous factors over the month has been liquidity-drawing. (d) All figures are shown in billions of dollars. Exchange rates taken on 29 December 2000: EUR 1 = USD 0.9388, USD 1 = JPY 114.35.

Annex 4

Bank of Japan

Monetary policy operations

	Instruments	Legal structures	Purposes	Rollover or not	Maturity	Eligible assets to be purchased/sold	Settlement conventions	Counterparties	Notes
Fund provision operations	Outright purchases of JGBs	Outright	Permanent	Can be exchanged for new issues at maturity (replacement)	JGBs (2Y,4Y,5Y,6Y,10Y, 20Y)		Forward only	Banks Securities companies	Exchanged for JGBs (10Y) or TBs (1Y) <converted into shorter issues>
	Outright purchases of TBs/FBs		Temporary	In principle redeemed at maturity (no replacement)	TBs, FBs		Forward only	Banks Securities companies Tanshi	Used as a means of short-term funds injections
	Purchases of bills		Repurchase	Depending on reserve condition	Within 6 months	Master bills (collateralised by eligible assets) ¹	Same day and forward	Banks Securities companies Tanshi	Master bills are designed and issued by financial institutions for the open market operations
	Purchases of CPs under repurchase agreements	Within 3 months				Eligible CPs	Forward only	Banks Securities companies Tanshi	
	Purchases of TBs/FBs under repurchase agreements	Within 6 months				TBs, FBs	Same day and forward	Banks Securities companies Tanshi	
	JGB repos	Securities borrowing				JGBs (2Y,4Y,5Y,6Y,10Y, 20Y)	Forward only	Banks Securities companies Tanshi	
Fund absorption operations	Outright sales of TBs/FBs	Outright	Temporary	Depending on reserve condition	TBs/FBs held outright by the BOJ		Forward only	Banks Securities companies Tanshi	
	Sales of BOJ bills				Within 3 months	Bills issued by the BOJ	Same day and forward	Banks Securities companies Tanshi	BOJ bills are allowed to be traded only among interbank participants
	Sales of TBs/FBs under repurchase agreements	Repurchase			Within 6 months	TBs/FBs held outright by the BOJ	Same day and forward	Banks Securities companies Tanshi	

¹ Eligible commercial bills (including CPs) issued by non-financial institutions, certificates of JGBs, book-entry government bonds, corporate bonds, loans on deeds, asset-backed securities, etc.

Monetary policy operations

	Instruments	Legal structures	Purposes	Maturity	Rollover or not	Eligible assets	Settlement conventions	Counterparties	Notes
Fund provision operations	Outright purchases	Outright	Permanent addition to Fed balances	Duration of underlying security	Can be rolled over for newly auctioned issues at maturity	Treasury securities and direct or guaranteed obligations of government agencies and government-sponsored enterprises	Usually next day. Same day and skip day have been used	Primary dealers ¹	Purchase of Treasury bills and coupon issues are usually arranged in separate operations. Purchases of agency debt have not been made since 1981
	System repurchase agreements	Repurchase agreement	Temporary addition to Fed balances	Up to 65 days	No	Treasury securities and direct or guaranteed obligations of government agencies and government-sponsored enterprises	Usually same day; forward operations are sometimes made	Primary dealers	The FOMC sets guidelines for specific collateral that can be accepted
Fund absorption operations	Outright sales	Outright	Permanent drain to Fed balances	-	-	Treasury securities and direct or guaranteed obligations of government agencies and government-sponsored enterprises	Same day is possible	Primary dealers	Only Treasury bills have been sold in any quantity in the market. Last arranged in 1989
	Matched sale-purchase transactions	Sale and repurchase	Temporary drain to Fed balances	Unlimited	No	Treasury securities and direct or guaranteed obligations of government agencies and government-sponsored enterprises	Same day	Primary dealers	In practice, only Treasury bills are used

¹ See the complete definition in Section 7.2 of the main text.

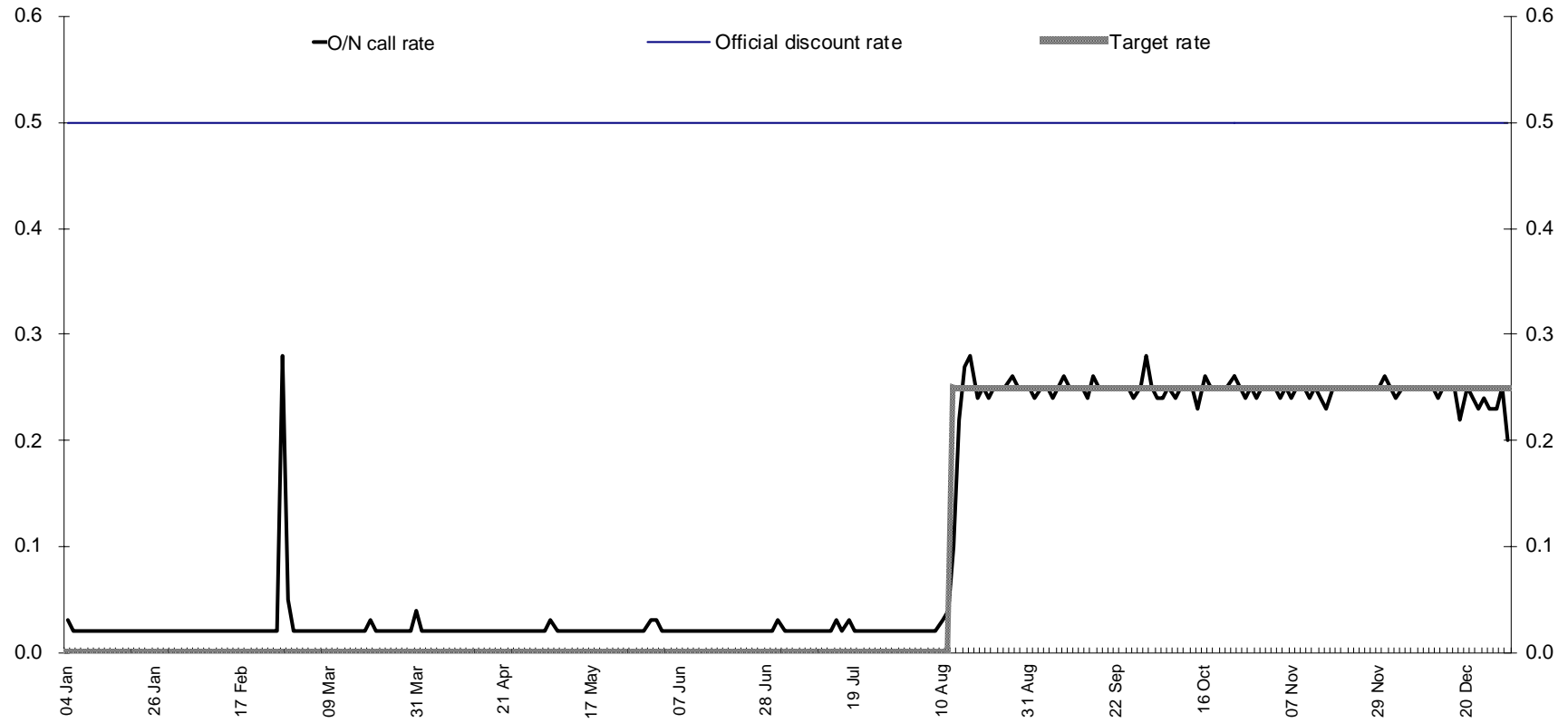
European Central Bank

Monetary policy operations

	Instruments	Legal structures	Frequency	Procedure	Rollover or not	Maturity	Eligible assets to be purchased/sold	Settlement conventions	Counterparties	Notes
Fund provision operations	Main refinancing operation (MRO)	Reverse transactions	Weekly	Standard tenders	Yes, but not necessarily for the same amount	2 weeks	Both Tier 1 and Tier 2 assets	T+1	Eligible credit institutions (2,500 institutions)	Fixed rate tenders were conducted from 1 January 1999 to 20 June 2000. Variable rate tenders have been conducted from 27 June 2000
	Longer-term refinancing operation (LTRO)		Monthly		Yes, but not necessarily for the same amount	3 months				Variable rate tenders (American auctions since March 1999)
	Fine-tuning / structural reverse transactions		Non-regular	FT: Quick tenders; bilateral procedures ST: Standard tenders	No	Non-standardised		T		Eligible credit institutions (200 institutions)
	Fine-tuning / structural outright purchase	Outright		Bilateral procedures			Only Tier 1 assets	Market conventions	No restriction a priori	
	Fine-tuning foreign exchange swap	Swap	Quick tenders; bilateral procedures	-	T, T+1, T+2	Eligible credit institutions (100 institutions)				
	Marginal lending facility	Reverse transaction	Access at the discretion of counterparties			Overnight	Both Tier 1 and Tier 2 assets	T	Eligible credit institutions (3,000 institutions)	
Fund absorption operations	Fine-tuning foreign exchange swap	Swap	Non-regular	Quick tenders; bilateral procedures	No	Non-standardised	-	T, T+1 or T+2	Eligible credit institutions (100 institutions)	
	Fine-tuning; collection of fixed term deposits	Deposit					-	T	Eligible credit institutions (200 institutions)	Used once on 5 January 2000
	Fine-tuning reverse transaction	Reverse transaction		Bilateral procedures			Both Tier 1 and Tier 2	Eligible credit institutions (200 institutions)		
	Fine-tuning/ structural outright sale	Outright					Only Tier 1	Market conventions	No restriction a priori	
	Structural issuance of debt certificates			Standard tenders			< 12 months	-	T+1	Eligible credit institutions (2,500 institutions)
	Deposit facility	Deposit	Access at the discretion of counterparties			Overnight	-	T	Eligible credit institutions (3,600 institutions)	

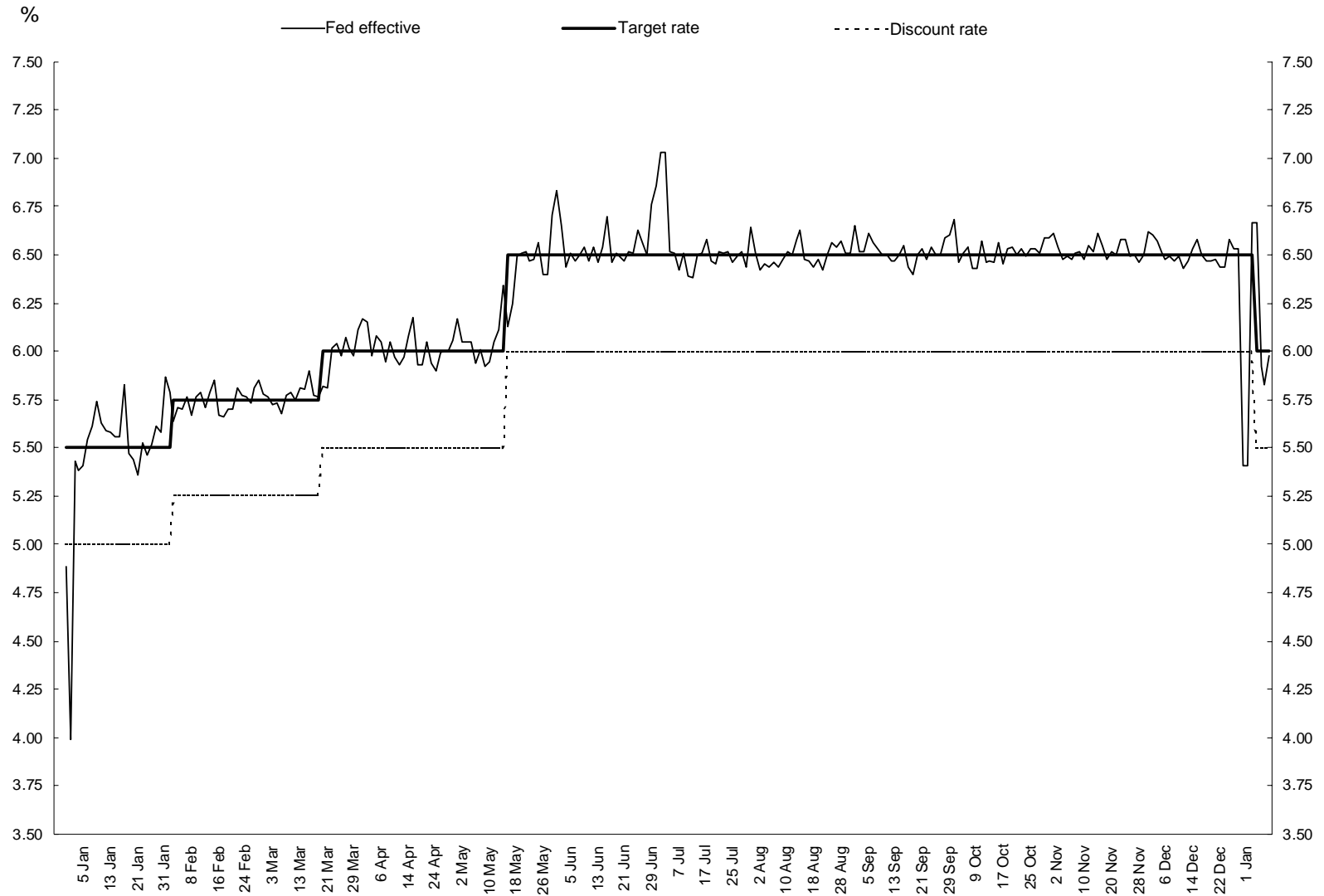
Annex 5

Bank of Japan - key rates (2000)

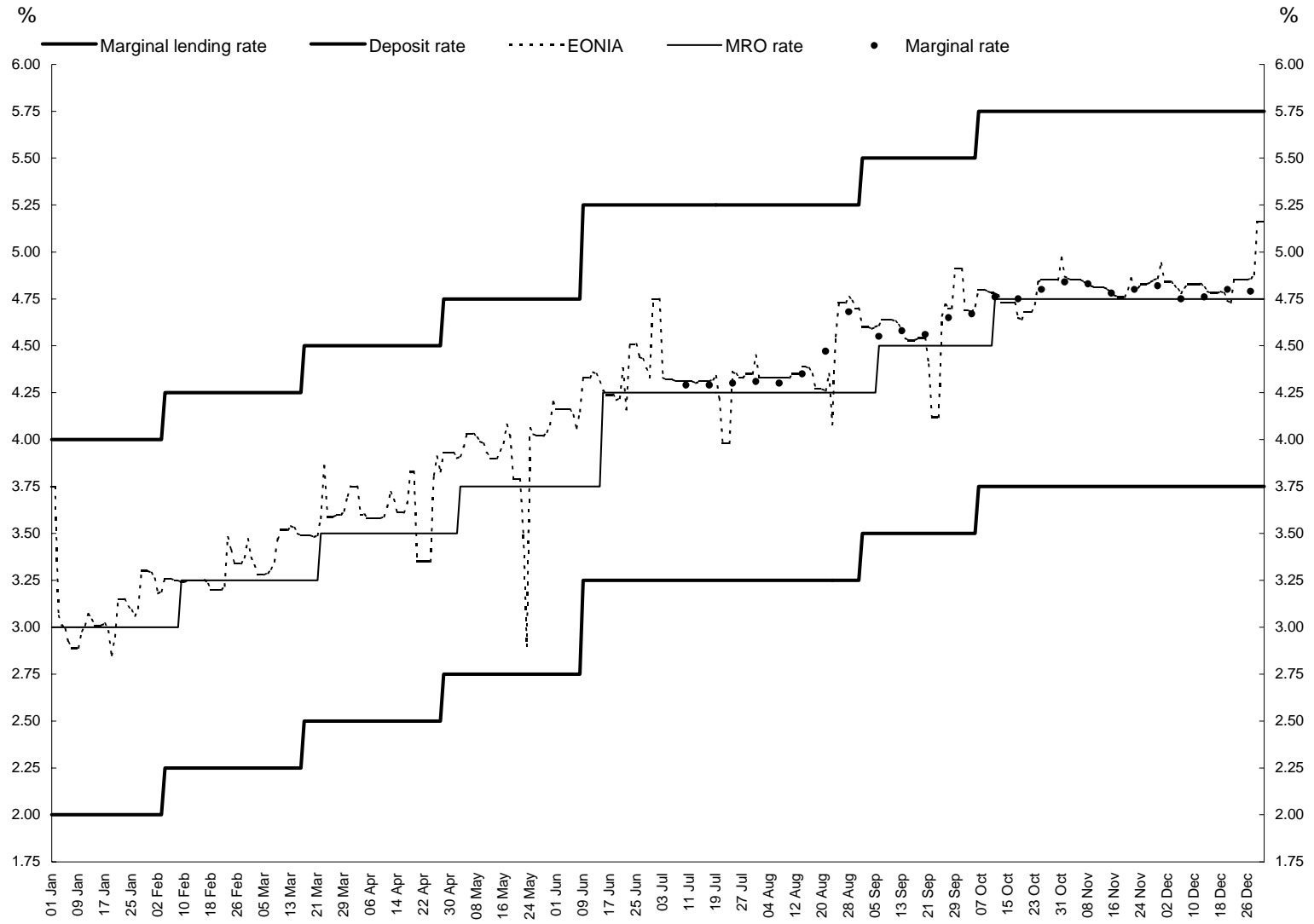


Note: BOJ changed main operating target from overnight call rate to current account balances as at 21 March 2001.

Federal Reserve - key rates (2000)

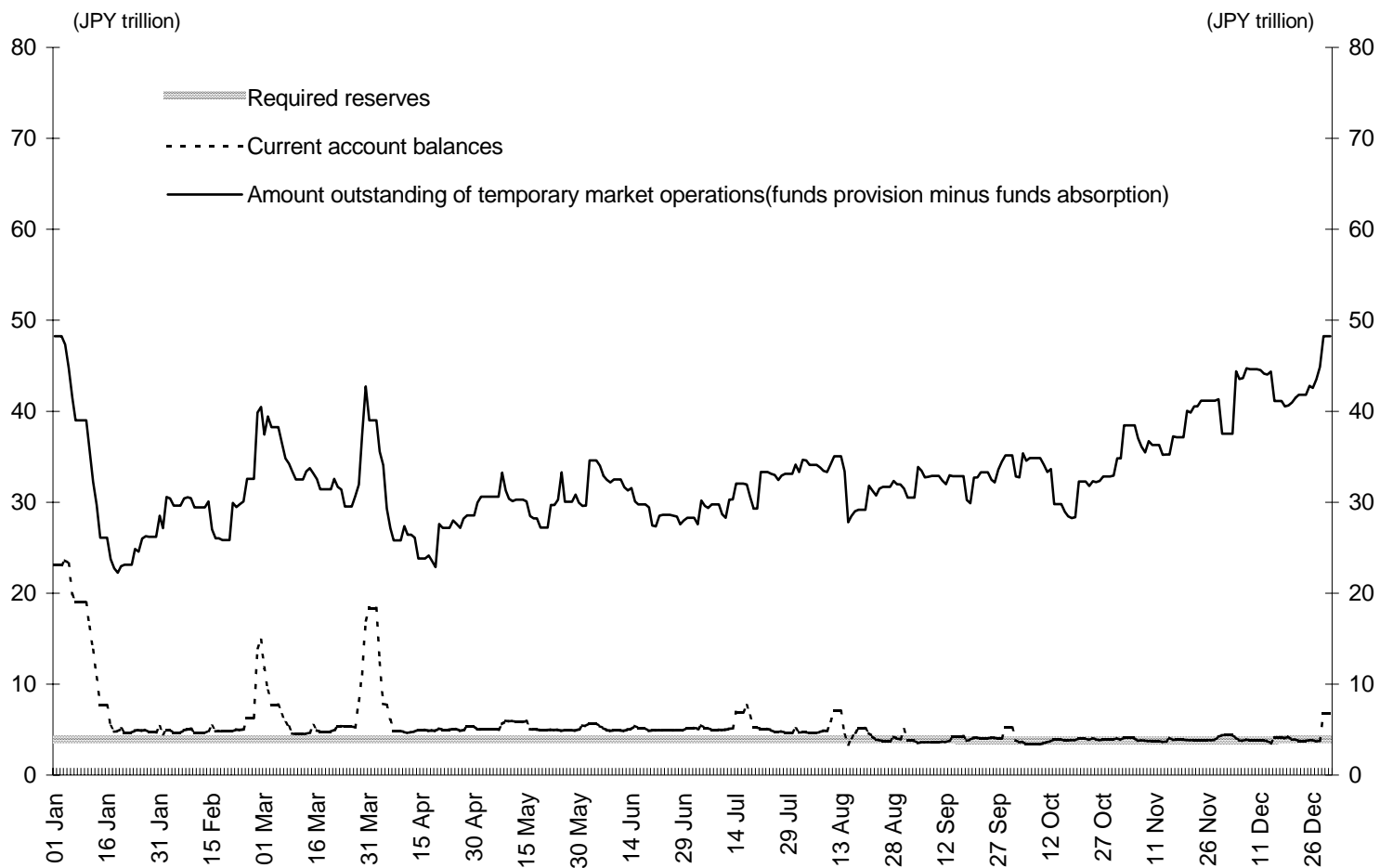


European Central Bank - key rates (2000)

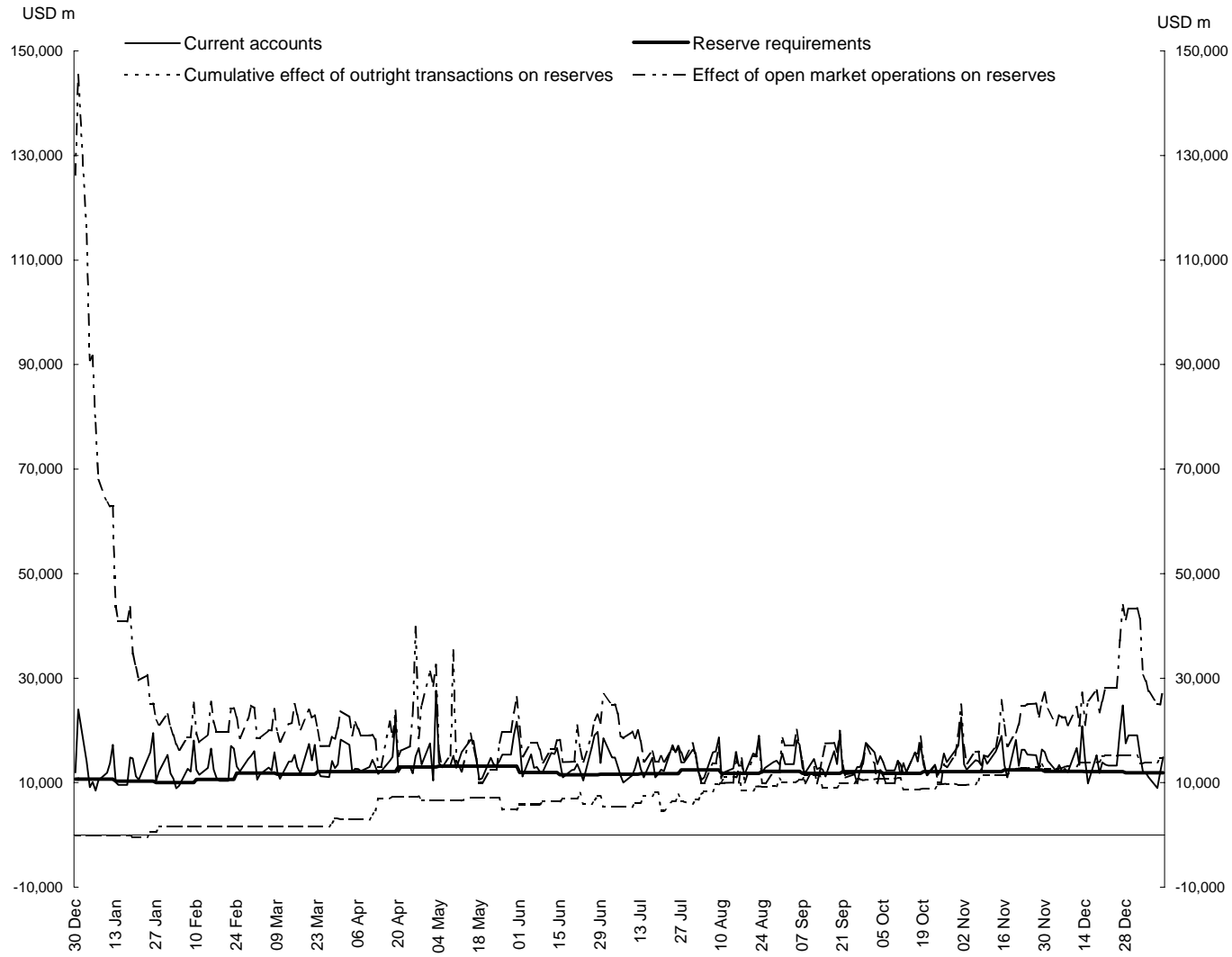


Annex 6

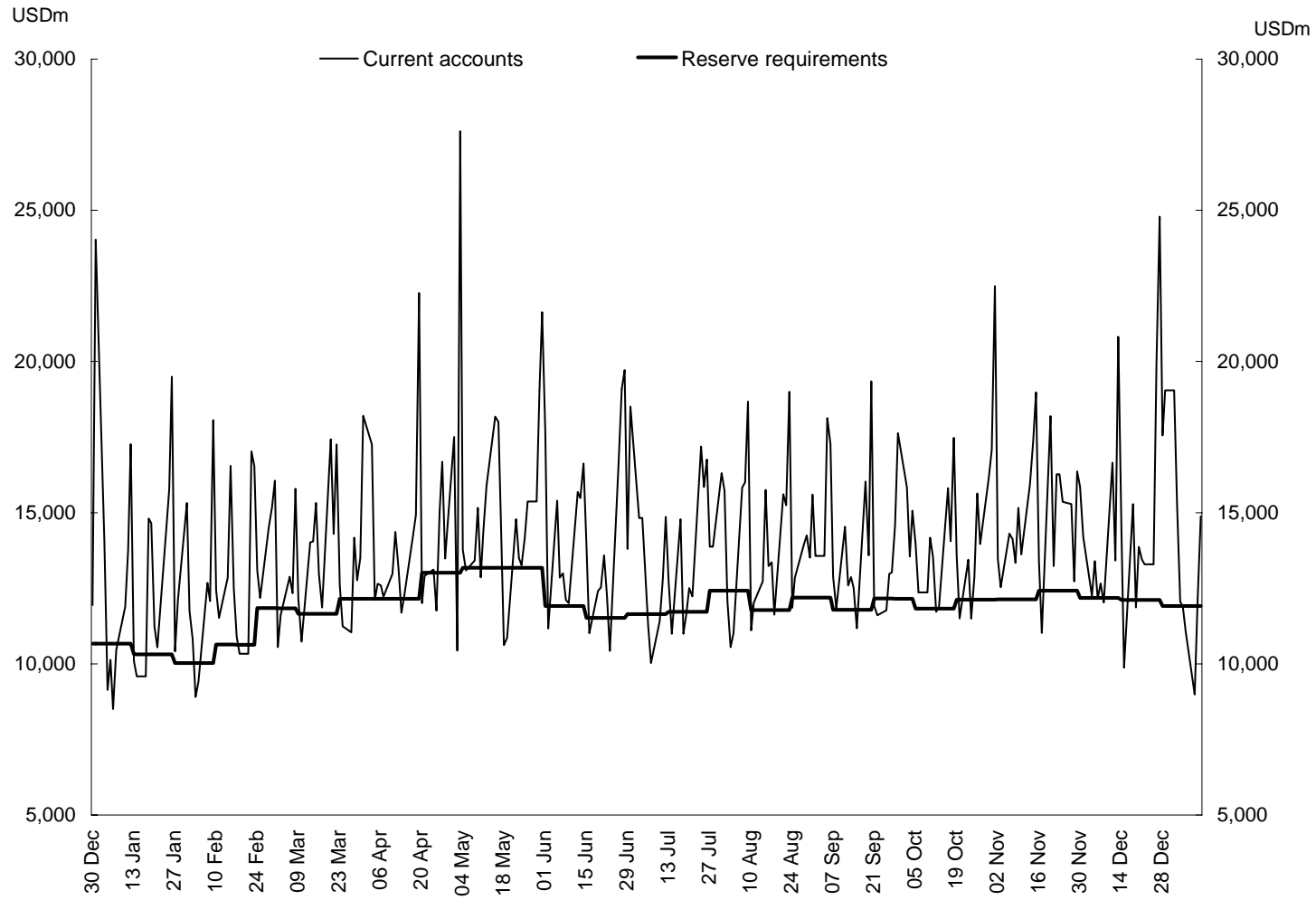
Bank of Japan - banking system liquidity (2000)



Federal Reserve - banking system liquidity (2000)



Federal Reserve - current accounts and required reserves (2000)



Eurosystem - banking system liquidity (2000)

