Monetary Policy Instruments for Developing Countries

edited by
Gerard Caprio, Jr.
Patrick Honohan

A World Bank Symposium
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The World Bank
Washington, D.C.
Foreword

Rapid structural change and widespread adoption of financial sector reforms in developing countries have placed pressure on traditional instruments of monetary control. It is widely accepted that, if the necessary macroeconomic control can be maintained, a move to an indirect, market-oriented system of monetary policy instruments will help the financial sector perform in a sounder and more efficient manner, resulting in the maximum contribution to economic development.

It is not long since many industrial countries adopted sweeping adjustments of their systems of monetary control, dismantling bank-by-bank credit ceilings and sectoral credit allocations. A number of middle-income countries have also progressed along similar paths. Many other countries are now looking at the experience of these pioneers to see what lessons can be learned.

With these developments in mind, the Financial Policy and Systems Division of the World Bank organized a seminar in May, 1990, which brought together experts from industrial and middle income countries, together with some of the Bank's own financial sector specialists and those of the International Monetary Fund, to discuss the lessons of recent experience with indirect methods of monetary control. The seminar formed part of the Bank's ongoing effort to evolve and disseminate best practice in various aspects of financial sector reform. It is hoped that this volume, which reports the edited proceedings of the seminar, will be of value to policy makers and students of developing countries.

In keeping with the informal character of the seminar, the views expressed should be regarded as personal ones: they do not necessarily reflect the views of any institution.

Millard F. Long
Chief, Financial Policy and Systems Division
The World Bank

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The Use of Market Instruments for Monetary Policy

Gerard Caprio, Jr. and Patrick Honohan

For a century or more it has been accepted that inappropriate decisions as to the price and availability of credit, or as to the expansion of monetary aggregates, could have damaging effects on price and output stability in the economy as a whole. Just how such monetary policy actions have their effect and what is the best way to implement policy has, however, remained controversial. In the last few years, there have been considerable changes in the way in which many industrial countries approach the formulation of monetary policy. The changes have accompanied rapid development in the sophistication and depth of financial markets and have been both a response to this development and a catalyst for it. In developing countries, both the evolution of financial markets and growing disenchantment with directed credit programs and with bank-by-bank credit ceilings have led to increased interest in at least examining and possibly moving to indirect methods of implementing monetary policy.

As a result of the World Bank’s increased involvement in financial sector development issues, especially through the growing number of structural and sectoral adjustment loans with a financial component, it has been asked to provide assistance in this area. Given that the mechanisms by which monetary policy is implemented can have important implications for the long-term development of the financial sector (as explained below), the World Bank has responded to these requests in conjunction with the International Monetary Fund (IMF), whose interest in assuring effective tools for monetary policy is clear. Indeed, the importance of this topic led to a session at the conference on collaboration between the World Bank and the IMF.

This paper provides an overview of the policy issues in this area that face developing countries in the light of industrial country experience during the last couple of decades. It draws on discussions at the seminar and, while not pretending to be a thorough summary, captures some of the key issues raised. The next section discusses the objectives of monetary policy and how these have evolved in recent years. There follows an account of the different policy instruments available to the monetary authorities. How these instruments have been used to cope with the main shocks affecting monetary policy—those related to government deficit financing and to external flows—are the subject of the penultimate section. The paper ends with a brief overview of the main messages of the papers and discussions reported in this volume.

The Objectives of Monetary Policy

Some basic relationships are fairly reliably established for many countries and can be taken as a basis for a more complete understanding of how the financial sector works in a market-oriented economy. For example, over a protracted period, rapid growth in the money supply will lead to sustained inflation; an increase in the cost of credit or a reduction in its availability will dampen economic activity and will also tend to slow the underlying rate of inflation despite representing an additional cost to industry.

On the other hand, there is not a clear one-for-one relationship between monetary growth and inflation in the short run. Domestic prices can be sticky; exchange rates can overshoot their equilibrium levels following a disturbance and may even veer away from equilibrium for a while. Innovations in the financial sector may alter the equilibrium relation between money, prices, and output in ways that are hard to predict and may lead to an increase in the volatility of this relationship (Goodhart 1989; Lindsey and Wallich 1989).

Accelerating inflation in many industrial countries in the 1960s and 1970s caused authorities to review their approach to monetary policy. It became widely believed that the common use of interest rates as operating targets for monetary policy had contributed to inflation, as
political pressures had combined with policy inertia to slow the response of monetary policy to rising prices. In the absence, at least from the early 1970s, of fixed exchange rate anchors, excessive monetary expansion had been tolerated. To correct this state of affairs, several industrial countries began to rely more heavily on the quantity of money as an indicator of monetary conditions or even as an intermediate target. It was felt that the money supply would prove to be a good leading indicator of inflationary conditions; keeping it under control would stabilize inflation. The degree to which the money supply was targeted, to the exclusion of other factors, varied from country to country. In particular, a degree of interest rate stability was also maintained in most countries. However, for some two and a half years (1979 to 1982) the U.S. authorities allowed interest rates to move rather widely, in an attempt to keep on course for their monetary targets.

Just as the monetary aggregates became more closely targeted, they began to perform less reliably as a predictor of inflationary conditions or of the state of aggregate demand, as noted by Goodhart (1989) and others. In some part, this contrary behavior reflected liberalization of financial markets, which had been occurring around the same time (Broaddus 1985; Judd and Scadding 1982; de Vries 1986). To some extent, it also occurred because near substitutes for the targeted aggregates were utilized by the markets, once the authorities attempted to exert contractionary pressure. For example, in the United States, controls on M1 helped spur the growth of money market funds and led to a variety of transactions services linked to components of the broader money aggregates.

By the end of the 1980s, most governments had formally or informally abandoned the narrow focus on targeting monetary aggregates in favor of a more eclectic approach that allowed them to include a number of different indicators of the state of the economy as a guide to policy. They had also instituted a more flexible regime of monetary instruments, which allowed them to influence monetary conditions more quickly than in the past and with a graduated pressure. At the same time many governments began to allow a much greater degree of competition in the financial system; the use of more indirect means of monetary control in this more competitive environment helped to ensure that monetary policy measures were not as easily evaded by disintermediation as they had been in the 1970s.

An alternative approach to the focus on monetary aggregates as the main intermediate objective of monetary policy has been the use of ceilings on aggregate credit expansion. The ceilings were usually ensured by distributing sub-ceilings on a bank-by-bank basis. This approach was widely used in European countries in the 1970s and still forms the basis of monetary policy in many developing countries (especially in Africa). However, the definition of the institutions to be included in such credit ceilings gave rise to many opportunities for avoidance through disintermediation and the development of near-bank and parallel credit markets, which greatly reduced the effectiveness of these instruments. Bank-by-bank ceilings also distorted competition by penalizing more dynamic institutions and discouraged resource mobilization; once a bank reaches its credit ceiling, it has no incentive to compete for additional resources, regardless of the profitability of its clients' investment opportunities (Johnston and Brekk 1989; Cottarelli et al. 1986). Various suggestions have been made for attempting to restore competition by permitting the trading of credit quotas between banks or by establishing an automatic link between each bank's current deposit mobilization and the allocation to it of future credit ceilings. However, these theoretical suggestions have never been systematically applied, as many governments preferred to replace the bank-by-bank approach altogether.

Directed credit programs have regularly become entangled with the implementation of monetary policy. In particular, a variety of developing countries and several industrial countries have had monetary policy subverted by attempts to exempt priority-sector credit from overall or bank-by-bank ceilings. Widespread recognition of the drawbacks of directed credit schemes has led to a decline in their popularity; once willing to reconsider these programs, authorities have become more willing to examine monetary policy instruments as well.

Countries that move away from bank-by-bank credit ceilings to a more indirect means of monetary control may find that they cannot achieve preset objectives for money or credit aggregates with the same degree of accuracy. The classic example of this problem is the experience of the United Kingdom in the 1970s, which saw considerable expansion in monetary depth when credit ceilings were removed. Neither credit nor money displayed a stable relationship with nominal GNP or inflation in those circumstances, and a single-minded pursuit of a rigid target for the aggregates would have been costly (Goodhart 1989). Developing countries that move to indirect monetary control are also likely to experience less certainty when using monetary aggregates as intermediate objectives. It may be less difficult to achieve intermediate objectives that are elements of the central bank balance sheet, but the reliability of these as a means of influencing aggregate demand or inflation remains relatively unexplored for developing countries.
Instruments for Smoothing Bank Liquidity

Banks settle their debts with one another and meet cash withdrawals either by drawing on their credit accounts at the central bank or by using currency in their vaults and tills. These assets, representing bank liquidity or the reserves of the banking system, are liabilities of the central bank. In case of need, banks can also sell liquid assets or borrow from each other or from the central bank. Over the longer run, banks can repay their short-term borrowing through the proceeds of maturing loans to customers or by mobilizing additional deposits. The speed and ease with which such actions can be taken depends on the sophistication of the banking system.

When the banking system as a whole is short of liquid funds, there is a generalized upward pressure on interest rates and a tendency for bank credit to be expensive and scarce. Such pressures can be eased by central bank action to provide liquidity to the system; an important function of the central bank is to ensure that seasonal and random influences on liquidity conditions are offset, so that they do not result in corresponding variations in interest rates. On the other hand, the central bank can also take the initiative to ease or tighten liquidity conditions depending on how it perceives a need to stimulate or to restrain aggregate expenditure (Binhadi and Meek 1989).

In the past, many central banks provided semi-automatic borrowing facilities to banks at posted interest rates (known as the discount rate, Bank rate, or Lombard rate), which were varied infrequently and which effectively placed a ceiling on short-term interest rates. Where banks were customarily borrowers from the central bank, its posted rate also provided a floor for short-term interest rates, as surplus banks could lend to deficit banks at or near the posted rate. Because of the political sensitivity of this key rate, upward adjustments were often made too late and in steps that were too small.

As a result, most central banks in industrial countries have moved away from automatic lending facilities and now manage interest rates in a more flexible manner, using a variety of new instruments. Each country has adapted its system of liquidity control in accordance with local conditions, with the result that a great variety of arrangements are in use, though each tends to satisfy certain key requirements. First, there is no longer an automatic availability of borrowing from the central bank at posted rates; accordingly, short-term interest rates tend to be more flexible than in the past. Second, most systems still have an upper and lower buffer to prevent undue interest rate gyrations in case the day-to-day instruments for influencing interest rates are unable to cope with a big surge in the demand for liquidity or in the availability of liquid funds. Third, the fluctuations of interest rates provide much information to the central bank to help it gauge market conditions. Fourth, for open economies operating a pegged exchange rate system, the regime often provides for an automatic stabilizing response of short-term interest rates to foreign exchange flows.

Liquidity management in most industrial countries takes place today in a much more developed and competitive money market than was the case only a few years ago. While other policy and technological changes have also played a part in developing money markets, it can be said that the more flexible techniques of monetary management have required and encouraged these developments. The economy has been well served by a deeper money market, which allows growing numbers of corporate borrowers direct access to short-term funds without having to pay for bank intermediation costs. The deeper money market has also ensured a more competitive and probably less costly system of bank intermediation. Firms that are allowed to hold certificates of deposits or commercial paper bearing market rates of interest will not settle for below-market rates on their deposits. Developing countries can also benefit from such reforms (and some already are) as they, too, move towards refined techniques of monetary management. In particular, deeper money markets allow banks to economize on liquidity holdings; their absence may partly explain the predominance of assertions that banks in the poorest countries are exceedingly liquid (Caprio and Honohan 1990).

The most striking illustration of how apparently different regimes of monetary control actually achieve the same result is the relation of posted rates to market rates. In some countries (for example, France and Canada) the central bank's posted (discount) rate is normally kept well above market rates. In others (for example, the United States, Japan, and the Netherlands) it is normally below market rates (Kneeshaw and Van den Bergh 1989). The resolution of this apparent paradox lies in the different manner in which lending at the discount window is practiced in the two groups of countries. Where the discount rate is below the market rate, its availability to borrowers is administratively restricted. In these systems it is normal on any given day to see some banks borrowing at this rate. But most avoid or limit the need to borrow by holding a margin of excess reserves, even though the opportunity cost of these reserves, represented by the interbank lending rate, is above the discount rate. In this situation, the discount rate provides a firm lower bound to interest rates; it is also a somewhat flexible upper buffer in that the banking system will be admitted to the central bank discount window if the
interbank rate moves too far above the discount rate. In countries where the discount rate is kept well above market rates (clearly indicating its penalty nature), it provides an upper bound to interest rates, but is not heavily used by banks because of the availability of cheaper market alternatives. A central bank operating a higher-than-market discount rate policy usually has a way of stepping in quickly to provide a deposit facility (or to offer short-term bills on itself at a given yield), in order to place a floor below interest rates if they are quickly falling too far. Thus, when Germany moved its posted central bank lending rate from just below to well above market interest rates in the mid-1980s, it also began to conduct the bulk of its money market interventions through mechanisms that did not involve the posted lending rates. In particular, it began to use what are known as “reversed transactions” (explained below) instead of lending.

Some industrial countries have not achieved this degree of flexibility in their interest rate management. For example, Belgian banks hold large quantities of government bills, whose yield represents the cost of short-term funds in Belgium and is essentially determined by the authorities’ funding decisions. In Sweden, the banks are subject to an automatic graduated scale of central bank lending rates and a central bank deposit facility. In contrast, the central bank lending rate in the United Kingdom is used more as a fine-tuning mechanism and is managed on a day-to-day basis.

Between the floor and ceiling buffers provided in the manner just outlined, the central bank usually has a variety of other instruments to influence bank liquidity conditions. Many of these involve quantity rather than price (interest rate) decisions by the authorities. For example, it is normal for central banks to make projections as to the liquidity needs of the system over a period of one month or more and to make interventions to add or drain the amount of liquidity that seems, on average, appropriate for that period. Predictable shorter-term fluctuations can similarly be met with instruments of the appropriate maturity. It will be desirable to deal with unexpected pressures using different instruments tailored to the particular circumstances. Use of one instrument rather than another can come to signal the authorities’ intentions, so that action taken to offset some expected fluctuation is not misunderstood as a change of policy, thereby avoiding unintended speculative pressures in the market.

Among the instruments used are reversed transactions in domestic securities and foreign exchange, transfers of government deposits, and outright purchases and sales of domestic securities and foreign exchange (Kneeshaw and van der Bergh 1989; Meulendyke 1990). As regards the last category, outright open market operations in domestic securities are most appropriate to meet trend needs for liquidity changes. However, they are not used extensively outside the United States, partly because most other countries do not have as rich a market of first-rate short-term securities. Lower quality securities are unlikely to be useful as collateral because of their credit risk, while long-term securities are more exposed to interest rate variations. Indeed, this is one of the principal advantages of reversed operations: by buying a government security and contracting to resell it at an agreed price, the authorities retain the initiative in terms of amount, maturity, and timing, regardless of the terms of the underlying security. Reversed operations can be implemented without much effect on the price of the underlying security, and they have most of the characteristics of a secured loan without having to be made at the posted rate. The shortage of first-class collateral in developing countries has made reversed transactions especially useful; although the central bank can decide to make any asset eligible for repos on a bilateral basis with selected institutions, acceptance by a wide range of market participants will be crucial to promote active trading in reversed transactions.

For speedy action, central banks often turn to foreign exchange (forex) swaps, which are reversed transactions in foreign exchange markets (Kubarych, 1978). The size of the foreign exchange market also means that large volumes of liquidity can be added or drained in this manner. It is the main intervention technique used by the Swiss authorities. However, this approach is not without drawbacks. First, there are usually only a handful of large participants in the foreign exchange market, so forex swaps are not good for providing or withdrawing liquidity on a broad base from the whole banking system. Second, provision of liquidity through forex swaps (i.e., buying foreign exchange spot with a contract to resell it later) at a time of speculation against the domestic currency is very risky for the authorities, as they cannot be sure there will be no devaluation. The authorities in several countries, industrial as well as developing, have lost large gambles of this type.

Shifting government deposits between commercial banks and the central bank is another tool by which the authorities can influence liquidity conditions, as noted by Charles Freedman below. A rise in commercial banks’ share of government deposits increases bank liquidity just as do expansionary open market operations. However, unless there are only a few banks (as in Canada, where the instrument has been most used—see Shearer, Chant, and Bond 1984), this instrument suffers from the selectivity mentioned for forex swaps. There can be technical difficulties as well: the procedure needs to be gov-
erned by a framework agreement on the distribution among banks, the remuneration of the deposits, and the security that the government receives for its deposits. Shifting government deposits neither requires nor further the development of money markets. This is at the same time a practical advantage and a reason for not relying on them indefinitely. Nevertheless, the management of government deposits needs to be given attention in the context of monetary management, as the distribution and size of these deposits will influence liquidity conditions whether or not they are consciously being used as an instrument of policy.

The move from a system of monetary management where the central bank provides liquidity on a bilateral bank-by-bank basis, as with the discount window, to one where the focus is on managing the overall quantity of liquidity, requires the development of markets in which the banks and possibly other participants can compete for their liquidity needs. This point is stressed especially by Paul Meek in the next paper. Once again, there is no unique model for successful development of such markets; various institutional arrangements are possible. However, participants in the wholesale market for very short-term funds require trustworthy counterparties and an instrument, or collateral, of the highest quality. For these reasons, several countries conduct their liquidity management in a restricted market to which only selected institutions, for example, the banks or approved money brokers, are admitted.

Although there is always the risk that, by restricting the number of participants, the authorities will not achieve as competitive a market as might otherwise emerge, a restricted market of this type can be a useful first step towards the evolution of a wider money market. In Thailand, for instance, the commercial banks make bids and offers for repurchase transactions in long-term government paper. The transactions are for a few pre-defined maturities and the central bank, acting as a broker and market-maker receives the bids, arranges matches, and may intervene on its own account. An alternative approach in which the central bank also deals with a restricted market is the treasury bill auction in the Philippines. Fewer than twenty (nonbank) authorized dealers participate, but the auction provides the main instrument of interest rate policy in that country, as the authorities decide how many of the bids to accept.

In some countries it is not possible to identify a sufficient number of appropriately credit-worthy counterparties, as where the banking system has been weakened by widespread loan losses or where the financial sector is too small or concentrated. Elsewhere, there may be a shortage of good quality collateral, as where the government does not borrow domestically or where there have been problems of government domestic payments arrears. In these cases action to correct underlying deficiencies, for example by rehabilitating the banking system, encouraging new entrants, and clearing up domestic payments arrears, is desirable anyway. It should be tackled before attempting market-oriented reforms that cannot be supported by the current state of the financial system. In several economies, such as Indonesia and Taiwan, the central bank has issued its own short-term paper to get around the problem of a deficiency of collateral; this solution is being actively considered in Botswana.

One advantage to using specialized money-market brokers or market-makers, instead of banks, is that they have the incentive and a clear objective to widen the number of counterparties with whom they deal, a point emphasized clearly by Meek. Even if it is possible for these brokers to fund their lending from banks, a wider clientele will tend to lower their funding costs. It also allows them more flexibility in managing their portfolio by selling paper outright to nonbank clients. In seeking out this clientele, they will broaden the scope of the money market, provide better cash management opportunities for large companies and other wealth-holders, and improve the access of quality borrowers to short-term finance at the lowest possible interest rates. On the other hand, it may be more efficient, especially in smaller countries, for the central bank to deal directly with banks without going through the additional intermediary tier of brokers. Many of the advantages of having brokers may be lost if they are wholly-owned and controlled by the banks.

If central bank management of bank liquidity is to be effective in influencing monetary conditions generally, it is essential that banks do meet their cash obligations, including the maintenance of any reserve requirements. Unauthorized overdrafts that arise from the clearing of checks must be automatically penalized by the central bank with sufficient severity to make such overdrafts quite exceptional. However, it is not strictly necessary to have formal reserve requirements to achieve monetary control, as demonstrated by their absence in Canada and the United Kingdom. Banks will necessarily hold some reserves on a voluntary basis to meet a bunching of withdrawals or loan requests from important clients (Caprio and Honohan 1990; Simpson 1987; Harrington 1987). Nonetheless, many countries do have reserve requirements, and there is the view, noted by David Lindsey, that these requirements provide a fulcrum on which monetary policy can operate with a more reliably predictable impact on monetary aggregates (Lindsey and Wallich 1989; Lindsey paper in this volume).
An additional merit of reserve requirements is that they can be adjusted to produce desired changes in liquidity. They can be raised in times of unexpectedly strong capital inflows to effect a broad-based mop-up of excess bank liquidity, thereby sterilizing the domestic impact of the inflows. Apart from such occasional circumstances, however, reserve requirements are often considered too blunt an instrument to be used for varying liquidity conditions. Even slight variations in them can produce large changes in the amount of deposits consistent with reserves. Furthermore, as money markets become more sophisticated, the scope widens for avoidance of reserve requirements through the substitution of non-reservable instruments. Indeed, this motive was also prominent in the rise in several countries of money market accounts. These accounts were popular because they evaded reserve requirements and thus allowed the payment of higher interest rates.

Reserve requirements were originally introduced in many countries as a prudential measure to ensure that banks would have sufficient liquidity on hand to meet unexpected deposit withdrawals. For that reason, they were expressed as a fraction of deposits. For monetary control purposes, there is no reason why they could not be expressed as a proportion of credit, especially if credit is considered a more relevant intermediate objective of monetary policy. This has been done in various countries. It is also possible to have a progressive schedule of reserve requirements—for example, through marginal reserve requirements on extensions of credit as overall credit targets are approached—as a more flexible alternative to bank-by-bank credit ceilings. In most countries, where reserve requirements are based on deposits, the requirements are defined by reference to a previous level of deposits. This allows easy monitoring, though it may introduce some delay in the impact of monetary policy on the aggregates. This “lagged-reserve accounting” also makes it easier for banks—especially those with an extensive branch network or a cumbersome reporting system—to know on a timely basis their required level of reserves. Whatever the base or purpose of reserve requirements, the requirement to maintain the reserves should allow the flexibility of permitting averaging over the maintenance period, to avoid unnecessary day-to-day fluctuations in liquidity conditions. Countries that have ignored this point have experienced large swings in interest rates as banks have had to scramble continually for reserves.

The assets eligible to satisfy reserve requirements are usually defined to include specified classes of deposit at the central bank and possibly special government bills. Some countries also include vault cash. Most countries do not include instruments that bear a full market rate of interest, and therefore the requirement represents a distorting tax on financial intermediation. Admittedly, the central bank does provide valuable services free of charge to the banking system, but these services are not proportional to the tax base. When inflation and nominal market-clearing interest rates combine with high reserve requirements, the tax can be very severe. Accordingly it is best to limit the size of reserve requirements and to link the rate of remuneration on required reserves to the market rate (even if for revenue purposes it is kept some distance below market).

### Coping with Shocks

For the most part, the assets that make up bank reserves—usually currency and deposits at the central bank—are liabilities of the central bank (see Figure 1-1). Non-bank holdings of currency are a relatively predictable quantity. (Except in centrally planned economies, they also are always provided fully to meet demand; control over the money supply does not mean squeezing the availability of hand-to-hand currency.) To influence the quantity of bank liquidity, the central bank must therefore have regard to the remaining elements of its balance sheet. Adjustments in these elements usually reflect, through the balance sheet constraint, a simultaneous adjustment in bank liquidity. The other main items are central bank lending to banks, holdings of government obligations, and foreign exchange reserves. (For example, when a bank purchases foreign exchange from the central bank for a customer, the central bank’s foreign exchange holdings fall, as does the bank’s deposit at the central bank.) By removing the banks’ automatic access to borrowing from the central bank at or below market rates, it is possible to bring the first of these items under

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**Figure 1-1. Simplified Central Bank Balance Sheet**

<table>
<thead>
<tr>
<th><strong>ASSETS</strong></th>
<th><strong>LIABILITIES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Foreign Assets</td>
<td>Reserve Money</td>
</tr>
<tr>
<td>Domestic Credit</td>
<td>Currency issued</td>
</tr>
<tr>
<td>Claims on government, net</td>
<td></td>
</tr>
<tr>
<td>Claims on banks</td>
<td>Bank deposits</td>
</tr>
<tr>
<td>Claims on nonfinancial firms (if any)</td>
<td>Other non-government deposits (if any)</td>
</tr>
<tr>
<td></td>
<td>Capital, reserves etc.</td>
</tr>
</tbody>
</table>
control. The other two items, which may present greater difficulties, are treated below in turn.

**The Impact of Government Deficit Financing**

Some countries have established a firm separation of monetary and fiscal policy in that they prohibit any lending from the central bank to the government. Less rigorous rules in other countries establish quantitative limits on such lending. Where lack of fiscal restraint presents serious risks to monetary stability, such rules can have merit, despite their arbitrary nature. In most countries, however, the central bank has to cope with providing an environment in which the financing of the government deficit is achieved while maintaining as much monetary and general economic stability as possible.

In Italy, enormous government deficits have been financed from domestic savings, while inflation has declined. The central bank has withdrawn from direct support of the government bond market. This has been achieved by maintaining a level of real interest rates which, though high, especially in recent years, can only be described as realistic in the context of the large deficits (Padoa-Schioppa 1987). As Cesare Caranza explains below, the authorities have progressively dismantled regulations that had been designed to provide captive markets for government paper (such as obligatory minimum holdings by contractual savings institutions and controls on holdings of foreign currency assets). Now holders of government paper do so voluntarily. They continue to be willing to absorb more, whereas those who were penalized by the regulations of the past have been slow to acquire voluntary holdings. The withdrawal of the central bank has reduced the rate of creation of bank liquidity and has slowed the growth in nominal money. These changes have allowed the currency to retain its position in the European Monetary System exchange rate arrangements and have reduced the rate of domestic price inflation.

Where a government has not been able to survive without extensive monetary financing, it has proved impossible to restrain inflation. In Brazil, the extremely high inflation of 1989 left the central bank no option but to confine its objectives to maintaining a functioning system of financial intermediation, again by ensuring that interest rates were at a realistic level. Making no attempt (at the level of monetary policy) to restrain the nominal expansion in monetary aggregates, the authorities instead focused on indicators of inflationary expectations, including the parallel markets in foreign exchange and gold. They adjusted interest rates on a daily basis to achieve positive ex ante real interest rates. This tactic allowed the financial sector to continue to function for some time, despite the difficulties of high and unpredictable inflation (with monthly rates of inflation rising as high as 80 percent or more).

In Chile also—though inflation has been much lower in recent years—monetary policy is operated through objectives for the real interest rate. In effect, this interest rate is transmitted to the market through the central bank's lending window and its deposit facility for banks. The precise approach is somewhat different; it relies on the daily monetary correction factor (about one-thirtieth of the previous month's calculated inflation rate), which is commonly used as a basis for indexed contracts in Chile. Indexation of monetary instruments remains controversial, however. Many feel that, by lowering the perceived costs of inflation, indexation reduces the willingness of political authorities to take the necessary fiscal steps to halt it. On the other hand, the extension of indexation to household mortgage debt (which has not been successfully implemented in all of the countries attempting it) can create an important lobby against inflation.

**External Flows and Monetary Policy**

Conceptually, a freely floating exchange rate conceptually means that there are no flows into or out of the central bank's foreign exchange reserves. In the polar opposite case of a rigidly fixed exchange rate, the central bank has no freedom to control its foreign exchange reserves, as it has agreed to accept or provide foreign currency against domestic funds on demand. Between these two extremes are a variety of different approaches to exchange rate management, which generate a variety of implications for the operation of monetary policy (Argy 1982).

If a country has adopted a free float, it cannot rely on exchange rate policy to give it a stable price level. Monetary policy—particularly limiting the nominal expansion of bank liquidity—will be the key to controlling inflation. In these circumstances, a stable interest rate may be the enemy of price stability, particularly if inflationary expectations build up and result in more and more borrowing from the central bank at the—now too low—stable interest rate.

An active interest rate policy in a floating exchange rate regime has a double effect on demand conditions in the economy. By acting to raise interest rates, the authorities increase costs and lower domestic demand directly. The resultant capital inflows serve to appreciate the currency, thereby also reducing external demand. Thus, the number of sectors exposed to the first-round impact of monetary policy is increased, and the negative
impact on any one sector, such as housing, may be diminished.

A fixed exchange rate, by contrast, should ensure a good degree of price stability, depending, of course, on what currency or basket has been adopted for the peg. But the exchange rate is fixed only as long as the authorities have sufficient reserves or foreign borrowing capacity to defend it. An inappropriately high level of domestic liquidity expansion (resulting, for example, from the central bank financing much of a high budget deficit), will result in a steady drain of reserves and, eventually, a forced abandonment of the peg, perhaps precipitated by a well-judged attack on the currency by speculators.

A fixed exchange rate can also be vulnerable even if monetary policy is not systematically misaligned in this way. For example, spontaneous short-term capital inflows, if not sterilized by offsetting action by the central bank, may relax domestic credit conditions so far that wages and costs generally get out of line. This weakens the competitive position of the economy and results in an unsustainable drain on reserves over the longer run, especially if the capital flows are reversed. Prompt action by the central bank to sterilize some of the inflow may be necessary to prevent this cycle, which has been observed in several developing countries as well as in the smaller developed countries. There can also be spontaneous speculative attacks on a fixed exchange rate—although the onus must be on the authorities to prove to their own satisfaction that the flows are spontaneous and do not reflect an underlying weakness in the economy. Few countries have sufficient resources to ride out such unwarranted speculative attacks without adjusting policy. The normal action is to allow the drain of domestic liquidity, which such an attack produces, to raise interest rates—dramatically if necessary. This can make unsuccessful speculation so costly that the attack is quickly choked off.

However, the impact of the balance of payments on monetary conditions need not be destabilizing. Indeed it has long been observed that a fixed exchange rate country whose competitive position deteriorates will experience a current account deficit which, if not sterilized, will tighten domestic liquidity conditions enough to lower domestic demand, divert the production effort into exports, and improve competitiveness.

Concluding Comments and Outline of the Volume

The remainder of the volume is organized in four parts. The first part, entitled “Nuts and Bolts,” contains contributions on the day-to-day practicalities of operating monetary policy under a market-based system. A mixture of theory and practical experience from countries as different (albeit neighboring) as Indonesia and Australia illustrates just what is meant by market-based monetary policy. The need for a parallel development of securities markets, as policy instruments evolve, is highlighted, together with some practical suggestions about how to encourage this.

The second part, “Monetary Targeting and Control,” stands back from operational details to look at the macroeconomic objectives towards which monetary policy is directed. The pronounced change in industrial country attitudes to monetary targets is stressed, and the limitations of the old approach for developing countries are noted.

The two main factors tending to knock monetary policy off course are the exigencies of government deficit finance and the management of international balance of payments flows and the exchange rate. Parts Three (“Budget Deficits and Monetary Policy”) and Four (“The Interaction of Exchange Rate and Monetary Policy”) look at these factors in turn, with case studies from developing and industrial countries.

The papers and discussions reported in this volume contain many detailed recommendations for the application of monetary policy instruments to developing countries. A number of key messages may be highlighted here.

- Indirect methods of monetary control require a certain degree of interest rate volatility. As stressed by Paul Meek, the challenge for the authorities is to act promptly and vigorously even when unpalatable interest rate increases are needed. They must also ensure that their institutional set-up makes provision for them to lower interest rates, when that is appropriate.
- The successful central bank will listen to the market as well as guiding it. Freed from the constraints of quantitative controls, financial markets will often signal inflationary pressures or an impending slump, thereby assisting the formulation of monetary plans and policy.
- The stability of money demand relationships cannot be relied upon in developing countries, partly because there is not sufficient historical experience with liberal markets on which to base forecasts. David Lindsey, Charles Goodhart, and Steven Grenville all noted the difficulties with intermediate targets even in industrial countries with more experience and the result that monetary targeting no longer holds the position it once did. Accordingly, it may be necessary for developing countries to concentrate directly on targeting foreign exchange reserves rather than on choos-
ing an intermediate target such as the quantity of money. Barry Johnston advocates this approach, though he observes that a tight monetary policy can result in private capital inflows rather than reducing the current account deficit.

- As noted by Johnston, there may be one-off portfolio adjustments following financial market liberalization and the removal of quantitative controls. The authorities must be prepared for these adjustments, often involving a greater expansion of credit demand than of deposit supply. The inflationary consequences may be ameliorated by appropriate interest rate levels or, depending on circumstances, capital inflows.

- Optimal functioning of indirect methods requires the development of new markets; these in turn enhance the efficiency of financial markets and their ability to serve the economy, including its investment needs. As argued by Meek, the objectives of financial market development and monetary policy thus go hand in hand. Cesare Caranza shows how this complementarity became crucial to the success of Italian policy in the 1980s. A related passage is Juan Andres Fontaine’s concrete account of how the development of debt-equity swaps by the Chilean authorities contributed to stabilization there.

- Also, it is useful to provide some hint of caution about the risks for central bankers in being too doctrinaire about the market-oriented policy instruments advocated in this volume. Several of the papers that follow give illustrations of practice deviating from the pure market approach. Without necessarily endorsing every one of these, we cannot disagree with the general point that emergencies can arise that do require old-fashioned non-market-clearing solutions.

Finally, shifting away from direct means of controlling monetary policy is by no means universal in its appeal. Direct controls are simple to operate. They seem to offer a sure handle on overall credit or money growth. As noted by several observers, moving away from direct controls often involves a fundamental reorientation of central bankers and government officials, not only in regard to directed credit but also concerning the financing of government debt. However, monetary officials in a variety of countries have found that there is no fool-proof method to guarantee the achievement of any overall monetary target. Bank-by-bank credit ceilings suffer from the same limitation; eventually, nonbanks arise to escape credit limits, and banks have every incentive to evade controls. Moreover, such ceilings limit competition and, by choking off innovation and prompting excessive holdings of liquidity, can curtail growth both in the financial sector and in the rest of the economy. Although not all countries are in a position to apply immediately the experience already gained by industrial countries in operating indirect methods of monetary control, it can be expected that more and more monetary authorities will soon begin to follow the lead of several Asian countries, in particular.

Notes

1. That is, for an economy not experiencing financial repression. If, on the other hand, interest rates have been repressed to artificially low rates, and credit rationed arbitrarily, an increase in interest rates may lead to greater availability of credit and an improvement in long-term growth prospects.

2. In France, a program dubbed the “encadrement du credit” entailed a target for the net asset growth of each financial institution, with penalties imposed that were a (geometrically rising) function of the extent of the transgression (Mourgues 1988 and Joint Economic Committee 1981.) Until 1979, however, credit for energy, exports and “social” housing was exempt. As expected, credit to these sectors boomed and led to a loss of monetary control. Coffee exporting countries in Central and West Africa were among those who experienced similar difficulties in the late 1980s.

3. For market movements to have meaningful information content, the market must be fairly competitive. If there is only a handful of institutions in the market, they could collude to send misleading signals to the monetary authorities.

4. These are often known as “repos” or “swaps.” A reversed transaction involves the sale of a security and an agreement to repurchase it later at a fixed price. It makes liquid funds available to the seller for the agreed duration of the transaction. The relation between the current price and the agreed future price establishes an implicit interest rate for what, for many purposes, can be thought of as a secured loan.

5. Thus the central bank can do a one-day or one-week repo with a 30-year bond as an underlying security. In Tunisia, the government has in effect securitized part of the banks’ loan portfolio by allowing some loans, presumably to high-quality risks, to serve as the underlying basket of securities for repos. This operation also could be viewed as a rediscounting of a basket of loans, compared with the usual rediscounting of specific, or individual, loans.

6. Although the overall public sector borrowing requirement has remained above 10 percent of GDP since the mid-1970s, in recent years the non-interest compo-
ment has declined to 2-3 percent of GDP. Indeed, the pressure of a rising interest bill, associated with the need to finance government debt at market rates, has increased the pressure on the government to reduce the non-interest deficit.

7. Short-term capital inflows can be spurred by a variety of factors, such as a rise in the price of a natural resource, as in the case of oil or natural gas exporting countries, or a significant liberalization of the domestic economy, as in the Southern Cone economies during the 1970s.

8. Steven Grenville (and indirectly, Paul Meek) describe how the central bank benefits from allowing the market scope to move interest rates. Discussing the link with exchange rate policy, Charles Freedman goes further in arguing that the authorities can do little to fight against fundamental market forces.

9. Authorities in large economies show signs of moving toward an eclectic approach where ultimate targets of inflation and growth are emphasized. Officials in smaller economies tend to focus more (or exclusively) on the exchange rate or foreign exchange reserves.

10. Don Mathieson makes this point about responses to financial system failures, while Carlos Queiroz illustrates the knife-edge along which the Brazilian monetary authorities have walked in a difficult policy environment. Lin See Yan describes the (controversial) use of targeted interest subsidies in response to a foreign exchange crisis.

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PART I

Nuts and Bolts: Practical Issues on Moving to Indirect Implementation of Monetary Policy
Introduction

The move from direct to indirect monetary controls was accomplished first in industrial countries with smoothly functioning money and capital markets. Policy makers in developing countries are starting without these advantages. This section deals with the basic practical requirements for moving to indirect controls. The key is ensuring that the monetary authorities have the tools necessary to smooth bank liquidity. Central bank intervention in the markets for treasury bills and similar instruments are usually the medium through which policy is effected.

Several speakers stressed the fact that moving to indirect monetary management and the development of efficient securities markets were closely linked. Neither can be wholly successful without the other. In country after country, this development has required shifting government bond sales from captive banks to a wider market. The process has been quite recent even in industrial countries. (Steven Grenville describes the Australian case in this part, and the Italian and Chilean cases are described in Part III.)

Though development of the money markets will not occur overnight, Paul Meek and Steven Grenville both emphasized that the way monetary policy is conducted can do much to either stimulate or retard their development. Deeper money markets will not only facilitate a smooth implementation of monetary policy but also improve the efficiency of the financial system.1 Issuing government paper too frequently or providing liberal access to the discount window stifles the development of inter-bank lending. Similarly, if the authorities eliminate variability in interest rates, they will prevent the emergence of brokers and dealers, who could facilitate the absorption of interest rate risk in the private sector. As Barry Johnston also argued, all of this requires a significant re-orientation in the thinking of the monetary authorities.2

Sufficient attention has to be paid to so-called “back-office support” in the central bank, which in fact should be viewed as “front-line” tasks, before the authorities can rely on open-market type operations as a channel for implementing policy. For example, policy makers will benefit from being able to forecast seasonal patterns in credit demand. When a central bank is able to forecast flows affecting bank liquidity, it is in a better position to achieve desired trend in interest rates. Meek remarks that this is not strictly necessary for short-term liquidity management purposes, and there are differences of opinion on how much effort should be devoted to the short-term forecasts. However, for the medium-term formulation of monetary policy objectives, forecasting of flows does become a more central part of the whole exercise, as pointed out by Barry Johnston. Central banks aiming for greater reliance on indirect methods of implementing monetary policy should make an early start on building these skills.

The pros and cons of reserve requirements, including precise methods of calculation and enforcement, were debated. Although reserve requirements can aid the central bank in its effort to determine banks’ liquidity needs, they can easily become a tool for taxing the financial sector and reducing the competitive position of the banks. Reserve requirements are not necessary for implementing monetary policy—this point resurfaced during the presentation by David Lindsey in Part II—but they can help strengthen the central bank’s hand in times of monetary restraint by making the banks come to it for liquidity. On the other hand, reserve requirements have often been used as a form of taxation, reducing the effectiveness of the banking system. Such distortions can be minimized by remunerating banks for the reserves they are required to hold.

Another controversial issue was the proper role of banks in development finance. Mr. Johnston expounded one view in this old debate, arguing that banks should not provide long-term credit, which was more appropriately the role of a capital market. Others have argued...
that one of the roles of banks is to engage in the term
transformation of risk, and that by pooling risks and judi-
ciously mixing debt maturity, banks can safely partici-
pate in term lending. For instance, one leading
economic historian has attributed a slowdown in U.K.
growth during the latter part of the nineteenth century
to the British banks' withdrawal from term lending; in
contrast, the increased willingness of German banks to
make term loans is seen as having boosted industrial
growth there (Kennedy 1987).

Dr. Grenville's presentation drew on the recent Aus-
tralian experience of a rapid transformation in the finan-
cial sector and in the conduct of monetary policy. He
underlined the importance of admitting non-financial
institutions into the money market as a means of in-
creasing competition, a potentially important point in
many small developing countries where there are only a
handful of banks. He also stressed that the presence of a
captive market for government securities can subvert
the development of a market. For instance, accounting
conventions can inhibit institutions (reluctant to recog-
nize the capital loss) from selling, before maturity, low-
interest bonds they have been forced to acquire. This
point is raised later in the contributions by Cesare Car-
anza and Juan Andres Fontaine. The simultaneous devel-
opment of an active government securities market and
new monetary policy instruments, which are comple-
mentary processes, requires close coordination between
the monetary authorities and those charged with public
debt management. If debt management is allowed to
take precedence, this can slow the effective transition to
market-based monetary control. (The Indonesian case,
discussed by Meek, provides an example where market-
based methods were developed using central bank and
private securities rather than those issued by the Gov-
ernment.)

The speakers in this session had considerable practi-
cal experience in money market affairs. Paul Meek was
vice president and monetary adviser in the open market
area of the Federal Reserve Bank of New York from 1973
to 1985. Since then he has served as a consultant to cen-
tral banks, including those of Indonesia, Malaysia, Paki-
stan, China, Portugal and Singapore. Steven Grenville
has had a distinguished career at the Reserve Bank of
Australia, while Barry Johnston worked at the Bank of
England and the U.K. Treasury before joining the Cen-
tral Banking Department of the International Monetary
Fund.

Notes

1. The greater the liquidity of the money market, the
less need of banks to hold excessive amounts of liquidity.
Grenville provides evidence of a significant decline of ex-
cess liquidity in Australia, as the money market deep-
ened.

2. Speakers did not, however, advocate special tax
privileges to promote money or capital market develop-
ment.

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gleand.
Central Bank Liquidity Management and the Money Market

Paul Meek

Central banks have a major role in developing and implementing monetary policy, conditioned by the political and legal system within which they operate. They must be concerned with two aspects of monetary policy: economic management and liquidity management. Economic management involves promoting sustainable economic growth over the longer term by keeping monetary and credit expansion in step with an economy's non-inflationary output potential. It requires operating within the constraints imposed by foreign exchange reserves, external debt, and the availability of foreign grants and credits. Liquidity management, in contrast, has a shorter time horizon. It involves assuring that the banking system can provide flexibly in the short-run for the cash and payment needs of the society.

Central banks have other important functions that bear on their monetary policy responsibilities. In most countries they are required to assure the soundness and safety of the payments system, regulating and supervising the operations of the commercial banks, and frequently other financial institutions as well. An adequate supervisory system and an effective legal system may be prerequisites to the desirability, or even feasibility, of developing financial markets as a means of fostering economic efficiency.

Assuming that the preconditions do exist, central banks can help money markets develop by the way they carry out their liquidity management function. The present paper takes up first the issues involved in such management. It then presents some general guidelines for developing an efficient money market. Finally, it gives an in-depth look at Indonesia's experience in recent years in moving from a credit control system of monetary control to one involving open market operations in a fledgling money market.

Central Bank Monetary Management

In developing countries the monetary authorities have tended to use dirigiste approaches to economic management. They have often chosen to set interest rates and exchange rates administratively and to impose credit control on individual banks as a means of influencing the balance between the supply and demand for real resources. The credit control approach has been used frequently in Asia, often in conjunction with a national planning exercise—in India, Indonesia and Pakistan, for example. Oftentimes the authorities also prescribe institutional holdings of government and other securities and attempt to direct credit to favored economic sectors. Administrative control over credit expansion often works well for a time in the formal financial system, to moderate inflationary pressures while fostering development. In time, however, it reduces competition within the banking system, favors existing lines of business at the expense of new enterprises, and results in high intermediation spreads. Government enterprises and the government itself are apt to take an increasing share of credit flows, sapping growth. These adverse consequences have sparked widespread interest in liberalizing financial systems to spur competition that will encourage savings and improve resource allocation.

To central banks, the encouragement of money and securities markets offers one means of enhancing efficiency by multiplying the channels through which savings and credit can flow. Such markets also enable monetary policy to operate flexibly to foster national macroeconomic goals, while leaving the distribution of domestic savings and investment to competitive forces. They can also assist the central government in financing its own cash requirements in a non-inflationary manner.
However a financial system is organized, the central bank has to find ways of providing liquidity routinely so that banks can meet varying short-term demands for cash and credit without impairing the reserves they are required to keep with it. Banks draw down their working balances at the central bank whenever there is a large public demand for currency or credit to pay taxes, meet payrolls, or pay bills. If the central bank does not offset the resultant drain on bank reserves, the banks are forced to scramble for funds, driving up interest rates or repatriating funds from abroad. Similarly, if it does not mop up the surplus reserves produced by a return flow of currency after major holidays, short-term interest rates will fall and there may be an outflow of funds abroad. The central bank can rely on its discount window to handle the fluctuations of bank reserves in relation to requirements—setting terms on which the individual banks can deal directly with it. Or it can initiate open market operations to offset such changes, leaving it to the interbank market to distribute the reserves within the banking system. A sizable share of reserve changes involve uncontrolled movements in other elements of the central bank's own balance sheet. The treasury makes large net disbursements from its accounts with the central bank at some seasons, adding to reserves, while at other times its balances swell with tax receipts, having the opposite effect. When the central bank intervenes in the foreign exchange market to maintain continuity, its purchases and sales impact bank reserve positions and the domestic money market. It must also take account of swings in the net credit to banks that may result from the central bank's arrangements for check collection and payment. It has to balance the collective reserve position of the banking system if it is to keep domestic short-term interest rates reasonably steady from day to day.

Once a central bank moves from credit control by administrative fiat to the use of financial markets, its economic and liquidity management commitments are in constant tension. The authorities cannot become obsessed with holding short-term rates steady if they are to manage the economy properly. They must be prepared to change short-term interest rates promptly as their perceptions of the economic outlook change. Holding such rates steady for extended periods can easily result in money and credit growth over a longer time horizon that is either excessive or deficient. Those central bankers who have relied on credit ceilings as their principal tool for economic management may find it hard at first to change quickly enough the terms on which they make reserves available. Operating in financial markets with flexible interest rates involves a basic change in orientation. The improvement in saving and resource allocation that financial markets can bring provides strong justification for moving ahead with their development. But the credit demands of the government and private business can get out of hand unless the monetary authorities possess the authority and the will to make interest rate changes that enforce market rationing.

Approaches to Liquidity Management

Central banks in developing countries usually begin operating in a financial environment dominated by commercial banks. These expand their branches and services as the economy's financial requirements increase with development. In time, finance companies, merchant banks, discount houses, stock exchanges, and insurance companies can develop, depending on the pace of business development and the enabling actions of the fiscal and monetary authorities. In this environment the central bank usually permits individual commercial banks to replenish their reserves by borrowing from the central bank, discounting approved paper with it at posted rates, or selling it foreign exchange. Commercial banks with excess reserves may be permitted as well to buy foreign exchange or government securities directly from the central bank. The central bank itself responds passively to the demands of the commercial banks, balancing the system as a whole by a series of bilateral transactions with individual institutions.

The interest and exchange rates at which the central bank deals with the commercial banks depend upon its approach to economic management, including the extent to which it permits domestic residents to switch between domestic and foreign currency. If credit controls are the principle instrument of monetary policy and access to foreign exchange is controlled, the rates at which the authorities discount or sell paper bilaterally may be arbitrary and remain fixed for long periods. In Pakistan, for example, the State Bank deals with excess liquidity by selling 91-day treasury bills on tap at a 6 percent discount rate. Then when a bank needs reserves, it rediscounts the bills before maturity at 6.05 percent. The State Bank's rates of issue and discount bear little relation to effective returns on bank deposits or loans, but its bill operations keep the rates on daily interbank loans steady at around 6 to 6.5 percent. Such routine accommodation inhibits the development of liquidity management skills that are needed in a modern economy.

When a central bank phases out credit controls, it has to adapt its liquidity management techniques in order to influence money and credit growth through interest rates. Often the first step is to develop an array of rates at which it is prepared to make loans or to sell short-term assets. It might, for example, establish lending tranches...
that involve a step-up in interest rates as individual banks increase their borrowing. The central bank could still rely on balancing the system in the short run through bilateral transactions with individual banks. For the longer term, it would have to adjust the level of rates or the structure of its discount facility when money and credit growth appeared to be departing significantly from a desired path.

A more important step toward market-oriented policy procedures takes place when the central bank assumes responsibility for evening out swings in bank reserves relative to demand on its own initiative, rather than waiting passively for individual banks to come to it. Once it begins to supply or absorb liquidity through market intervention, the discount window plays an important, but subordinate, safety valve role. Operationally the central bank can supply reserves through the market whenever the short-term interbank rate rises above a certain point and withdraw them whenever the rate falls below some lower point. The distribution of reserves among different banks is left to the interbank and other asset markets. The discount window serves as a backstop in case reserves remain short after the central bank operates.

**The Banking System’s Demand for Reserves**

To maintain reasonably steady short-term interest rates from day to day, the central bank seeks to provide banks with sufficient reserves to meet any mandatory reserve requirements plus whatever excess reserves or working balances the payment system needs. What this implies for central bank operations depends on the deposits commercial banks maintain with it in practice, as determined by their working needs as well as the regulations governing reserve requirements and transfers of funds and securities.

**Reserve requirements**

In most countries, the central bank specifies the reserves that commercial banks must hold, usually calculated as a fraction of selected categories of customer deposits with each bank. Some central banks use uniform requirements across deposit categories to equalize the implicit tax involved, while others specify lower requirements on time and savings deposits than on demand deposits. The process of liquidity management can be adjusted to whatever system is in place. Typically, required reserves are calculated on the basis of deposits on one day or on the average of deposits during a specified reserve calculation period. The banks must keep the reserves during a reserve maintenance period, which is usually lagged from a few days to several weeks with respect to the calculation period. Commercial banks make every effort to meet their requirements since deficiencies usually subject bank management to embarrassing inquiries from the central bank as well as the assessment of a penalty. In a few countries, the monetary authorities operate with zero or minimal reserve requirements, exploiting their leverage on the working balances of the banks. In the United Kingdom, for example, the Bank of England has an understanding with the major banks that their working balances with it will each day remain at or above a certain level.

The periods selected for reserve calculation and maintenance affect the manner in which both the central bank and the commercial banks go about their business. Use of a single day in calculating requirements—perhaps the end of a monthly or semi-monthly period—gives commercial banks an incentive to minimize deposits on the day in question. The reserves required may change significantly from one period to the next, since deposits on the base date can vary a great deal depending on the day of the week or time of the month. Using a daily average calculation for the base period has distinct advantages. There is less scope for commercial bank churning to reduce requirements through their own action, when each day’s deposits enter the reserve calculation. The averaging process also tends to dampen swings in required reserve levels between periods.

The length of the reserve maintenance period influences the scale and frequency of swings in reserve availability that the central bank seeks to offset and hence, the behavior of the money market. If the commercial banks must meet their requirements of minimum working balances every day, the central bank faces each day the formidable task of countering the net effect on reserves of all uncontrolled changes in its balance sheet. The Bank of England, for example, must operate daily in the money market to balance that day’s reserve changes, with end-of-day loans to discount houses available to meet residual needs. The overnight interbank rate moves during each day as individual bank reserve positions change. One cannot make up tomorrow for today’s shortfall.

Malaysia’s experience provides another example. Until recently Bank Negara Malaysia specified that required reserves be maintained on a semi-monthly basis, but held them frozen throughout the maintenance period. Accordingly, the separate working balances of the banks bore the full brunt daily of all changes in the central bank’s balance sheet. Since Bank Negara at the time made credit available at day’s end only at a markup over the highest interbank rate of the day, the swings in the rate were quite large. As soon as it allowed banks to meet their reserve requirements on a daily average basis and
modified the rate charged on residual loans to the banking system, the scale of its daily market operations dropped sharply and the daily interbank rate steadied within a narrow range.

Many central banks have chosen to allow commercial banks to meet their requirements on a daily average basis over the maintenance period as a way of reducing the scale of reserve imbalances and of dampening swings in the interbank rate. Some impose limits on how low end-of-day balances can be in relation to requirements, to reduce the likelihood that the banks as a group will accumulate large deficiencies during the period. Large cumulative deficits or surpluses can exert considerable upward or downward pressure, respectively, on the daily interbank rate when banks attempt to square their positions as the end of the period approaches. To moderate such pressures, some central banks permit reserve excesses or deficits to be carried forward, within limits, into the next reserve maintenance period, as is done in the United States.

The length of the lag between the reserve calculation period and the reserve maintenance period affects the reserve management problem facing both commercial banks and the central bank. If both the central bank and the commercial banks have deposit data in hand before the reserve maintenance period begins, then both will know in advance the reserve targets at which they are shooting. If the two periods overlap, both must operate on the basis of projections, which are likely to have sizable margins of error. It helps when both have a good fix on requirements in time to take corrective action before the maintenance period ends. With such information the central bank can make reasonable estimates of the total reserves that the banking system will demand during the maintenance period to cover requirements and allow for the excess reserves necessary to lubricate the payments system.

Advance knowledge may be desirable from an operational standpoint, but it is not critical. The central bank still has to estimate the uncontrolled factors affecting the supply of reserves. Variations in currency in circulation, treasury balances at the central bank and other factors may well be considerably larger than the variations in required reserves. The central bank will always face a margin of uncertainty about the demand for reserves that will impact the money market.

The Demand for Excess Reserves

Whatever the level of requirements, banks customarily need a certain amount of excess reserves to keep the system operating smoothly. In managing their positions, banks have to cope with large in and out transfers initiated by their customers. Not surprisingly, when the music stops at the end of the day, there are usually unanticipated surpluses that cannot be disposed of until the next day. The more banks there are in the system, the greater the volume of excess reserves that are likely to accumulate during the reserve period.

In the United States, for example, many of the banks and the other depository institutions that have access to the Federal Reserve's discount window and wire transfer facilities have very small reserve requirements. Their need for working balances with the Federal Reserve exceeds their requirements. As a result the aggregate volume of reserves on the central bank's books at the end of each day's transfers of funds and securities is quite sizable—almost US$1 billion in 1989. In conducting its open market operations, the Federal Reserve must add an estimate for excess reserves to estimated required reserves in each two week reserve period, to produce a projected demand for total reserves. If it wishes to raise short-term interest rates for economic management reasons, the central bank does not fully meet this demand, forcing banks to increase their borrowing from it. If it wishes to lower rates, it can supply more reserves than it expects will be demanded.

A banking system's need for excess reserves depends in part on whether the central bank's rules allow vault cash to be counted toward the fulfillment of requirements. When vault cash can be counted, commercial banks typically retain enough, distributed in their branch banks, to meet local demands for cash while seeking to minimize the expensive movement of cash. Some banks may then find that the residual requirements met by central bank balances are less than they need for working balances. The smaller these residual balances in relation to bank activity, the more likely that banks will hold excess deposits with the central bank. On the other hand, if vault cash cannot be counted toward requirements, then commercial banks will seek to minimize the cash held in their own vaults, withdrawing cash as needed from the central bank and redepositing excess cash with it. Both the central bank and the commercial banks will then incur significant additional costs in transporting and handling the cash.

The central bank's own rules for permitting transfers of funds on its books from one bank to another also influence the banking system's demand for excess reserves. Some central banks, Bank Indonesia for one, will honor transfer orders only if the transferring bank has collected funds on deposit in its account. In consequence, most Indonesian banks maintain deposits beyond their requirements in order to transfer funds early in the day or to be able to meet adverse clearings. Bank Indonesia in its open market operations has to allow for
a sizable demand for excess reserves. Moreover, banks typically pay a higher interbank rate in the morning than after the clearing, usually one percentage point or more.

In contrast, the Federal Reserve System in the United States required for many years only that banks have adequate balances at the end of the business day. To encourage an efficient financial system in an environment with thousands of banks, it allowed banks to transfer funds or make payment for securities even if such transactions resulted in temporary overdrafts in their Federal Reserve accounts. One consequence was the development of a very efficient interbank (Federal funds) market. Individual banks could redress a loss of funds experienced in the normal course of business by borrowing funds overnight or for longer terms from banks with surplus funds. Borrowing banks in the major cities go into overdraft automatically each morning when they wire funds to their lending banks to repay the previous day’s loans. They cover the overdraft with incoming receipts or borrowings that are credited to their accounts later in the day. This practice of extending intraday credit to banks that are overdrawn exposes the Federal Reserve to the risk that a bank fails before it restores its balance at the central bank. Concerned about its credit exposure in a world financial system with enormous transfers, the Federal Reserve has been developing new rules and procedures for monitoring and controlling its exposure without adversely impacting the operation of financial markets.

The Supply of Reserves

In managing liquidity, a central bank develops its own procedures for supplying or absorbing reserves. As noted earlier, this may involve a passive response system in which discount window rules allow depository institutions to discount various kinds of paper or obtain advances when confronted with a shortage of reserves. The central bank may also stand ready to sell treasury or other paper at preset rates to banks with excess funds. Once a central bank undertakes to manage liquidity actively, it must itself add to, or reduce, reserves by buying or selling assets in the money market. The discount window then becomes a safety valve rather than the principal means of meeting liquidity needs.

The Discount Window

The management of liquidity takes as given the other credit activities of the central bank. Central banks often serve as the channel for distributing subsidized credits to favored enterprises or sectors of the economy. Or they provide temporary overdraft facilities to the central government or take down a portion of new government loans. These credit activities, which may loom quite large in the central bank’s balance sheet, are a source of reserve changes, necessitating an equilibrating response. The central bank must cope with changes in reserve availability from whatever source, including those that originate within the bank itself.

Many central banks have a formal discount window that purports to be available to commercial banks that experience reserve shortages but which in fact goes unused because the discount rate is set well above the cost of adjusting through other means. Banks in Pakistan can obtain needed reserves by discounting treasury bills at a rate well below the formal discount rate, while the State Bank uses credit controls for economic management. In Indonesia a few years ago, banks could sell foreign exchange they held abroad to the central bank for same-day credit, whereas the discount rate was usually three percentage points or so above the daily interbank rate. What matters is not the definition of the formal discount window but the alternatives the banks face in making reserve adjustments on their own initiative.

If central banks depend on influencing money and credit growth through interest rates, they can still establish an array of rates at which they will deal with their commercial banks to adjust liquidity. Balance in the system as a whole is achieved through independent actions of the banks themselves in bilateral deals with the central bank. Rates in the interbank market for funds reflect the interaction of bank credit demands with the central bank’s rate schedules. They, in turn, affect the rates that the banks quote on deposits and loans. Monetary control’s effectiveness depends on the readiness of the authorities to move its administered rates.

The critical step forward in liquidity management occurs when the central bank undertakes to supply or absorb reserves on its own initiative. It then addresses reserve shortages or surpluses in the system as a whole, leaving the distribution of reserves to the operation of the money market. Open market transactions are based on competitive bids or offerings by market participants, not a preset central bank schedule, and the central bank determines the amount of securities purchased or sold. The introduction of open market operations does not eliminate the need for discount window operations. Individual banks still need a lender of last resort when they find themselves short at the end of the day, after all interbank transfers have taken place. The discount window provides such a facility to individual institutions but no longer is the vehicle for major adjustments in reserves.

The interaction between open market operations and the discount window is central to economic manage-
ment. Arrangements differ considerably from country to country. In the United States, with its thousands of depository institutions, access to the window is restrained by internal rules that define acceptable borrowing in terms of frequency and institutional size. When open market operations do not fully meet the banking system's demand for total reserves, the banks increase their recourse to the discount window; the Federal funds rate also rises but remains moderate even though the discount rate is below the Federal funds rate. The spread between the two rates indicates the bite of policy tightening. It increases when the Federal Reserve satisfies reserve needs more through rationed recourse to the discount window than through purchases of government securities in the open market. The central bank can probe toward monetary restraint or ease without moving the discount rate. Changes in the discount rate are used to reinforce changes in market rates initiated through open market operations, when the economic situation calls for advertising publicly the shift of policy.

A different approach is used by the Bank of Canada, whose banking system consists of a few banks with nationwide branching systems. The Bank of Canada sets its discount rate each week at a penalty markup over the average issuing rate established on three-month treasury bills in the weekly auction. As long as the central bank finds the existing level of short-term market rates satisfactory from an economic management standpoint, it provides fully the reserve needs of the banking system, so that there is no need for borrowing at the discount window. However, if the economic situation calls for higher rates, the Bank of Canada holds back on supplying reserves so that one or more banks are forced to borrow at the penalty rate. This generates upward pressure on all short-term rates. Once these have risen to the desired level, the central bank resumes meeting the full needs of the system so that there is no further need for banks to borrow.

The Bank of Italy establishes a step function of discount rates confronting its individual banks. The more often a bank borrows from the central bank, the higher the rate it pays. This approach involves a measure of market discipline on the individual bank, rather than the administrative guidance used by the U.S. Federal Reserve System. The central bank can initiate an increase in interest rates by limiting the supply of non-borrowed reserves, forcing individual banks to borrow at higher and higher rates. When rates have risen to the appropriate level, the Bank of Italy can resume supplying reserves as needed and adjust its discount rate schedule appropriately.

Central banks cannot rely on open market operations for economic and liquidity management without considerable development of the financial structure and markets. Yet central banks have a leading role to play in these institutional developments. An excellent example of the steps that can be taken is provided by Malaysia. At an early stage after independence in 1957, the monetary authorities encouraged the formation of new national commercial banks and branch banking, which resulted in a sharp decline in the dominant share previously held by foreign banks. The first discount house was organized in the 1960s, and the number had grown to seven by 1986. The Bank Negara Malaysia also persuaded the treasury to begin issuing securities with different coupons and maturities to meet the needs of a wide range of investors, including the Employees Provident Fund, which took down 20-year bonds. In 1973, the year in which the Malaysian and Singapore currencies ceased to be interchangeable, the sale of treasury bills moved to an auction basis and the Malaysian ringgit was floated. Bankers acceptances and negotiable certificates of deposit were authorized in 1979. Finance companies and merchant banks were established as well in the 1970s.

Bank Negara from its beginning required the banks to hold specified liquid assets in addition to required reserves, to assist in monetary control and to ensure that the banks played a direct role in financing the government's development efforts. In 1986 the primary liquid asset requirement stood at 10 percent of total deposits and was met principally with holdings of treasury bills and deposits with the discount houses. Banks were required to hold an additional 10 percent in secondary assets, consisting of commercial bills and other Malaysian government securities. The issuance of treasury bills and other government securities was kept within the amounts that banks and other financial institutions were required to hold so that the interest rates on these issues were usually below those that would have prevailed in a free market. The discount houses were able to pay a higher rate on deposits with them than were available on treasury bills because they were permitted to hold higher-yielding government securities with maturities out to three years, which the banks could not count as primary liquid assets. The interbank market was quite active in maturities ranging from overnight to one month, while transactions in maturities out to three months were common.

As noted earlier, Bank Negara managed liquidity by posting rates at which it would buy bankers acceptances, as well as treasury securities maturing out to 20 years. It also might sell treasury bills, and on occasion other gov-
ernment securities, on the posted yield curve. At one time it also placed government deposits with the banks for one month or longer in an effort to influence market rates. The banking department participated actively in the foreign exchange market to maintain a degree of continuity in the value of the ringgit. It also occasionally used swap transactions to relieve strains in the domestic money market and served as lender of last resort to the banks.

This passive approach sufficed to meet the system's liquidity needs, stabilizing the daily interbank rate once banks were allowed to meet their requirements on a daily average basis. However, the central bank's own willingness to trade government securities bilaterally on a posted yield curve left little opportunity for a secondary market to develop. The fact that government securities carried below-market yields made them unattractive to anyone not subject to liquid asset requirements. The discount houses considered their function primarily one of maturity transformation. They concentrated on carrying profitably a portfolio of treasury and short-term private instruments with the inexpensive funds generated by the qualification of their deposits as primary liquid assets. They could, in fact, shift a part of their interest rate risk to the central bank by selling to it from portfolio. The houses did play an active role in developing the markets for bankers acceptance and certificates of deposits, buying the securities and selling them under repurchase agreements for shorter periods at rates that provided a positive interest rate "carry." But the secondary markets were thin even in these instruments.

In 1987 Bank Negara began the transition to a policy of promoting an active secondary market in government securities and managing liquidity through market intervention. Taking advantage of a decline in interest rates, the treasury increased its sales of treasury bills and shorter maturities of Malaysian government securities to the point that these bore market yields. Bank Negara began buying and selling such issues only on its own initiative and at the rates at which they were trading in the emerging secondary market. In early 1989 it designated seven discount houses as exclusive underwriters of the weekly treasury bill auctions, with the requirement that they make secondary markets to all comers. Bank Negara also reduced the primary liquid asset ratio to 5 percent, to encourage them to depend more on market-making for profits and less on their privileged position as deposit takers. At the same time the Bank appointed the discount houses, seven merchant banks and four commercial banks as primary dealers in Malaysian government securities. They were made responsible for underwriting auctions of such issues and making secondary markets in them. Bank Negara announced that henceforth it would look to open market operations as the primary means of managing domestic liquidity. The discount window was relegated to a subordinate role, available to individual institutions only under special circumstances.

**Forecasts and the Management of Treasury Balances**

A central bank embarking on the use of open market operations to manage liquidity finds it helpful to develop forecasts of the likely behavior of the major components of its own balance sheet. In many countries, the interlocking patterns of treasury receipts and expenditures subject bank reserves to sizable, and often erratic, swings. The central bank also needs to compensate for predictable flows of currency into and out of circulation in connection with the country's payment practices and seasonal patterns. The central bank's own net extensions of credit to state enterprises or favored industries need to be included in the reserve outlook. Transactions in foreign exchange are much less predictable, but their effects on bank reserves, as they occur, should be available to the manager of domestic open market operations. Major swings stemming from changes in required reserves and other factors may be reasonably predictable—for example, the credit float stemming from the check collection process in the United States. Forecasts of the prospective movements in reserves from such factors can give the central bank guidance concerning the magnitude and direction of its own intervention. What is important to decision-making is the discipline that such forecasts impose rather than the size of forecast errors. A regular forecasting procedure provides the manager not only with information but also enables him to acquire a feel for the likely margin of error in the forecasts themselves.

Reserve forecasts are not, however, a prerequisite for effective liquidity management through open market operations. The interbank market itself provides continuing information on the interplay between the demand for reserves and their availability in the banking system. Commercial bankers in charge of managing the reserve positions of their banks keep close watch on where they stand in relation to their reserve requirements. They bid for funds in the interbank market if they are short and lend funds there if a long position is building up. In an active market, the interbank rate indicates whether aggregate demand is building up in relation to supply. Since the object of liquidity management is to maintain reasonable stability in the overnight interbank rate, the central bank can intervene when the rate moves above or below the range it desires. It can use repurchase agreements to inject reserves on a temporary basis, to
counter unusual strains, or the reverse of such operations if the money market becomes undesirably sloppy. These short-term operations are an important supplement to the outright purchases or sales of securities addressed to longer-lasting developments in the demand for total reserves.

The conscious shifting of treasury balances between the central bank and the commercial banks can play a useful role in reserve management outside the market. In the United States, the treasury maintains balances with most banking institutions and makes deposits in, or calls on, such balances as necessary to even out its own balances at a level agreed on with the Federal Reserve System. This procedure helps cushion bank reserves from the variability of tax collections, expenditures, and securities sales. In Canada, the treasury has delegated management of its balances to the Bank of Canada, which shifts balances as its primary means of managing liquidity. While this approach deals admirably with liquidity in its system, it does bypass the money market. The central bank of a developing country can contribute more effectively to financial market growth if it is itself an active user of the market than if it develops a system that bypasses the market.

General Guidelines for Money Market Development

Nurturing an efficient money market is a many-sided endeavor. Such a market requires a legal, regulatory, and supervisory framework that assures market participants that contracts will be promptly fulfilled and that the credit risks of buying and selling market instruments are small and manageable. Official oversight is needed to keep tabs on the market's functioning and to discipline those that engage in unsound business practices. There must be negotiable instruments of high credit quality, issued under laws and rules that spell out the conditions of issuance and the protections available to the buyer. The market requires financial intermediaries—either dealers that buy and sell from position at their own risk or brokers that charge a commission to bring buyers and sellers together. The central bank, money market instruments, and dealers all have essential roles to play in developing an efficient market.

The Central Bank

The central bank is a natural leader of efforts to improve a nation's financial system. It oversees and helps organize the payments system needed to supply the cash and credit requirements of the economy. It supervises the banks, and often other financial enterprises as well, to maintain public confidence in the safety of deposits and the integrity of financial transactions. The central bank serves as fiscal agent for the ministry of finance—banker to the government, servicing its deposit accounts and issuing its securities. It is the operating arm of monetary policy in both economic and liquidity management.

This paper has concentrated thus far on the contribution the central bank can make to market development by using the markets to manage liquidity and the economy. But more than the central bank's own activity is needed to energize a new market. Its transactions will be only a small part of the total in a well-functioning market. The central bank must take steps to enhance the standing of the instruments available in the market and the dealers who make the secondary market in them. A good money market rests on the participation of a wide range of businesses and investors seeking safe outlets for their short-term funds. It is not enough for the central bank to embrace rate flexibility in its own operations if the market remains limited to transactions between it and the commercial banks. The central bank must find ways of encouraging dealers or brokers to seek out retail customers in business and finance, so that the market will develop breadth and depth.

Instruments

A money market needs instruments to trade that are of high quality, to attract the short-term funds of those who prize safety of principal more than yield. A treasury bill or central bank certificate maturing in three months or less provides an ideal instrument. Both are of the highest quality, eliminating default risk except in the most extraordinary of circumstances. Either can anchor the short-term market, providing a reference yield for private paper. The central bank should normally conduct the auctions of such paper as well as provide the bookkeeping and transfer facilities that facilitate trading. It can underscore the quality of the paper by discounting it in its lending operations. When the central bank graduates to managing liquidity through the market rather than through the discount window, it can take the lead in buying and selling such open market paper. The central bank must also oversee the credit quality and market practices of the dealers or brokers that make the secondary market.

In developing a treasury bill or central bank certificate market, it is important that the issues sold at auction mature at intervals of at least a week, as in the United States. Dating 91-day paper to mature on each business day of the week as in the United Kingdom reduces the size of each maturity and inhibits trading in
the resulting 65 issues. Spacing issues at least a week apart makes it easier to achieve a tradable size. It also enhances the role of dealers, since they will be called on to write a repurchase agreement to the specific date their customer needs cash or to repurchase an instrument from them on that day. The length of the maturity auctioned initially can reflect the existing stage of development. In a rudimentary market, it can be as short as a few weeks. As the Indonesian example later in the paper makes clear, it is not even critical that the amount to be auctioned be announced in advance. What is necessary is that bidders be free to bid at rates of their own choosing and that the issuer accepts bids in sufficient volume at market rates to provide a tradable supply. One can move to standard-size auctions and extend the maturity to 13 weeks as the central bank, dealers, and other participants learn to use and trade the instrument effectively.

Central banks need also to work actively with banks and market makers in developing the market for bank certificates of deposit (CDs) and bankers acceptances. Their supervision of the banks provides the investing public with assurance that such bank liabilities are of high quality, even though not as riskless as treasury bills or the central bank’s own liabilities. The central bank prescribes the conditions under which banks can accept private drafts to create acceptances and deals itself in the market as a means of assuring itself that its regulations are being followed. The central bank also allows finance companies and merchant banks to issue their own short-term paper. Here, too, it must provide a degree of supervision if the paper is to be acceptable to a wide range of investors.

In time, once public confidence in the money market builds up, it may become possible for businesses with high credit standings to place their own paper with investors, either directly or through dealers. Such commercial paper usually bears a higher interest rate than bank-sponsored paper but still enables the issuer to raise funds at a lower rate than through borrowing directly from a bank or through bankers’ acceptances. Use of such an instrument depends on the development of a sophisticated group or investors, which are willing to bear the risks of buying such paper to obtain the higher yields they offer.

**Brokers and Dealers**

In building a good money market, the central bank needs to encourage the development of dealers who will make markets in short-term instruments. Such market making is essential to enable buyers of the paper to sell it before maturity, to raise cash whenever they need it. In well-developed markets with many participants, brokers can perform the function of bringing buyers and sellers together, charging one or both a commission for the service as in the interbank and foreign exchange markets. But developing a good secondary market for short-term instruments usually requires an intermediary that is a dealer rather than a broker—one prepared to buy and sell from position, embracing the risks and rewards of ownership. Such a dealer has a strong incentive to build customer participation in the market, for only that will enable him to control his own risks.

A dealer in securities has three sources of earnings. First, he can usually earn a positive return from financing a position in short-term securities day to day or week to week at a lower interest rate than is being earned on the securities themselves. Secondly, a dealer makes a spread on the difference between his bid and asked prices—the greater the activity, the more he makes. Finally, the dealer can make a capital gain—or loss—from changes in the value of his position as interest rates rise or fall.

In the early stages of developing a market, dealers normally focus on the positive “carry” between the rate earned on securities held in position and the rate at which they can be financed for shorter periods. The spread is often quite large because of the premium banks and others place on liquidity in the absence of a functioning secondary market. Dealers can usually finance a position that is ten, twenty, or even fifty times their net worth, since they need only supply a narrow margin of collateral on such high quality, short-term paper. The earnings potential on a leveraged position is quite large in a stable rate environment. The dealer is rewarded for taking the risk that interest rates will rise and that he may have to renew his short-term financing at rates higher than he is earning on his position. But the leverage of his position exposes the dealer to a substantial risk that his entire equity can be wiped out by a rise in rates. Accordingly, the dealer needs to develop cash customers to whom he routinely sells money market paper outright as an investment of their liquid funds. In case of a rise in rates, such customers experience only the opportunity cost of foregoing higher earnings for the remaining life of the security. The dealer, however, would have to mark down the value of his whole inventory and could be forced to sell at a loss in order to maintain margins on the securities pledged to lenders.

Nurturing a group of dealers that make secondary markets in short-term paper involves many challenges to the central bank. It must select the dealers with whom it will trade, establishing capital requirements and developing a reporting system that permits it to assess the risks that dealers are running in their day-to-day operations. The central bank will need to see that the maturity
of the paper it or the ministry of finance sells to the dealers does not overreach their ability to manage their maturity risk. It should conduct its own operations on a best-price basis that enforces competition among the dealers. It may provide some support to fledgling dealers through special financing facilities, an underwriting commission, or by giving them a favored role in a set of liquid asset requirements imposed on financial institutions. Note, however, that such privileges create vested interests and may be hard to withdraw as the market develops.

There is always an adversary element in the relation between the central bank and the dealers. This flows in part from its supervisory role, but dealers are also apt to want central bank protection from some of the business risks that are properly theirs. They may tend to prefer the passive role of earning a positive carry rather than developing a customer market, looking to the central bank to rescue them if it raises interest rates in pursuit of its economic objectives. The central bank has to prod them into market-making by tying its recognition to their outright transactions with customers. Only by building a good customer base can dealers manage interest rate risk in bad times, in order to survive and prosper in good times. While some special aid may be necessary in unusual circumstances to buttress the market’s ability to continue making markets, the central bank must avoid developing a market in which the “carry” profits accrue to the dealers and the interest rate losses are borne by the central bank.

The Case of Indonesia

Indonesia presents an interesting example of a country that has recently moved from administrative controls to flexible monetary management through market operations. This shift has been part of a broad governmental effort to use market forces to restructure the economy. The authorities have sought to enhance financial competition and thereby promote a high level of domestic savings and a more market-oriented allocation of real resources. The motive force for this transformation effort came from the sharp fall of oil prices in the early 1980s. At that time, the petroleum sector accounted for 20 percent of GNP, 70 percent of exports and two-thirds of government revenues. The drop in oil prices cut deeply into government receipts at a time when borrowing abroad became more difficult, necessitating a substantial cut in development outlays. The government responded in 1983 by devaluing the rupiah by 38 percent against the dollar to encourage non-oil exports and by instituting a new program of domestic taxation. Major changes in the financial system were also set in motion.

Monetary Policy and the Financial System

At the time of the 1983 reforms, Bank Indonesia relied on a system of individual bank credit ceilings as its primary defense against excessive domestic money growth. It also employed a complex system of rediscount credits to priority sectors (termed liquidity credits) and controlled the loan and deposit rates of the five state banks, which accounted for three-quarters of commercial bank deposits. Whenever reserve shortages developed, the central bank advanced liquidity credits to the banks.

Monetary policy goals were set in the context of an annual government-wide planning exercise linked to a five-year plan for the economy, one in which state enterprises played a major role. Bank Indonesia based allowable credit growth for each fiscal year on the money supply growth believed consistent with anticipated real growth and allowable inflation, after allowing for the expected behavior of the balance of payments. The central bank worked out with the Ministry of Finance credit ceilings for each of the large number of public enterprises. The openness of the financial system, with capital movements virtually free of controls and individuals permitted to hold dollar balances domestically, counseled a cautious approach to credit expansion. Fortunately, the central bank enjoyed considerable autonomy within government by virtue of the legal changes made in the 1960s to enable it to bring runaway inflation under control.

The 1983 reforms aimed at increasing the flow of public savings through the financial system and reducing the extension of subsidized credit by the central bank. The existing credit control system was abolished outright. Bank Indonesia was charged with developing means of pursuing annual monetary growth targets without interfering directly in the lending and deposit-taking activities of the commercial banks. The state banks were freed from controls over their deposit and lending rates, enabling them to compete more effectively with the private banks, which had grown rapidly in previous years by serving an active private business sector. Banks were also permitted to sell certificates of deposit for the first time. However, the concept of the state banks as engines of development lingered on. They retained their privileged position as channels for subsidized liquidity credits and remained the only institutions permitted to hold the deposits of state enterprises.

In developing indirect means of monetary control, Bank Indonesia confronted a money market that was still in a formative stage. It included an interbank market and a small market for the paper issued by non-bank
Developing a Revised Strategy of Monetary Control

After the reform, Bank Indonesia continued to prepare annual objectives for monetary growth related to the government’s five-year plan. It devised a format for tracking the monetary base weekly in relation to a target corresponding to the Bank’s annual monetary growth objectives. To foster indirect methods of monetary control, the central bank introduced in 1984 a redesigned discount window and its own central bank certificates (SBIs—Sertifikat Bank Indonesia). It discontinued paying interest to the banks on excess reserves, stimulating activity in the interbank market. By selling SBIs, maturing in one and three months, Bank Indonesia provided the banks with an investment outlet and could absorb excess reserves. The SBIs were sold weekly at auction, but the central bank controlled, and seldom changed, the rates it offered. Bank Indonesia named FICORINVEST, an NBF1 95 percent owned by it, to make a secondary market in the new instrument.

The central bank introduced two discount windows: Facility I to provide credit to meet liquidity needs for up to two weeks and Facility II to provide credit for two months to encourage banks to make term loans. It set the discount rates for use of the facilities well above the rates on short-term interbank deposits to emphasize that banks were to raise funds from depositors, not from the central bank. A bank borrowing at either window was not required to submit collateral other than its own promissory note.

These initial arrangements had one notable shortcoming. The central bank had no means of adding to reserves on its own initiative. In practice, the banks proved reluctant to use the discount window because of its high rates and also because of concern that such borrowing would reflect adversely on the bank’s creditworthiness and management. To meet liquidity needs, the banks, which maintained foreign exchange abroad about equal to Bank Indonesia’s own holdings, depended on selling foreign exchange to the central bank for same-day delivery. A serious problem for both economic and liquidity management arose in August-September 1984 when U.S. interest rates and the dollar’s exchange value rose sharply. Bank Indonesia allowed the rupiah to depreciate at a somewhat faster rate than previously against the dollar to spur the export sector. This move triggered a speculative outflow as banks and their customers sought to hedge against the possibility of another maxi-devaluation. Responding to the drain of bank reserves, rates rose as high as 90 percent in the overnight interbank market as banks scrambled for funds. Bank Indonesia relieved the strain by opening a special credit facility that enabled the banks to borrow for up to one year. This, together with the return flow of funds prompted by the high rates, restored liquidity and brought interest rates back down.

To give it a tool for supplying reserves in such circumstances, Bank Indonesia established regulations in early 1985 under which commercial banks and finance companies could issue trade bills and bankers’ acceptances (SBPUs—Surat Berharga Pasar Uang). The central bank also empowered FICORINVEST as its agent to discount the new instrument at an announced schedule of rates as well as to discount outstanding SBIs, the central bank’s own certificates. Only bank-endorsed SBPUs were made eligible for discount at FICORINVEST or Bank Indonesia. Bank Indonesia stood ready to discount paper for FICORINVEST at an attractive rate to the extent it could not finance its position elsewhere. The new facility provided banks a means of obtaining reserves indirectly at lower interest rates than the official discount rate.

Proceeding by trial and error, Bank Indonesia learned to manage the liquidity of the banking system quite smoothly, although it was somewhat handicapped by lack of timely information on the current level of reserves and the reserve outlook. The commercial banks maintained reserve requirements, calculated on the basis of contemporaneous liabilities, during four periods each month. Those with surplus reserves—ordinarily the state banks—invested in SBIs in the weekly auction at rates set by the central bank. Banks that found themselves short of reserves could discount their own SBPUs at FICORINVEST within the credit limits established by Bank Indonesia. They could also discount SBIs with FICORINVEST at more attractive rates than were available at the central bank’s discount window. Bank Indonesia thus made a two-way market through FICORINVEST that kept the overnight interbank rate from moving too widely. The banks avoided the discount window, preferring the cheaper alternatives available at FICORINVEST.

The market for SBIs and SBPUs began to develop. FICORINVEST was able to finance a portion of its portfolio of SBIs and SBPUs through repurchase agreements away...
from the central bank. It also resold the two instruments on an outright basis to a limited extent. The two-way market made by FICORINVEST also facilitated the transfer of funds within the banking system. The state banks were the principal buyers of SBIs, while the private and foreign banks relied on discounting their own SBPUs regularly to meet part of their financing requirements.

Problems of Economic and Liquidity Management

In pursuing its monetary growth objectives, Bank Indonesia confronted the openness of its financial system and the modest size of its exchange reserves. In 1985, against the background of declining U.S. interest rates and a weakening dollar, it was able to lower open market rates and its discount rate by about 3 percentage points in order to stimulate domestic economic activity. It was also able to allow the rupiah to depreciate against the dollar at a modest pace, to the same end. But public sensitivity to the possibility of a further maxi-devaluation remained a conditioning influence. Despite the adverse economic effects of a large further decline in oil prices, the central bank could not reduce SBI and SBPU rates further during the 18 months following August 1985. Unable to provide further stimulus through monetary policy, the authorities devalued the rupiah by 44 percent in September 1986.

The move caught nearly everyone by surprise, exacerbating anxieties of businesses and individuals accustomed to holding dollar, as well as rupiah, assets. While the size of the move should have defused fears of further devaluation, it did not. Large outflows of foreign exchange developed in late 1986. The monetary authorities chose to maintain the existing rate structure for SBIs and SBPUs in support of domestic economic growth. There was heavy discounting of SBPUs at FICORINVEST, sizable discounting of SBIs, and moderate use of the Facility 1 discount window at its penalty rate—all to finance the purchase of foreign exchange from Bank Indonesia. The reserve strains generated by the outflow resulted in a rise of about 3.5 percentage points in short-term interbank rates, a modest counter to the outflows themselves.

Although this tempest subsided, a much more serious storm began to build up in April 1987. Bank Indonesia initially tried to maintain its low interest rate policy, but this soon proved impossible as a full-blown exchange crisis emerged in May and June. Sharp increases in the SBI and SBPU rates proved insufficient to stem the tide. In late June the Government drained reserves on a massive scale by ordering four state institutions to withdraw Rp 900 billion from time deposits at the state banks and to purchase SBIs. The central bank raised its basic discount rate in four steps from 18.5 percent in April to 30 percent in early July. It also sharply reduced, and then eliminated, FICORINVEST’s committed credit lines for the purchase of SBPUs. The overnight interbank rate, which had been in a 13 to 14 percent range in April, rose to a 35 to 40 percent range in early July.

These drastic measures succeeded in defending the rupiah’s exchange rate and generating a large reflow of funds in the next few months. They also led Bank Indonesia to rethink its approach to reserve management. Rigidly fixing short-term interest rates had contributed to the crisis by inhibiting change. The central bank concluded that the large credit lines outstanding to the banks through FICORINVEST’s discount facilities posed an unacceptable risk of financing speculative outflows. It decided that henceforth it would deal in SBIs and SBPUs only on its own initiative, making its own judgements on the scale of operations and the rates at which it would deal.

The reflux of reserves led to excess liquidity that provided a favorable environment for introducing sales of seven-day SBIs in the market at auction nearly every day. By October 1987, the central bank had negotiated a smooth transition of the overnight interbank rate back to a range of 10.5 percent to 12.25 percent. Given the excess liquidity, there were few occasions on which the authorities bought SBPUs competitively in the market, so the sales of SBIs became the main instrument for liquidity management. The promising SBPU market dried up without the involvement of the central bank, reducing the adjustment options available to the private banks that normally had loan demands in excess of their deposit generating capacity. The auction technique did, however, enable the central bank to signal the direction in which it wished to nudge interest rates by the cutoff rate it set in the auction. Bank Indonesia itself found the new rate flexibility a great improvement over administered rates.

Useful as the auctions were, a number of problems arose as the central bank regularly auctioned seven-day SBIs to absorb liquidity and occasionally bought SBPUs under repurchase agreements. The seven-day instrument was too short for any secondary market to develop. The state banks, which were the chief repositories of liquidity, bought only what they needed. In fact, they were able to extract a substantial spread over the rate they were receiving in overnight market by virtue of their market power. Bank Indonesia could not effectively bring pressure on the banks through sales because they could always let their existing holdings mature over the next few days without replacement. Accordingly, it had difficulty in February-March 1988 when it sought to nudge rates higher to forestall exchange rate speculation.
when the cabinet changed. The state banks simply did not bid to take up additional SBIs at the higher rate levels desired.

Further Developments

The appointment of a new cabinet and central bank governor in April 1988 led to an intensive review of the financial system. In October the government proclaimed a comprehensive set of measures to make the financial system more competitive and to give Bank Indonesia scope for more effective open market operations. They authorized the establishment of new national banks, joint ventures with foreign banks, and rural credit banks, subject to minimum capital requirements. They permitted non-bank state and local government enterprises to hold up to half of their funds with private national banks, allowing these banks to compete for such deposits for the first time. The regulations established legal limits on the credits that banks could extend to a single borrower, but expanded the ability of banks to provide foreign exchange services without prior approval. Non-bank financial institutions were also allowed to open a branch office in each of seven major cities.

Bank Indonesia reduced reserve requirements from 15 percent to 2 percent of banks' third party liabilities and extended the requirements to NBFIs. This change helped offset a flat tax of 15 percent just imposed on the interest that the banks paid on time deposits and certificates of deposit. The combined effect was to shift to direct taxation for the benefit of the government from the indirect tax of reserve requirements, which accrued to the central bank. The banks were required initially to buy three-month and six-month SBIs equal to 80 percent of the cut in their requirements.

Bank Indonesia, operating under the authority of the reform package, took steps to develop further its open market operations and encourage the growth of the money market. It introduced a two-day lag in the settlement of foreign exchange transactions, cutting off the access to reserves on a same-day basis. In January 1989, it appointed a group of 15 private banks and NBFIs to act as underwriters of the SBI auctions and as market makers in the secondary market. The central bank required all bids to be submitted through the market makers, paying them a small commission on their successful bids. It also improved the mechanism for transferring ownership of SBIs, so that the new dealers could re-sell them to non-banks as well as banks, either outright or under repurchase agreement.

The central bank began selling one-month SBIs in a weekly auction in January 1989, and introduced a three-month maturity in May. At this stage it chose not to announce in advance the amount to be auctioned. This proved wise because bidding by the state banks proved erratic, depending on whether they were flush with funds or not. When the Ministry of Finance made large outpayments to government enterprise accounts, a state bank receiving such funds would make large bids in the auction at a narrow scale of rates, but once the funds were spent, it might not bid at all. The 15 dealers chosen by the central bank were all small in size relative to the state banks, so they made only small bids in the auction for their own account. They served primarily as conduits for the much larger bids of the state banks and were unable to make bids of any size in the secondary market.

The auctions themselves proceeded quite smoothly with Bank Indonesia varying the amount sold in accordance with the bids received. The private banks and the NBFIs soon found that the new SBIs, and the compulsory ones issued the previous October, could be sold under short-term repurchase agreements (repos) for a week or longer at rates lower than those at which they could borrow unsecured in the interbank market. The dealers also financed profitably their positions through short-term repos. There was some selling by private banks to the state banks of the longer SBIs issued after the October package, but outright buying and selling of the newly auctioned issues was on a limited scale.

Bank Indonesia continued to operate almost daily in the market to maintain reasonable stability in the overnight interbank rate. Each business day, the manager of operations would consider the ease or tightness of the money market in relation to his objectives. Taking account of the limited information available on the reserve outlook, he would decide whether to sell seven-day SBIs the next day or make repos on SBPUs. If the central bank's economic management called for lowering interest rates, then he would not satisfy the demand for longer-dated SBIs in the weekly auction. The banks would then have to dispose of their excesses in the interbank market or by buying seven-day SBIs, which carried a lower interest rate than the longer maturities. Coordinating daily operations with the weekly auctions in this way, in 1989 Bank Indonesia was able to maintain reasonable stability in the overnight interbank rate in the short run while lowering its level progressively over the period.

Lessons of the Experience to Date

Bank Indonesia has made notable progress in developing more flexible techniques for managing liquidity and pursuing its monetary objectives. The road has been rather rocky, punctuated by periodic disturbances stemming from devaluation fears and currency outflows. But
the authorities have responded to each challenge with institutional changes that have moved toward a more market-oriented approach. They have begun to adjust short-term interest rates flexibly in accordance with economic and foreign exchange market developments. By maintaining a steady, modest pace of depreciation of the rupiah against the dollar, they seem also to have reduced significantly expectations of further maxi-devaluations. This has permitted a reduction in the interest rate premium that previously was necessary to keep from losing exchange reserves.

The Indonesian experience indicates that it takes time to move from a system of administered controls to a more market-oriented one. Central bankers tend to see credit controls as powerful tools yielding predictable results, and they enjoy the power such controls give them. Relinquishing controls means giving up the familiar—setting limits on quantities and interest rates—for the uncertain world of influencing deposit growth by changing interest rates and affecting the demand for deposits and other financial assets. The administrative mindset does not change overnight. Market development needs to proceed step by step so that both the authorities and financial institutions gain confidence in their ability to function in the evolving system. The central bank has to keep close watch on developments yet avoid bailing out poor management decisions in the financial sector.

In Indonesia both the central bank and the financial community are still learning how to operate in a competitive market environment. Bank Indonesia can now manage liquidity effectively with the present market. But the secondary market for SBIs and SBPUs lacks sufficient capital and operational expertise to allow the central bank to affect interest rates with the speed that would be needed to cope with the kind of exchange flows experienced in the past. There is more it can do to encourage a better secondary market.

One need is to distinguish clearly the weekly auctions of longer-dated SBIs from the daily sales of seven-day or shorter maturities. To develop the secondary market it is desirable to build up a regular and predictable supply of three-month SBIs, leaving it to dealers to make secondary markets in the outstanding issues. Eliminating the weekly auction of four-week SBIs would be helpful, since selling that maturity now enables investors to obtain them from the central bank without recourse to the secondary market. Pre-announcing the amount to be sold each week of the three-month issue would enable bidders to know the total amount for which they must compete. It should result in some variation in the cutoff rate from week to week and also promote swapping of issues already outstanding for the new issue.

Whereas the weekly auctions could be standardized in amount, Bank Indonesia's daily operations will necessarily vary in size, depending on the reserve situation. There is no need to restrict the sales of short-dated SBIs to a seven-day maturity. There may be times when excess liquidity is so great that Bank Indonesia would prefer to sell SBIs maturing in two or three days in order to mop up such liquidity without creating a reserve shortage in the next reserve-averaging period. The central bank also needs to use its regulations and operations to promote a level playing field for financial competition, countering the tendency of the state banks to exert market power. At the same time, better coordination is needed with the Ministry of Finance to develop a mechanism for reducing the size of the net flows in and out of its central bank account. Bank Indonesia's daily operations could then be kept within the developing capacity of the market.

The banks and dealers still rely too much on auctions conducted by Bank Indonesia rather than operating as competitive, profit-oriented units. Some big banks tend to rely on the auctions to adjust their reserve positions even though they could trade profitably in the secondary market. The dealers depend on Bank Indonesia's commissions and maturity transformation—financing longer paper with short-term funds—for their profitability. They have been content to earn the wide spread between the rates on longer-dated central bank paper and their financing costs without much concern for the risk that interest rates may fluctuate. They are likely to quit making markets at the first sign of trouble and turn to the central bank for rescue. The dealers are not large enough to accommodate the potential activity of the state banks in SBIs. But they could do much more than they have done thus far to make small markets and educate customers about the gains to be earned by riding the yield curve.

These are not unusual teething problems for a new market whose participants are learning to manage interest rate risk. In the past, the dominant position of the state banks has posed a problem because of the market power they exert. Already there are signs of keen competition in the market for the deposits of state enterprises that may alleviate this problem. The central bank itself can reinforce market competition through its own operations. It must transact business only on a best-price basis and avoid supplying SBIs to state banks that have missed in the auction. Bank Indonesia should require dealers to sell SBIs outright to non-bank customers and stand ready to bid in the secondary market on a scale commensurate with their capital position. It should weed out those who only take the central bank's commissions for submitting the bids of others in the auctions.
Bank Indonesia needs as well to develop a strategy for improving the market in bank paper: the SBPU. Completely phasing out central bank support for that market through FICORINVEST in 1987 was a mistake. The Bank can help reinvigorate the market by buying SBPUs periodically from the dealers on an outright basis. Its SBI marketing effort can also help if the volume of three-month SBPs in bank portfolios can be built up sufficiently so that it alternates between purchases and sales in its daily open-market operation. That would afford more opportunities for participating in the SBPU market.

In the final analysis, it is the market participants who have to develop the money market. The central bank can carry out its liquidity management in ways that use the market. But the market's rationale has to rest on the service it provides to financial institutions and the economy at large. The steepness of the yield curve suggests that there are ample incentives for the money market to make an important contribution to a more efficient allocation of financial resources. One should expect further progress in Indonesia.

Notes


Discussion

Question: If you were advising the government of a developing country on setting up a market for short-term government securities, what could influence your choice as to whether it should be a market in treasury bills or central bank bills? Does the fiscal position of the government have anything to do with the choice?

Mr. Meek: I would think so, yes. In general, it is in the central bank's interest to try to develop market mechanisms for raising treasury cash. Otherwise, the treasury is knocking at the central bank's door. So, given the policy mandates of the central bank, it has a large self-interest in trying to work with the treasury, to get the treasury to issue securities as market instruments. A treasury bill market is a good place to start.

Indonesia was a special case because it had no treasury instruments. But I think you have to look at each situation on its own. The important thing is to find something that fits with whatever stage of development exists in the country. For example, if a market has already started in commercial bankers' acceptances, then the central bank ought to participate in that market.

It may be of some interest that one of the purposes in founding the U.S. Federal Reserve System—one of the narrow self-interests of the commercial banks—was to authorize U.S. bankers' acceptances. They were tired of financing all these things with bills drawn on London. They did not have the legal authority to have bankers' acceptances in the United States. So, embedded in the Federal Reserve Act was a commitment to try to develop a market for bankers' acceptances. The first governor of the New York Reserve Bank had been the president of Bankers Trust Company. One of the major activities of the central bank in the 1920s was the effort to develop a New York market for bankers' acceptances. This is a case in point of a central bank setting out to develop a market. The treasury bill market also came along in the 1920s, at about the same time.

I do not know why they chose to auction a 91-day bill on one particular date and have it mature on a single date. But that was highly beneficial to the development of a treasury securities market because it gave dealers a role in underwriting the issue and financing positions with repurchase agreements. I think that choice was important in the market's development.

In part, differences between the U.S. and U.K. government debt markets spring from very different debt management philosophies. The tradition in the United Kingdom has been to finance the government at the long-term end of the market with coupon issues—giltswith rather than with short-term instruments. The United States pursued over the years—to its disadvantage in some respects—a policy of debt marketing: "We have something for everybody. We have bill auctions every week, and every month we have a two-year issue, a three-year issue. We have a five-year issue, a ten-year is-
sue, and so on." The U.S. Treasury is unconcerned that everything is not financed on a long-term basis. And so the U.S. marketable debt has a much shorter average maturity than U.K. debt.

Mr. Grenville: I thought I would say a word for the other side, just in case anyone things the U.K. system has nothing at all in its favor. We have a system in Australia like that in the United Kingdom. Those who want to buy treasury notes at tender can get them at any time in the following week; the notes mature 90 days from date of purchase. This approach has the advantage of putting an automatic shock absorber into the system. It is left to the market to work out on which days over the next week there will be excess liquidity. The market can then get rid of this liquidity by taking up treasury notes on those particular days. It is just one way of handing over to the market a bit more of the decision-making process and smoothing out the liquidity changes. We do have that bit of advantage.

Mr. Meek: Of course, that stems from the fact that the Australian system, like that of the United Kingdom, requires that the system be balanced out at the end of each day. If you have reserve requirements, averaging over a period of time is obviously much easier for all concerned.

Question: You mentioned the benefits of having a two-week period for averaging reserves to meet reserve requirements, rather than a one-week period. Is that always the case? Would it not depend on the stage of financial development of that particular economy?

Mr. Meek: Oh sure, I think that can be tailored to the individual country. My suggestion to Indonesia (of a two-week period) several years ago was made at a time when they had contemporaneous reserve requirements. But the actual state of reserves was not known until many weeks after the fact. So the central bank had no idea of the banks' needs for reserves. The managers have no guidance as to the demand for reserves to meet requirements.

In the case of Indonesia, this was not a very important or disturbing problem; they do not have the kind of volatility that occurs in the U.S. banking system. It does not really matter whether or not the reserve requirements are contemporaneous. If you have lagged reserve requirements, the important thing is that all the banks know at the beginning of the reserve holding period what their requirements are. And the central bank knows their requirements. That knowledge is of some value.

Mr. Honohan: When you say it was useful to move from a one-week to a two-week reserve maintenance period, do you mean that it helped to lower the volatility of interest rates?

Mr. Meek: By useful, I meant the market moved interest rates in an appropriate direction without central bank intervention. In the U.S. system, for example, when Wednesday was the settlement day in a one-week period and Friday counted for three days of the seven, the room to maneuver or bet on the future course of interest rates was modest. The two-week period gave the banks more scope for betting on the future course of interest rates. If the Federal Reserve trading desk had a borrowings target when a lot of bullish economic information came out, desk managers would say the Federal Reserve will have to tighten up interest rates. So they would go long early in the period to ensure their reserve requirements were covered. The overall effect was to firm up interest rates.

If there were a series of strong economic data, the federal funds rate might firm up by a percentage point over time, simply because expectations about the future had changed. The Federal Reserve was in the enviable position of being able to sit back. We were not intervening on the funds rate; we did not have narrow limits on it. If the economic data continued to move the same way, some of the move toward tighter money would already have taken place. It helped overcome the internal lag in the central bank's decision-making process. On the other hand, if the economic data moved differently and expectations changed, the funds rate would come back down. There was a range of plus or minus one percentage point on the funds rate that the market itself would move by virtue of having a two-week period, whereas the one-week period lacked that.

My observation from one visit to the German Bundesbank was that their one-month reserve period gave them even more of a market-led effect on interest rates.

Question: I want to follow up on the last question. In an inflationary economy, would you suggest introducing a money market at once or controlling inflation first before proceeding to the creation of the money market?

Mr. Meek: I think that developing a money market, a primary and secondary market in treasury debt, is something that should be on the agenda of the central bank all the time. Countries have had a long period of time, twenty years or more, to develop credit controls and other means of financial control that we all now think are not optimal. Over the past ten years, the countries themselves have learned that this kind of system is inefficient, leads to a misallocation of resources, and is not good for
long-term growth. There is a fashion in these things; ten years ago very few persons had any interest in the financial markets in developing countries. Now it is all the rage.

Question: When credit controls are removed, sometimes the central bank tends to start changing the reserve requirements. What has been the result, especially when reserve requirements were initially raised, of trying to reduce them again?

Mr. Meek: I am sure other people in the room have a better fix on that than I have. My own personal view is that it depends very much on the development problems in the particular country. I agree with all of the arguments for a “level playing field”—low reserve requirements and such things—under ideal circumstances. But in a country that has great difficulty collecting taxes, then some level of reserve requirements doesn’t seem like a bad idea to me. Of course it cannot last for a long period of time.

To return to the example of Indonesia, they cut their reserve requirements from 15 percent to 2 percent, but then imposed a 15 percent tax on interest paid by commercial banks to depositors, which is really just the same thing. The only real difference was that instead of the central bank receiving the earnings, the treasury got them.

I become a little concerned that some advisers perhaps over-emphasize the importance of the level playing field, equalizing opportunities, and avoiding any incentives that may lead one part of the market to develop faster than other parts. When a developing country is still at a fairly early stage of development, I think those may be ideals and goals toward which the system should evolve over time. But I do not know that they are the most pressing immediate concerns.

Question: Would you advocate varying reserve requirements from time to time as a monetary instrument?

Mr. Meek: Well, that affects the wedge between the interest rate paid on deposits and interest rates charged borrowers. That may have some value. Too frequently, though, I think reserve requirements have been raised and liquid asset requirements have been installed primarily to channel funds to the government from the private sector. All of this redounds to the disadvantage of the country’s economic development. I’m not sure one should encourage the use of reserve requirements, but I don’t really have a position on it.

Mr. Honohan: If reserve requirements are often used, and are perceived, as a fiscal instrument and not as a monetary instrument, would not that fact militate against their introduction in a system where previously there were none? Would it not be dangerous to blur the distinction between fiscal objectives and fiscal instruments on the one hand and monetary objectives on the other?

Mr. Meek: Yes, I think that risk exists. However, at times circumstances lead us to recommend second-best or third-best measures. I had thought that I would never advocate liquid asset requirements. Then I went to China to advise them on debt management. The Chinese had sold nine-year bonds, and then five-year bonds, three-year bonds, and two-year bonds; 1990 is the year they all come due. They have no mechanism for refunding. And the banking system owns almost none of the bonds. I suggested that as a temporizing measure they might introduce a liquid asset requirements temporarily to, in effect, provide the funds that they could use to pay off the existing bonds. I have been told they did not accept my advice. They just made the state enterprises hold onto their bonds.

Mr. Honohan: I don’t know whether that is better or worse than one country, which shall remain nameless, that organizes its bond sales by paying off all the old bonds in November and issuing new bonds in February. They haven’t worked out how to bridge the November to February period.

Question: Do you have a rule of thumb for when the central bank ought to exit from making the market? To what indicators might it look when deciding to begin getting out of setting prices?

Mr. Meek: I think the whole movement toward markets and toward abandoning credit ceilings as a monetary control is the basic issue. That issue need not be finally decided when the market is started, but the central bank must commit to moving in the direction of markets.

As an example, Pakistan had a credit control program that involved ceilings on all the commercial banks. They had a simple rule for issuing some treasury securities. They issued 91-day treasury bills on any day at 6 percent, and they were prepared to repurchase them at 6.05 percent. The 6 percent was unrelated to the market rate, which would have had to be around 8 percent. Rather, it performed the function of liquidity management perfectly well. Anyone with excess funds bought bills at 6 percent; if someone needed funds, he could sell bills
back to the central bank at 6.05 percent. The banking system manages the whole liquidity system through this kind of mechanism, but it is not a secondary market or a market in which treasury bills have any significant role as a money market instrument.

I think the decision should be made on a case-by-case basis. Even so, I think there are more opportunities than may at first appear. I shall never forget advising some years ago in Portugal. It was said that, because it was just a small country, they could not aspire to open market operations for a long time, if ever. After I was there about a week, I pointed out that they were already doing open market operations. Three times a week they were having an auction of participations in the central bank's portfolio. Their explanation was that, because they had nationalized all the banks and had a credit ceiling, the banks attracted far more deposits than they could utilize for lending within the credit ceiling. The central bank was sharing its higher-yielding treasury securities, so the nationalized banks would not go bankrupt. To them, that was not an open market operation, it was mopping up excess liquidity in the system. So there are many ways to begin developing a market.

Question: What kinds of financial institutions are able to trade in central bank certificates in Indonesia?

Mr. Meek: Central bank certificates can now be bought by anyone. They are bought initially through the dealers, who act as agents. I have encouraged the Indonesians to direct sales efforts towards the insurance companies and other financial institutions who are natural residual holders of liquid balances in this form. Dealers have begun by contracting repos (repurchase agreements) with them for a week. The rate these institutions receive is better than they can get at a bank. As a result, they have developed a fairly good repo market. The central bank did develop all the housekeeping facilities, and so on, to permit fairly rapid transactions in the paper.

That is just what needs to be done; one needs to develop a nonbank market for the central bank paper. Originally, holders of central bank certificates were limited to the banks, but now anyone can hold them.

Question: Is there also an interbank market in Indonesia, and who are the main suppliers of funds to it?

Mr. Meek: Yes, indeed. The state banks, which hold 75 percent of deposits, typically are the ones that receive large government deposits. They do not know how long they are going to have them, so these banks have a high liquidity preference. By and large, their loan demand is less than that of the private banks, which have close ties to private enterprises. As a result, the borrowers in the interbank market are largely the national private and foreign banks. One of the monetary reforms was to drop the limitation on the amount a participant could borrow in the interbank market, because these banks had good loan demand.

Although the state banks are suppliers to the interbank market, the rates at which they are willing to supply indicate their managers have not been completely converted to maximizing profits. For example, rather than placing excess reserves available in the afternoon of one day, if the rate is lower than they expect, they will hold the reserves for fear of lowering rates on money to be placed the next day. They end up holding excess reserves because they do not act to maximize profit.

I think this is a "teething" problem; these banks are just learning how to function in competitive markets and in a more competitive banking system. One of the healthy aspects is that the private banks have generated a lot of competition for deposits. When we visited there last year, we found that this competition had produced some unexpected results. Whereas the central bank and government were anxious to lower interest rates, the state banks were afraid to lower their rates because they would lose deposits to the private banks. As one would expect, all this is getting worked out over time.

Question: You said that the recipients would receive dollar deposits? Was there much currency substitution in favor of the dollar? Was there capital outflow to Singapore?

Mr. Meek: I think the answer involves the difference between wholesale and retail. That is, individuals can hold time deposits that are denominated in dollars and carry an interest rate that follows rates in Singapore, though with some lag. Individuals with small holdings do not have direct access to Singapore. There is not a local dollar market that pays a wholesale rate, in some sense, for dollar deposits. That market is only available in Singapore. Businessmen or bankers who have larger holdings and are worried about devaluation turn in their rupiahs to the central bank for dollars and place the dollars in Singapore.

Mr. Grenville: There were two ways by which enterprises could bypass the local banker. If they could not get liquidity within the credit ceiling, they could get it on the local market at the market rate. That bypassed the commercial banks, but they paid much more for it. Or they could try to pick it up in Singapore, where they could get credit denominated in foreign currency.
Mr. Meek: Also, the central bank provided swap facilities for foreign currency. But not everybody could access Singapore credit.

Mr. Honohan: In some countries the authorities maintained credit targets for the sake of the current account in the balance of payments. They want to restrain overall expenditures to get the current account right. In that case, this kind of leakage to Singapore or some other readily available market is a big problem. In other cases, the authorities do not care about the current account; they just want to ensure that no official financing is involved. If they can encourage private capital inflows, that is well and good. Private inflows do not require official financing of the balance of payments. Then the money from Singapore is treated as welcome. However, since it might leave quickly in some cases, it is a shakier kind of financing.

Question: You talked about the other mechanisms for liquidity management. Could the central bank have managed bank liquidity by withholding or increasing liquidity credits?

Mr. Meek: They used that approach at times in their credit restraint program, which produced a liquidity shortage. And in really tight times, they would make such credits available. Basically, though, the timing of priority credits is not under the central bank's control. They originate in the commercial banks and come to the central bank. It is an uncontrolled element to which the central bank must respond.

Part of the problem with the steep yield curve is the inflow and outflow of the treasury's balances at the central bank. These tend to be large relative to the size of the market. So a question arises on whether to supplement the open market operation with a mechanism for placing treasury funds with the banks. Malaysia for example, did this at one point, although it was not for the purpose I am suggesting. The central bank was allocated certain treasury funds that it could deposit with banks.

However, in Indonesia I have not yet detected any great enthusiasm in the central bank for a mechanism that would place treasury deposits away from it. In lieu of that, clearly a much better informational situation is needed, one in which the treasury and the central bank share intelligence on big receipts or deposits. Some effort has been made in that direction, but it is still imperfect.

Most central bankers with experience in open market operations would agree in the utility of being able to forecast the balance sheet. I suggested to the Indonesians five years ago that it would be good to start forecasting their balance sheet. There is a discipline this brings: a knowledge of seasonal demands. The central bank people already have a visceral sense for that; they know there are certain demands for cash, and so on.

And yet, although forecasting the future balance sheet is useful and teaches those involved a good deal, it is not necessary for effective conduct of open market operations. Indonesia has a complete and comprehensive system even though the central bank does not forecast the demand for reserves. The interbank rate itself tells one whether the system is short or over-supplied. Every afternoon around six o'clock, the Deputy Governor decides whether or not to have an auction of seven-day certificates the next day. He knows what the foreign exchange market has done and what central bank certificates are maturing. He can guess whether the system will be short or long the next day and decide whether or not to do something. So, desirable though it may be, one does not need projections of reserves to conduct open market operations.

In the Indonesian case, there was a one-day lag. They would announce at the end of one day that they were going to auction certificates or make repos the next day. So they were not reading the events of the day on which an operation took place.

Mr. Grenville: In Australia, where we have good statistics and a good relation between the central bank and the government, we do this whole task. We do these daily forecasts of liquidity, as I am sure they do here in the United States, going out several weeks ahead. That process is very useful for our understanding of the market. We even publish each morning at 9:30 a.m. the amount by which we think the system will be down or up. So we stick our necks out. But when we get the bids in from people who want to do business with us, we may change our minds on how much we want to do in the market that day. We can make mistakes; the market sometimes has a better feel for what is happening with liquidity, and it lets us know. Just because we plan to do $A500 million in market operations, does not mean we will actually do $A500 million. If you set it up right, the market can tell you a lot.

Mr. Meek: Yes, in the Indonesian case with contemporaneous accounting, that is the best guidance the central bank has. The information the banks have about their position is much more up to date than the central bank's information about their position.

Question: With respect to the issue of credit control and the market, it seems that the important question is whether the official interest rate right now is more or
less in line with the world interest rate. If it is, the authorities would not have a big problem in trying to control credit.

Mr. Meek: In their situation with modest exchange reserves and a completely open system, they cannot pursue a different interest rate policy. Since I visited there, the large premium for devaluation risk has diminished considerably. They are conducting their operations in such way that people are now beginning to believe that the gradual adjustment of the exchange rate is enough to meet their needs and that there will not be another maxi-devaluation.

The implications of those maxi-devaluations for monetary policy are interesting. They limited what the central bank could do to lower interest rates, because they resulted in a risk premium which kept rates higher than many people thought they should be.

Question: For some countries, foreign currency deposits are quite large. What was the size of the foreign-denominated deposits in Indonesia at the time of the maxi-devaluation? They were not that large, were they?

Mr. Meek: They were not huge, no. They were limited mostly to urban areas and reasonably sophisticated people.

Mr. Honohan: I have a question about these devaluations. A crucial, difficult issue comes up for a central bank that is operating one of these unsteady exchange rate policies, one that is supposedly fixed but is being adjusted at intervals by these maxi-devaluations. As you described the risk premium, it is more than could be justified over long periods of devaluations.

This is a common phenomenon, but what should be the central bank's response to a surge in this premium? I accept that the central bank must live with the premium and cannot avoid responsibility for the effect of the devaluation. The dilemma arises when lenders assume that another maxi-devaluation will occur, probably soon, but the central bank knows there is no plan for a maxi-devaluation. The situation is a bit like the crises of the nineteenth century: what should central bank policy be when there is a run on the overall system? The old solution was that the central bank should lend as much as possible.

Mr. Meek: At high rates.

Mr. Honohan: Or, at least in practice, just to provide all the liquidity that is required. Now, that might be the appropriate response for the hypothetical central bank that is sure it will not devalue and has the means of providing the liquidity, that is, has access to large reserves. In the European arrangement, where unlimited reserves are available, that could be the correct response for a government that is sure where it is going: either the country should devalue at once or it should lend in unlimited amounts. In practice, this route is not often followed; spikes in interest rates occur before devaluations in the European system.

However, the option of lending in unlimited amounts is not available to Indonesia. Therefore, there appears to be a deficiency in the arrangements for this kind of exchange rate system. If the country does not have the credit facilities to back up its policy on exchange rate, perhaps it should go to a much more flexible exchange rate system instead of one with temporary pegs and major devaluation jumps at intervals.

Mr. Meek: I think the latter is what the Indonesians have undertaken to do. That approach has usually washed out fairly quickly. For example, they made the mistake in December 1986 of trying to ride the crisis through. They had no intention of devaluing, and so on, but that just culminated in a much bigger crisis later on. Since that time, things have been reasonably well behaved.

Mr. Grenville: The Indonesians offered to swap local currency for foreign currency. This swap facility was not open for everyone but open for those with heavy exchange rate exposure. That, in a sense, is making a bet on whether there will be a devaluation. If the swap offer is used and no devaluation occurs, then the central bank is all right. If the devaluation does happen, the central bank has taken major losses.

Mr. Honohan: Yes, that is the key point. Is the government sure it can maintain the rates? In the case as described, which may have been an oversimplification, the central bank knew that it did not want to devalue and had no intention of doing so. If it can stay with that position, the dice are loaded; it knows that it will win the bet. If the bank's actions indicate that it knows it will win the bet, when it offers the bet nobody will take it. However, to hedge the bet by saying that this week the interest rate is 20 percent, next week it will be 23 percent, reveals a lack of confidence.

Mr. Grenville: But when the bet is much bigger than the foreign exchange reserves, the central bank gets worried. They did not get to that stage, but they went to the stage where foreign currency swaps were not far short of their total foreign exchange reserves.
Mr. Honohan: Yes, and central banks lose these bets because, as in the case of the Philippines, they are forced to take the bet. They probably knew they would lose it, and they did lose it.

Mr. Meek: For a central banker in a situation like that in Indonesia, the best response is a quick defense. The sharp rise in interest rates in the middle of 1987 evoked many complaints. Yet, it is not clear that the rise had any lasting economic consequences. In fact, I think it formed the basis for the growing confidence that there would not be another maxi-devaluation.

Mr. Grenville: The two things go together. One very good move the Indonesians made was to price the use of the currency swap facility in line with the interest rates. The premium (or cost) of the swap was based on the difference between domestic (i.e., rupiah) and foreign (i.e., U.S. dollar) interest rates. As domestic interest rates rose, the swap premium also rose. While the central bank was offering the bet, it was also making the bet progressively more in its favor. If it wins the bet, it is in a very good position.

Mr. Honohan: If a rise in short-term interest rates for several months is not costly for the economy and for investment decisions and business confidence, then surely one should go for the short-term rise. Still, I am not sure it is without significant costs. Those costs could be a heavy price to pay in situations where the country should just devalue at once. In other cases, the country will be able to ride it out; if the central bank is not wrong, sooner or later the money has to come back. If it can hold out, it will be all right.

Mr. Caprio: In general, the Central Bank has to guard against a common occupational hazard, to wit, that of not recognizing when a disequilibrium is fundamental. At least a part of the "art of central banking" involves making such difficult decisions.

Question: I think that betting against the market is a dangerous path to follow. If there is an expectation in the market, there is little you can do about it. In 1982, the Argentine central bank went into this rough exercise. The result was that, as they say in Argentina, "all the losses were socialized." The private sector was completely wiped out by the high cost of the debt in foreign currency. All the losses were taken by the central bank. So I think it is very dangerous to try to intervene in a market, for the central bank to take such a high risk.

In the case of Indonesia, I understand there were some dollar-denominated deposits, which the system apparently was able to continue intermediating despite the expectation of devaluation. Perhaps there were also dollar-denominated loans. When the banks receive a deposit in dollars, what do they do? Do they also lend in dollars? That is one solution; another would be to index deposits or loans denominated in dollars, or to index bonds to the dollar. Indexation is always one way to cope with a devaluation risk. Mexico has followed this course for the last couple of years. Real domestic interest rates in Mexico have been extremely high. The government has begun to issue indexed bonds; this allows the banking system to index deposits and loans in dollars. But the dollar interest rate domestically is still high, which proves the problem is not just the expectation of devaluation but also some risk of default. There is no financial engineering that can solve this problem.

Mr. Honohan: I think you are saying that countries in volatile situations without significant foreign exchange reserves really cannot commit to a fixed exchange rate without heavy costs. A fixed exchange rate policy, where the possibility of devaluation exists, is a risky policy to follow.

Note

1. Editor Note: This point was emphasized by Deputy Governor Lin of Bank Negara Malaysia; see chapter 11.
The Use of Monetary Policy Instruments by Developing Countries

R. Barry Johnston

Today's session is entitled nuts and bolts, and this lecture is on new instruments and techniques. Before I get down to "nuts and bolts," I think it is worth reminding ourselves that the types of instruments and techniques I will describe are developed in pursuit of broader objectives for economic growth and development. I stress this because the transformation to a more market-oriented financial systems is not necessarily easy to accomplish. It often involves a fundamental reorientation of thinking in the central bank as regards its role in allocating financial resources, the commercialization of state-owned financial institutions and in the government concerning the payment of market-related interest rates on its debt.

The reform of monetary instruments should also be viewed as only part of broader financial reforms which aim at making the financial system more responsive to market forces and more competitive. I would include in this:

1. Steps to liberalize interest rates
2. A reduced reliance on direct controls to allocate credit and the removal of other discriminatory regulations that inhibit competition between financial institutions and fragment the financial system
3. A reduction in the barriers to entry of new financial institutions and the exit and restructuring of existing inefficient institutions
4. The development of new financial markets and new financial instruments

Financial reform is in its turn an integral part of broader economic liberalization that involves a shift from allocating resources through directives, controls, and subsidies toward a greater role for market forces.

Why Is There a Need to Reform Monetary Control Techniques?

The system of monetary control in most developing countries has typically involved some if not all of the following elements: direct controls on interest rates (including preferential rates for certain loan categories); aggregate and individual bank credit ceilings; selective credit controls and preferential central bank refinance facilities to direct credit to priority sectors; and high reserve and liquid asset requirements, designed both to absorb liquidity and to provide government deficit finance.

The direct controls have a number of drawbacks. They often become ineffective over time as an instrument of monetary control and inhibit efficient resource allocation. Credit ceilings and other direct controls force institutions into portfolio positions that they would not otherwise voluntarily accept. Hence, banks and their customers have incentives to avoid the direct controls. The implicit tax imposed on commercial banks, and thus on their borrowers and depositors, by credit ceilings, interest rate controls, and high (but low- or non-renumerated) reserve and liquid asset ratio requirements, encourages the emergence of other, unregulated, financial intermediaries and instruments that compete with the regulated ones. This weakens monetary control by eroding the effectiveness of the direct control and distorts monetary indicators.

Monetary control is also weakened when credit ceilings involve a buildup of excess liquidity at regulated institutions, as this discourages deposit-taking by regulated institutions, and in turn inhibits savings mobilization or causes disintermediation. Savings mobilization may not be promoted simply by mandating positive real deposit rates at regulated institutions, as they may either turn away depositors or find ways of paying lower effective deposit rates. It is generally not possible to control both the cost and quantity of credit, although in practice this is often attempted using direct controls.

The efficiency of credit allocation is also adversely affected by direct controls. It is difficult to design procedures that do not penalize more efficient institutions,
and the support of inefficient institutions may lead to higher average transaction margins and lending spreads. High liquid asset ratios create captive markets for government securities and an inappropriate pricing of credit, including a substantial interest subsidy to government. With direct controls, little attention is paid to developing money and capital markets, which are central to the efficient allocation of resources.

**Key Elements in a Liberal Monetary Control Framework**

The main elements of the reform of monetary control instruments are

1. The development of a framework for making decisions about interest rates and the path of financial variables in a liberal system
2. The introduction of new techniques for government domestic debt management
3. A reform of central bank operations and facilities
4. Supporting institutional reforms.

**The Monetary Control Framework**

In a liberal system, the main instrument of monetary control is the central bank's control over the stock of reserve money (cash and balances with the central bank) and hence over money market interest rates. Money market rates, in turn, affect other lending and deposit rates. Such a system does not rely on high or even compulsory reserve or liquid asset requirements but only on the central bank's ability to manage its own balance sheet and to control the terms at which it is willing to provide assistance to cover reserve shortages.

The central element of the indirect approach to monetary control is therefore the central bank's control over the items in its own balance sheet. Paul Meek has described what these items are. Table 3-1 breaks these items down into nondiscretionary factors—those which are beyond the short-term control of the central bank—and the discretionary operations of the central bank, which can be used to manage the supply of reserve money relative to the demand for it, to meet required and precautionary reserve balances or the level of money market interest rates.

The framework for management can be formalized by developing a reserve money program that involves forecasting the main nondiscretionary elements and setting out the options for the discretionary factors in order to achieve policy objectives, or to adjust the policy targets in response to unanticipated movements in reserve money components. The establishment of such a framework requires a blend of economic and statistical analysis and operational experience and often involves reorganization in the treasury and central bank. The treasury needs to be able to monitor and forecast its own cash position, while the central bank has to develop the framework for forecasting and coordinating information.

**Table 3-1. Components of the Reserve Money Program and Discretionary Policies**

<table>
<thead>
<tr>
<th>Nondiscretionary Elements</th>
<th>Discretionary Elements and Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net purchase or sales of foreign exchange against local currency.</td>
<td>Policy with regard to the exchange rate and net foreign exchange market intervention.</td>
</tr>
<tr>
<td>Change in currency in circulation outside the central bank.</td>
<td>Obligatory reserve requirements; penalties for obligatory reserve shortages; availability and interest rate on borrowing from the Central Bank.</td>
</tr>
<tr>
<td>Changes in holdings of obligatory reserves and precautionary balances due to changes in bank deposits and balance sheet totals.</td>
<td>Government deposit and debt management.</td>
</tr>
<tr>
<td>Net receipts and payments through government accounts with the central bank including redemptions and issues of government securities.</td>
<td>Sales of central bank and treasury bills at auction; policy towards the tap window; and short-term money market intervention.</td>
</tr>
<tr>
<td>Redemptions of central bank bills and tap sales of bills; maturing central bank loans and assistance, and current receipts; and payments by the central bank.</td>
<td>Changes in rediscount policies and discount window rates.</td>
</tr>
</tbody>
</table>

Automatic central bank credits to priority sectors.
on the trend in other domestic and external variables and developing the overall implications for the cash reserves of the financial system.

The establishment of the monetary operating framework should be one of the critical first steps in the adoption of indirect instruments of monetary control. In practice, however, the establishment of such a framework is often given lower priority than, say, the more visible auctioning of treasury bills. Consequently, the efficiency with which monetary policy has been conducted with indirect instruments has sometimes been poor.

**Domestic Debt Management**

The starting point for developing market-based monetary control in developing countries has often been procedures for the primary issues of treasury bills and/or central bank bills. In some countries the catalyst has been markets in longer-term government securities. However, because commercial banks are often already required to hold treasury bills to meet liquid asset requirements or have built up excess reserves with the central bank, treasury and central bank bills are often a useful first instrument in developing market-based procedures.

Issues of central bank paper have been considered useful because of the potentially greater freedom for the central bank to tailor issues of its own paper to achieve monetary objectives without direct interference from government budgetary considerations. However, the net budgetary and monetary impact from using central bank rather than treasury paper is similar, and the choice is largely an operational decision.

The role of security issues as instruments of monetary control can be illustrated using basic financial flow and balance sheet equations. The basic approach is to generate projections of (a) the supply of cash reserves resulting from transactions by the government and the central bank and (b) the private sector's demand for cash reserves resulting from the public's demand for currency and the banking system's demand for required and precautionary cash reserve balances. The volume of securities issued is used to manage the differences between these supplies and demands.

A neutral monetary policy stance—i.e., one which would leave money market rates unchanged—would involve removing an excess supply of cash reserves by selling a volume of treasury bills to the private sector equal to the difference between the forecast supply of cash reserves and the estimate of demand (or relieving a forecast reserve shortage by not rolling over maturing bills). A restrictive policy stance designed to raise interest rates would involve the creation of a reserve shortage by selling a volume of bills in excess of the forecast reserve surplus. In this case, and assuming the forecasts are accurate, banks would find themselves short of reserves and interbank rates would tend to rise. If the sale of treasury bills reduced the aggregate supply of reserves below reserve requirements, banks would have to seek marginal accommodation from the central bank and the interest rate at which the central bank provides the assistance would become the key determinant of the overall level of interest rates. An expansionary stance would involve selling fewer bills than the forecast cash surplus. In this case banks would have excess cash reserves, which could push interest rates down. Interbank rates would fall, and there would be repayments of central bank credit. In this framework, the design of rediscount facilities is an integral element of reserve and interest rate management.

Selling techniques for primary bill issues include "free" auctions, fixed price tenders, and tap sales at predetermined interest rates. Under free auctions, the central bank announces the volume of bills to be sold and asks for competitive bids. Bills are allocated starting with the highest bid price and moving to the next highest, etc., until the tender is fully sold. Under a fixed price tender or with tap sales, the central bank sets the interest rate on bills and accepts the volume demand at that rate. With a free auction, interest rates fully adjust to achieve the quantitative objectives for the sale of bills and hence for the targeted stock of reserves, but this may risk volatility in interest rates from auction to auction. On the other hand, with a fixed price tender, the interest rate is determined in the short run and quantities are allowed to vary. The tender price can be varied from one tender to the next to exercise the desired quantitative control, but this procedure may risk a "bias to delay" in adjusting interest rates.

In many countries that are introducing market-oriented procedures, bills are auctioned, but no tender volume is announced in advance. The central bank exercises its discretion in accepting or rejecting bids, depending on its quantitative or interest rate objectives. The decision not to announce the tender amount can thus give the central bank added flexibility, although at the cost of reducing information to market participants. In the initial stages, the benefits to the central bank of the increased flexibility can help overcome concerns about implementing new monetary control procedures. In some cases, bills are auctioned and tender volumes announced in advance, and a permissible range is also announced for bids that would be accepted.

The introduction of treasury bill auctions often needs to be accompanied with a broader reform of the domestic debt management instruments and policy. For example, the simultaneous sale of treasury bills at auction and on
tap at rates close to those determined in the auctions can
deflect demand from the auction and bias upward the in-
terest rate bids at the auction. On the other hand, allow-
ing captive institutions to bid at the auction can bias the
bidded interest rates downward. In either case, the auc-
tion bids will not be representative of market rates.

**Central Bank Facilities and Operations**

In support of the development of a more market-or-
ented financial system, the central bank may have to re-
form its existing facilities and introduce new operational
arrangements.

**Refinance Facilities**

In many countries, central bank preferential refi-
nance is a major source of reserve money creation. Such
refinance is often automatic against eligible bank loans
and carries below market interest rates. The central
bank often lacks the instruments to control the expan-
sion of the refinance in the short-run, which therefore
has the potential to undermine monetary control, while
the preferential interest rates distort the allocation of
credit and the competitive position of different financial
institutions. Bringing this preferential refinance under
control is often a matter of urgency.

Reforms of the refinance facilities could include the
introduction of bank-specific credit ceilings on the vol-
ume of short-term refinance and raising and unifying
the interest rates on this refinance at the bank rate. The
bank rate should be raised and maintained above the
treasury bill rate. Such short-term refinance should
eventually be merged with the central bank’s daily mon-
ey market operations.

As regards long-term project refinance, this could be
auctioned, as this would help determine a more appro-
priate pricing for long-term funds and provide the cen-
tral bank with closer control over its total volume. Over
time, as the capital market develops, the auction rates
and capital market rates would converge and the auction
of refinance could be phased out and replaced with capi-
tal market transactions.

**Procedures for Day-to-Day Liquidity Management**

Auctions of primary bills to the general public involve
administrative costs and delays. As a result, primary bill
issues have tended to occur no more frequently than
once a week, which also seems reasonably optimal tim-
ing for these issues. However, as the actual outcome for
reserves may deviate significantly from the outcome
projected by the authorities, there may be a need for sup-
plementary central bank operations to manage money
market liquidity between the issues. If not offset by the
central bank, the resulting reserve shortages or surplu-
ses could result in excessive volatility in interest rates and
could complicate banks’ compliance with legal reserve
requirements.

The aim of achieving interest rate flexibility while
avoiding excessive volatility often calls for day-to-day in-
tervention by the central bank. The most common forms
are lending through the central bank rediscount win-
donow, outright sales and purchases, and repurchases of
securities.

The availability of usable collateral is often a critical
bottleneck in central bank day-to-day liquidity manage-
ment and the development of money markets more gen-

eral. For example, in many countries, the use of lender-
of-last-resort facilities is inhibited by the lack of unen-
cumbered collateral. Banks may hold large stocks of liq-
uid assets, but these are not usable as they are held to
meet liquid asset requirements. To increase the usability
of liquid assets, the liquid asset requirements can be re-
placed with norms that would specify the average hold-
ings of liquid assets over a sufficiently long period so as
to not restrict banks’ ability to utilize liquid assets at a
particular point in time. Also the central bank should en-
courage the development of bankers acceptances (BAs).
The BA is a convenient instrument that can be used to
collateralize interbank trading between institutions of
diverse credit standing and can be used by the central
bank to inject liquidity when there is a shortage of trea-
sury or central bank bills. With an increased availability
of collateral, the rediscount window can become a useful
instrument for liquidity management by banks and
hence for the central bank to direct the level of interest
rates through its rediscount rate policy.

A rediscount window only provides a facility to elimi-
nate reserve shortages; there is a risk that the rediscount
rate would be viewed as the indicative rate for all interest
rates, inhibiting their market determination. These
problems can be mitigated by providing graduated ac-
cess to the rediscount facility at progressively higher pe-
nal rates and special interest-bearing accounts with the
central banks for excess reserves.

These procedures are based on preannounced interest
rates and leave the initiative to obtain or dispose of bank
reserves entirely to the commercial banks. The alterna-
tive is for the central bank to take the initiative as re-
gards the quantity of intervention and leave interest
rates to be market-determined. For example, when
shortages are indicated, the central bank could an-
nounce its willingness to buy bills up to a certain
amount, then ask for competitive offers; when surpluses
are indicated, the central bank can announce its willing-
ness to sell a certain volume of bills, then ask for com-
petitive bids. The central bank would then be able to accept the bids and offer to meet its intervention and interest rate objectives. By restricting the auctions of money market intervention instruments to a few key money market participants, these auctions can be more flexibly implemented than the general auctions of primary bills. Experience indicates that active secondary markets are most likely to develop when the central bank begins these daily discretionary operations and ceases posting intervention rates.

The development of daily operations often needs to be supported by reforms of reserve requirements. Penalties for noncompliance with reserve requirements may have to be increased to ensure that the reserve requirements are a binding target for the central bank's day-to-day money market operations. The lagging of reserve requirements can help provide the authorities with firm information about the level of reserves demanded by the banking systems. Also, averaging the period for compliance with the requirements can introduce additional flexibility and reduce interest rate volatility and the need for day-to-day intervention by the central bank.

One of the major sources of noise in the money market can be the clearing and settlement arrangements. The money market provides a means of access to good funds for the processing of payments and the maintenance of overnight required reserve balances. To take optimal reserve positions, a bank requires up-to-date information on its cash position and its customers' payment flows and time to offset these, if necessary, through the money markets. If banks do not know their requirements for good funds until after the money markets have closed, the consequences are thinner markets, greater volatility in interest rates, increased risk for market makers, and larger holdings of precautionary reserve balances by banks. The lack of information creates a serious problem for the central bank, since the central bank would not know the aggregate shortages or surpluses that it would need to offset in its daily money market operations.

One way of avoiding these problems is a system of same-day settlement for money market transactions and next-day settlement for all other payment orders. In this way banks and the central bank can know, usually in the morning, the net payment orders transacted the previous day that have to be settled today. They can then enter the money market to trade and balance their settlement positions. Similarly, the central bank can establish a timetable for its own money market intervention.

Repurchase transactions have a number of advantages for central banks in managing money market liquidity. It is not necessary to have developed financial markets to undertake a repurchase transaction. The central bank needs only to communicate to the dealers or banks its desire to trade and the direction in which it wishes to deal and to ask for interest rate bids and offered amounts. Repurchases are self-liquidating and can be targeted to temporary fluctuations in bank reserves. They overcome the frequent problem of a shortage of specific maturities and the large transaction costs involved in buying and selling securities outright to manage a temporary liquidity imbalance. They are therefore a flexible and cost-effective tool for managing highly variable bank reserves.

Supporting Arrangements and Institution Building

Paul Meek has already touched on these issues. In addition to financial institution building, let me briefly mention a number of broader structural and policy issues that should also be addressed as part of the reform of monetary instruments.

The liberalization of interest rates is often inhibited by the captive markets for government securities created by high liquid asset requirements or other portfolio restrictions. Liquid asset ratios may therefore need to be reduced or the range of assets eligible to meet the requirements expanded to include prime quality private papers. This would be desirable anyway, as a way of stimulating the market in BAs and other private papers. Public sector financial institutions (and the central bank) should have their securities allotted outside the auctions to avoid distorting the auction rules. There is no guarantee that a market-based system would be competitive. Hence, measures to increase financial sector competition, including bank restructuring and the reduction in barriers to entry that I mentioned at the beginning, may have to accompany the reforms.

For interest rates to have the appropriate impact on resource allocation, borrowers have to be responsive to market prices. A high incidence of credit undiscipline and loan delinquency, or arrangements where borrowers or banks expect to have their loans covered by the government, can render interest rates meaningless in the allocation of credit. The strengthening of bank supervisory arrangements, bankruptcy laws, and the legal procedures for loan recovery may therefore have to accompany the financial reforms.

As a result of interest rate liberalization, interest rates on government debt may rise, with budgetary implications. Similarly, parastatals and other borrowers, which have access to bank loans at preferential rates, may experience an increase in borrowing costs. As a result, certain projects may no longer be viable and productive sector restructuring has to take place.
Managing the Reform in Monetary Control Techniques

Let me finish this talk by discussing some of the complex issues in the implementation of monetary control that can accompany financial reform—issues that we are only now coming to grips with.

Sequencing of Reforms

The successful transition to more market-oriented financial systems requires careful consideration of the speed and sequencing of reform. It takes time to build up expertise, to change attitudes, and to establish new institutional arrangements necessary to ensure effective monetary control and competitive market mechanisms. This suggests a phased approach to reform.

Under the phased approach, interest rates could be set free in stages, for example, by gradually widening the permissible ranges for deposit and lending rates or by steadily adjusting minimum deposit rates and maximum lending rates. The traditional instruments—reserve requirements and rediscount windows—could be deployed initially to manage bank reserves and thereby the credit-creating capacity of the banking system, while phasing out credit ceilings on banks. However, credit ceilings on individual banks could still inhibit competition; there is a risk—evident in some countries—that the phasing of reform is so slow that little fundamentally changes.

If the initial financial system is highly regulated, with each regulation supporting the other, it may be difficult to implement a gradual, effective reform. In such cases, a major one-step change in the operational system may be unavoidable. This has been the policy followed in a number of countries. However, rapid structural changes carry a risk of a loss of monetary control and broader financial sector instability and require careful management.

A detailed examination of the sequencing of financial reforms in five countries has provided some important conclusions about the dynamics of the growth of deposits and credit following financial liberalization. These are illustrated in Figure 3-1. In the pre-reform period, deposit growth declines because of the negative real deposit rates and the overall repressed nature of the financial system. Credit growth is maintained through increasing liquidity support from the central bank. Deposit growth that is lower than credit growth is associated with increasing resource pressures in the pre-reform period.

After financial liberalization, both credit and deposit growth increase. However, the response of credit growth is initially more rapid than deposit growth. The decline of deposits in the pre-reform period reflected a voluntary portfolio response to financial repression rather than specific controls. In the post-reform period there is a gradual portfolio adjustment by depositors to the new liberal financial situation. Credit growth, in contrast, was constrained by direct controls with an excess de-
mand for credit. Once the direct controls are removed, financial institutions respond by meeting the excess demand for credit, and credit expands rapidly. The initial effect of the financial liberalization is, therefore, to increase the resource imbalances.

The subsequent development in deposit and credit growth depends on the structure of real interest rates. When real interest rates are positive, the growth of credit slows down compared with the initial post-reform credit boom. The growth of credit may remain higher than in the pre-reform period because of the general increased role of the financial sector in mobilizing and allocating resources following financial liberalization. The growth of deposits continues to increase. This reflects the lagged portfolio adjustment to the financial liberalization measures, the development of new financial instruments and institutions following the liberalization, and the reduction in central bank liquidity support of financial institutions, which in turn are forced to mobilize deposits to meet credit demand. After some point the growth of deposits and credit converge, allowing for balanced growth with a higher level of overall resource mobilization than in the pre-reform period.

If real interest rates are negative in the post-reform period, this encourages a more rapid growth of credit and slower growth of deposits. The maintenance of negative real rates requires expansionary central bank policies that finance the faster growth of credit in relation to deposits. As a result, the growth of deposits does not catch up with the growth of credit and resource imbalances remain. These may be wider than in the pre-liberalization period.

Even with the maintenance of positive real interest rates, there is likely to be an initial post-liberalization credit boom that can pose a threat to economic stability. The management of the credit boom is a critical element of successful financial liberalization. For example, financial liberalization may have to be accompanied by a sterilization operation aimed at absorbing excess liquidity. However, to the extent that the initial credit growth reflects a one-time stock adjustment to a new equilibrium position, an attempt to constrain it solely through interest rates could result in very high real interest rates. The economy-wide implications may therefore have to be offset by an accompanying reduction in the fiscal deficit or a temporary increase in external borrowing.

**Design of Financial Programs in the Post-Reform Period**

The design of financial programs may have to be rethought following financial reform. Financial programming, at the level of the banking system, is likely to be made more difficult and responses more uncertain following the change to indirect monetary control procedures.

First, the relationships between money and credit and final objectives that existed during the pre-reform phase are likely to be less reliable following financial reform. The introduction of new instruments may shift the interest sensitivity of money demand. For example, a liberalization of interest rates on bank deposits may result in broad money becoming less sensitive to changes in the general level of interest rates. The removal of credit ceilings that constrain portfolio allocation can result in portfolio shifts, including a demand to hold larger money balances at any given level of interest rates and income. Higher interest rates may lead initially to distressed borrowing. Money multipliers may also change with reform, for example, when there is reintermediation to the banking system leading to reduced cash holdings by the non-bank public.

Second, the attainment of short-run quantitative targets for bank credit, consistent with a desired outcome for the balance of payments (established as part of the financial program), would be extremely difficult when interest rates or the cash reserve of the banking system are the principal monetary control instruments. This reflects the considerable uncertainty about the size and even the sign of the short-run interest elasticity of the demand for bank credit. This is not to say that an overall inflation or balance of payments outcome could not be achieved using indirect monetary control instruments but that precise financial programming at the level of the banking system would be difficult.

A practicable monetary policy framework consistent with a market-oriented system of monetary control, quantitative performance criteria, and explicit targets for the balance of payments is likely to be one defined at the level of the central bank's balance sheet rather than the banking system. Monetary control would be exercised through sales of securities to the private sector, with the aim of achieving quantitative targets for the net domestic assets of the central bank. This framework would also be consistent with the use of broad or narrow monetary aggregates as intermediate targets. The setting of quantitative targets on the central bank's balance sheet also fits neatly with the use of primary auctions of securities as the principal market-based instrument of monetary control in underdeveloped financial markets. These are areas and questions that are under study.
Discussion

Mr. Caprio: What role do you see for liquid asset ratios? In some countries, the authorities view them as a tool of monetary policy; in others they are viewed as a tool for prudential concerns.

Mr. Johnston: Liquid assets should not be a tool of monetary policy. They should be primarily a prudential instrument. That is why I emphasize the availability of usable collateral. Unfortunately, when you set requirements the collateral becomes unusable. Therefore, the prudential buffer that the stock should provide is not there. One may have banks that meet a liquidity requirement of 35 percent of assets but have no collateral to trade. So they cannot go into the money market; they cannot go to the central bank. The central bank quite often ends up having to announce another window at which it makes unsecured loans, because the banks cannot use their liquid assets stock as collateral.

Quite often liquid asset requirements cannot be rapidly reduced without major effects on the government’s borrowing position because much of its deficit is financed through liquid asset requirements on the banks. As I suggested, the first step is to try to get these liquid assets into a usable form, so they can serve the prudential role of providing liquidity to the banking system. This should be the primary objective. For this reason, the liquid asset requirement should be stated as an average over one or two months, so the banks can use it on a daily basis, but re-establish the needed ratio for the statutory period.

In addition, many bank supervisors emphasize that the country should determine its minimum liquid asset requirements based on strictly prudential guidelines. Such guidelines might look at the maturity structure of the assets and liabilities, rather than just mandating a blanket ratio of 35 percent on the whole balance sheet. It is better to analyze in finer detail the system’s needs for liquidity. For example, demand deposits are not really very liquid, in the sense that they normally are returned to the system. On the other hand, one-month deposits tend to be withdrawn when they mature. The aim should be to develop relative weights and ratios which will provide an appropriate amount of liquidity for the system for prudential reasons.

Question: At the beginning of your presentation, you mentioned reasons why one should or might want to move away from direct credit controls. For the countries where you have experience, why did they actually take the decision?

Mr. Johnston: In some cases it was evident that ceilings were having no influence. Basically they were just repressing a number of regulated banks. Outside the ceilings, you had the “gossamer” banks, which were doing things similar to what the regulated banks did but were not subject to the ceilings. In that sense, the authorities had lost monetary control. We have worked on one that was near that point.

For other countries, it was very much a conscious decision. They wanted to liberalize their financial system; they wanted to move to market-oriented procedures, and this was part of that process. They realized they could not have a liberal system if they had credit controls. I think these have been the two main reasons.

Question: Has there been a case of liberalization that has been both rapid and stable?

Mr. Johnston: I am not aware of one, although my experience is not extensive. On the one hand is the example of Korea, where liberalization has been in progress for ten years; they are still regulated, and they have not had instability. But I do not think that is rapid financial transformation. The present experience in Eastern Europe is still being played out. I do not think they have yet experienced this problem, but it is premature to say what is happening there. The circumstances may be a bit different in Eastern Europe, where the banking systems were much more constrained and the private sector was not sufficiently developed to take advantage of the removal of ceilings.

Question: What about the experience in New Zealand with rapid liberalization?

Mr. Caprio: They began liberalization in 1984. New Zealand did everything very much like the southern cone countries. They opened up on the capital flow side and removed all the credit controls. Real interest rates went up to about 15 percent, then came down to about 8-10 percent. In fact, New Zealand’s experience more closely resembles graph A in Figure 3-1. There was a boom in credit for about five years, but it finally came back in line with deposits.

Question: In many cases in the developing countries, banks must rely on short-term deposits. They lack the
longer-term resources they need, which of course explains why term credit is not available for economic growth. Besides interest rate regulation, is there anything the central bank can do and should do to encourage savers to shift to longer-term securities?

Mr. Johnston: I am of the view that commercial banks should not be in the business of providing long-term credit. Short-term financing institutions have short-term liabilities. Most of their assets are in trade and other credit. Those assets should not be directed into longer-term lending; that is the role of the capital markets. The way to get longer-term credit is to develop the capital markets. Get bonds and equities into the system; let the private sector take the responsibility. But do not put the risk on the banks.

In these countries, the banks are already weakened. To try to force them outside their preferential lending policies can be a risky strategy. Instead, the risk should be dispersed more generally in the system, and that is the role of the capital markets. To generate the capital markets, change the refinance facilities, make interest rates flexible, and reduce the preferential credits. Ultimately, that will help to get long-term credit into the economy.

Question: Operationally, should we be encouraging the simultaneous development of the capital market when we are working with the monetary sector? Or does that come later?

Mr. Johnston: Definitely it should be simultaneous. The working paper that has been circulated specifically recommends reform of the monetary instruments simultaneously with development of the money market and capital markets. These elements of the system are mutually supporting; each is needed for the overall system to progress.

I believe the emphasis should be on the capital markets. Ultimately, that is where the domestic resources should be mobilized to finance development.

Question: I suppose, though, the emphasis would depend on the level of institutional development in the economy as a whole. For some countries, is it not unrealistic to expect the capital markets to provide much in the way of resources in the near term? Few countries have capital markets providing even one quarter of gross investment needs.

Mr. Johnston: But we normally find that, when the capital market is not providing any resources, it is because the central bank is providing them or the development-finance institutions are getting highly subsidized loans. As a result, no one else can make any money providing long-term resources. There is no role for the capital market. The yield curve may be bending downwards, so no one can intermediate at the long end because long-term borrowers are getting all this priority credit.

Question: So you are saying that Germany and Japan are wrong in depending on the banking system for long-term financing.

Mr. Johnston: Well, that is a broader issue. Yes, that raises the whole question of how one sets out the liberalization process. There is a different model. The one we have discussed here is the model of liberalizing the financial system so that it takes the decisions. The Korean and Japanese model is different. There, funds for development were directed through the banking system. In Japan they have had to reform because of the increase in the public sector bonds being issued. I agree there is a fundamental question of what is the appropriate development model.

Question: We have been talking about monetary liberalization and the accompanying instability. You made a point that I think is quite important. At the same time that a money market is developed, a framework for decision-making within the central bank must also be developed. Isn't this something that basically cannot be gotten from a text book. One must see it operating and then start to develop the decision-making capability. Invariably, while the learning is occurring there will be instability. There is no way to avoid this; it is a cost that must be paid for the long-term gain of having a liberalized market.

Participant: The people in that market have to learn how to take the risks.

Mr. Johnston: Part of the role of the Fund and of the World Bank is precisely to help speed up the learning process. The Central Banking Department provides resident experts to central banks, to advise them on precisely these questions.

Question: Yes, but wouldn't you say that what can be done is to reduce the period of instability, yet there will inevitably be some instability?

Mr. Johnston: Yes, I think that is right. What I have been presenting is the case for trying to at least be aware that it will happen and designing the instruments that
can minimize the instability. That is where we should really try to work. I don't think we can avoid the instability.

Mr. Caprio: If I understand the point of the last question, it was directed more toward fashions. It is fashionable now to have a treasury bill market, just as it used to be fashionable to have a steel plant. But no attention is paid to whether or not the central bank should have, for example, a forecasting department.

Mr. Johnston: Yes, that is true. Everyone is running out to trade treasury bills but not providing the support for that market. That is really where there is a problem.

Question: You mentioned the desirability of variable-rate instruments. In the context of a high-inflation environment when your market is in the process of emerging, what is your view of instruments indexed to some kind of price index?

Mr. Johnston: We have varying views on this. It depends on whether you are in the process of a fundamental adjustment program that is intended to bring inflation down.

In one country that was in that situation, we suggested not to index, even though they had inflation of 50 percent a month. The idea was not to index, so as to increase the speed of adjustment. However, the central bank did specify in its auctions a nominal interest rate, which at the time was about 20 percent, as an indicator to the market. With annual inflation running at perhaps 2,000 percent, this of course raised a credibility issue that had to be addressed. The adjustment program was designed to address that issue, and so the decision was not to index.

More generally, if a country is not in the position of fundamentally restructuring its financial system—is not intending to announce an adjustment program—in fairness the only thing to do is to index. The index needs to be kept as current as possible; lags in updating the indexation should be reduced to lessen the inflation risks. Indexation itself does not necessarily undermine market orientation because you can still sell index instruments below par and allow the market to determine the real interest rate. You just index the inflation component.

Question: How can you introduce a competitive market for treasury bills in situations, typical in Africa, where there is little competition in the banking systems and where the banks form a club or cartel.

Mr. Johnston: In some countries, starting to bring in market instruments has, in itself, weakened the cartel. In particular, opening the treasury bill auctions to the non-bank sector provides an alternative source of funds. Those who otherwise would deposit funds with the banking system can now buy treasury bills. Therefore, the market can help to reduce the monopolistic position in banks. This is particularly true if the banks are not paying market rates on their deposits when the government starts to issue treasury bills.

Sri Lanka, for example, had a fairly monopolistic banking system. When the central bank started to market treasury bills aggressively, the banks lost deposits. Now there is a very liberal, free, and competitive interest rate structure, at least on the wholesale markets. This followed from the aggressive policy of the central bank in issuing treasury bills. So use of a money market in this way may actually be part of one's strategy for reforming the system.

As this example shows, financial reform is a case-by-case process. There is no general model. The IMF's experience in dealing with a large number of countries indicates how the instruments I have discussed can be helpful. Even so, every country needs to be examined as an individual case.

Mr. Honohan: In that context, a large number of the African countries don't yet satisfy the basic preconditions. Their whole structure is at an earlier state.

For example, in some African countries, there are many deposit-taking institutions that are not allowing the depositors to withdraw their funds. They say, "We can't pay, just come back next week." In the United States of the 1930s, if a bank said it couldn't pay, a huge crowd of depositors formed and began hammering on the doors. But in Africa, though the banks concerned are not allowing withdrawal of more than perhaps $200 a week per account, there are no lines, because depositors know they will not get any money. The depositors just leave, hoping that some day something will happen.

Though you may say that there is an absence of good collateral in the market, and bankers' acceptances might provide a solution, realistically most banks will not buy bankers' acceptances! They won't even trust an inter-bank loan.

Mr. Johnston: In that case, the acceptances you first use to get the system started are those of whomever is a good primary credit risk. Then it is his credit rating that you trade. So it is not the banker's acceptance that you trade. For example, you might get the oil company to issue the paper, if the central bank is lending to the company. That is how you can generate some paper to trade in a money market.
Mr. Honohan: Nobody has yet taken you up on what I thought was a pretty dramatic assertion. At least I understood you to say that, "For the purpose of adjustment programming, let's not bother with aggregate credit anymore. If we want to go down the route of indirect monetary control, we are not going to hit those credit targets. We can hit narrower aggregates, i.e., elements of the central bank's balance sheet. The IMF should put into its adjustment programs that, while there could be intermediate targets such as broad money, the government is not required to hit those targets."

I have two questions about this assertion. First, will this work for a very unstable country, and get them out of their mess? Currently, we talk about the balance of payments gap and filling the gap. We tell the country it has to fill a gap of US$50 million, of which this amount will come from the World Bank, this much more will come from the IMF, and some more from somewhere else. The monetary program is all worked out on the basis of how much credit there will be. If, instead, you decide not how much credit there will be but only the amount of central bank money, you may end up with a residual gap.

Second, when you spoke of an intermediate target, you mentioned broad money but not credit. Do you think credit should be dropped altogether?

Mr. Johnston: On the first question, when the level of the central bank is programmed, the external target is the net foreign assets of the central bank. That is a reserve position. You can do the programming on the central bank's balance sheet or on the banking system. Indeed it has been done on the banking system for many countries. But the external target is different; it is not the overall balance of payments but the net foreign assets of the central bank. So it doesn't create a problem. One can still develop exactly the same flow of funds structure. The aggregates to be included differ from those at the aggregate level, but it can be done. It is not a big problem.

Mr. Honohan: So the program is designed in terms of foreign assets; therefore it is still the external financing gap that is being addressed?

Mr. Johnston: Yes. In fact, the Western Hemisphere Department of the IMF has usually done their programming on the central bank balance sheets. The Africa Department has tended to use the banking system. The Asia Department has used both, but more on the banking system. Therefore, we are not necessarily moving into new territory in terms of programs. Rather, the use of instruments changes the way we think about program design.

With respect to your question about credit, we once did a survey just to find out about credit. We sampled journal articles published over the last five or so years. There were 450 articles on the demand for money and one article on the demand for credit. I defy anybody to show me a stable demand for credit function. Charles Freedman has supported the concept of credit as an intermediate aggregate but has recently retracted on the basis that demand-for-credit is no more stable than the money demand functions. In short, if we could establish appropriate ways of estimating a demand for credit and we thought they were reliable, then yes, it would be a useful instrument. At the moment, I am not optimistic; but we should not stop the search for that reason.

Mr. Grenville: The thing that forced Australian authorities in the direction of targeting credit was not so much the change in which side of the balance sheet was being watched as it was the breadth of the credit aggregate. We wanted something broad because of all the churning that was occurring within balance sheets during the deregulation process. For example, when we removed our reserve requirements, that fundamentally changed the way M3 operated. Just a few years earlier, a re-regulated system had changed it in the other direction. To try to eliminate that churning within the balance sheet of the formal financial system, we were forced to something that gave the very broadest representation of what was happening to the system. That is why some of us did not accept that a more stable relationship cannot be gotten for credit than for money.

Mr. Johnston: When I worked for Charles Goodhart, I was asked to estimate the disequilibrium monetary model of the U.K. economy. The idea was that we would develop a model for the disequilibrium of monetary aggregates through the counterpart equations. My difficulty with that approach was why would one attempt to generate a model for money, which throughout most of the literature is the more stable aggregate, from all these unstable counterparts. The counterparts did not seem to me to have any basic forecasting relation to the generation of money. In fact, the causality runs the other way around.

Where I think you and I part company is on the idea that the counterparts are in some sense more stable than the monetary function itself. I think the counterparts, between one another, offset a lot of the noise in any one of them. The monetary aggregate, over longer periods, is the most stable of the components. That is why it is more useful.

Still, having said that, I cannot say that M3 has been a stable aggregate in the United Kingdom. It has been re-
defined a number of times. And they will continue to redefine it as the financial system evolves, because basically M3 tries to measure a concept of money that is difficult to measure. Where do you cut off money from other assets? That is the fundamental problem, and it is not an easily resolved problem. There are a lot of criteria for defining money, but none is satisfactory. Going to a narrower aggregate helps to some extent, but it still has these problems.

Mr. Honohan: On the issue of money demand stability in the developing countries, from my own limited experience, for the various countries for which I needed to do such an analysis, it was difficult to get well-behaved, stable-looking demand for money functions showing interest elasticity. Even in the franc zone, which is a rather stable area, it was difficult. For the most of the rest of Africa, too, and in China there was a lot of instability.

Mr. Johnston: The problem is that the data are not available to do adequate testing. For example, GNP series are at best annual and lag by a few years. It may be possible to get some other aggregates, but the inflation figures are not reliable. The interest rate series may not be particularly representative. So the immediate, major problem to be faced is what to estimate. There is not the richness of information that can be had in the industrial countries, in which to search for stable aggregates. Therefore, quite often one ends up with some rough rules of thumb about where money is going and, hopefully, an adequate review process.

This increases the importance of having the independent central bank “captain” in place. That person has to exercise a lot of judgment about the movements in the monetary aggregates and does not have the support of, for instance, stable demand equations, to conclude that interest rates should or should not be raised. He must be able to ask questions such as, “What happened? Did one of the large importers come in yesterday and put this large monetary perturbation into the system?” That is why I feel that the judgmental aspects of monetary policy need to be well developed in the developing countries.

Question: It seems to be more difficult to get banks to compete on the lending side than on the deposit side.

Mr. Johnston: Certainly it is true that if there is no capital market, there is no substitute for bank credit, and that is a problem. In Indonesia, reduction of exchange controls led to an injection of competition, which freed up the system. So you can bring in external competition; you can allow entry of some foreign banks.

Also, the country probably has a lot of state-owned banks, over whose decisions some moral suasion could be exerted. In one small country, one of the big banks is state owned but was a member of the banking cartel. The authorities there complained there was no competition. We said, “Can you not generate competition yourself by telling the state-owned bank to leave the cartel and set its own rates?” One needs to look institutionally at the issues.

Mr. Honohan: Under the influence of our agencies, the central bank in Ghana decided to deregulate interest rates. They said, “We no longer regulate the bank’s policy.” Now the Ghana commercial bank, which is owned by the government and has 50 percent of the market, sets interest rates. Deregulation in this case was just a transfer of control from the central bank to the commercial bank.

Mr. Johnston: That agrees with my point about the phasing of reforms. As another example, Sri Lanka introduced a repurchase market, but nobody ever traded repurchase agreements because the process was so cumbersome. One of the adjustment program conditions had been to establish a repurchase market, but this did not mean that it was a functional market.

These examples show why it is important to think more fundamentally about what we actually are trying to accomplish in these processes. It is not just a question of throwing a lot of monetary instruments at the system and hoping.
Building Financial Institutions for a Market-Based Monetary Policy

Steven Grenville

My brief is to talk about Australia, which I shall do, but not in great detail. Australia is an interesting case because, in a period of ten years from about 1975 to 1985, we went from a system of extreme controls to a system that is very deregulated. The current system has floating exchange rates, and we operate monetary policy through open market operations.

We do, however, have some idiosyncrasies in Australia. If I were to explain exactly how our open market operations worked, it would resemble the story of the bumblebee—aeronautical engineers tell us that it cannot possibly fly. Yet it does, and our system in Australia is a bit like the bumblebee. If someone had presented the current design before it was put into practice, we would have read the description and said there is not the slightest hope that such a system can work. And yet, it works perfectly well for us. At this conference, you have heard that different systems suit different places. I think that is true; our system is fine for us, but I would not wish to impose it on anyone else. It is an accident of history as much as anything.

Therefore, I shall try to distill from our experience the things that might have relevance elsewhere. Since you have heard not one but two papers with a similar approach, I do not want to go through the same details again. I shall try instead to approach some of the same issues from a different angle and hope to provoke discussion as we proceed.

The story of that ten years of transition might be summarized as “what went wrong, and how we tried to fix it.” We did not have the opportunity for intellectual consideration of the question of sequencing. We responded to what was happening in the market. For instance, we did not float the exchange rate in 1983 because we finally had gotten around to reading Milton Friedman and suddenly recognized that we needed a floating exchange rate to gain control of monetary policy. Rather, we floated because the old system broke down. We tried to fix it two or three times. It became clear that we could not fix it, so we floated.

There may be countries where sequencing is important. Without doubt it is an interesting issue to think about. But our experience is that you do what is necessary to evade this steamroller coming towards you. You do not think much about exactly what to do except to get out of the way.

One of the lessons from our deregulation is that the process, once started, has a momentum that was not foreseen. In history, when one looks back, certain critical events may be seen, such as the assassination of Archduke Ferdinand setting off the First World War. In Tolstoy’s War and Peace, the critical event occurs when Kutuzov decides to move towards Borodino. Tolstoy makes the point that, at the time, it doesn’t seem like an important event. The decision having been made, events roll on, and one does not have many choices.

Another Model for Open Market Operations

The previous speakers have had the chance to set out the big picture. While I know I am supposed to stay with the little picture, the case study, I cannot resist having a go at the big picture, too. Again, the lesson to take home from all these versions of the big picture is that no single view of the world is exactly right. We all have slightly different perspectives. Besides, some of our actions were based on a view of the way system works. So I shall take a few minutes to set out my point of view.

Figure 4-1 shows the central bank’s balance sheet and the commercial banks’ balance sheet. The diagram is routinely used to teach the credit multiplier, which I am sure you remember from Economics 1. On the left is the central bank’s balance sheet. Suppose we conduct an open market operation that adds a dollar to the bank reserves, as recorded on the liability side of the central bank’s accounts, and of course, that dollar also appears
Figure 4.1 Sample Balance Sheets for the Central Bank and Commercial Banks

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<th>ASSETS</th>
<th>LIABILITY</th>
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<tr>
<td>foreign exchange</td>
<td>bank reserves (+$1)</td>
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<td>bonds</td>
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<td>-loans to govt.</td>
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on the asset side of the balance sheets of the commercial banks. On the usual view of the credit multiplier process, there is a required reserve ratio, linking deposits and bank reserves, which is the fulcrum holding the balance sheet together. Because we have that extra dollar of deposits, loans can increase, which holds the whole balance sheet together. The critical fulcrum is the level of reserve bank reserves.

Of course, in this model the extra dollar goes into bank reserves, and this allows the banks to expand their balance sheets. To increase loans, banks must change the interest rates they charge on loans. To fund these loans, the banks bid for deposit funds. So there is a change in the monetary aggregates, as bank deposits rise. There is also a change in interest rates. According to this model, then, out of the open market operation comes a change in interest rates. However, from the monetary policy perspective, reserve requirements act as the critical fulcrum of the system. In our model, the fulcrum is the payment system, the check clearing system. We leave that check clearing system either flush with funds or short of funds. That is how we change interest rates. We do not change rates by selling bonds and finding that the price of bonds has changed, so therefore the interest rate, which is the inverse of the bonds' price, has changed. Rather, when the banks get together every night to clear the checks written on them, we make it more or less difficult for them to have enough reserves. If we want interest rates to go up, we keep them short of reserves. They become worried and do various things to raise interest rates.

From our experience, we do not see the system operating like that. Rather, in our view the world is much simpler. The open market operations affect short-term interest rates directly. They directly affect the cash rate, the short end of the yield curve. And that, in a sense, becomes the cornerstone for the whole of the yield curve. The holder of a 90-day bank bill considers the cost of holding that bill to maturity and what the central bank will do to influence the short-term interest rate. In our model, therefore, open market operations affect interest rates directly, which affect the cost of funds in the commercial banks' balance sheets. This in turn affects loans, since there is an interest elasticity on the demand for loans.

Overall, this view ends up in much the same place as the first view of the system. The differences between them are not worth fighting over. Still, like many doctrinal issues, we can debate them at length. It ought to be possible to resolve these various views simply because balance sheets must balance. Identities remain identical, so all of these differences in models can be reconciled. But the differences do represent different perspectives on the mechanisms underlying the balance sheet.

Within the old perspective, reserve requirements act as the critical fulcrum of the system. In our model, the fulcrum is the payment system, the check clearing system. We leave that check clearing system either flush with funds or short of funds. That is how we change interest rates. We do not change rates by selling bonds and finding that the price of bonds has changed, so therefore the interest rate, which is the inverse of the bonds' price, has changed. Rather, when the banks get together every night to clear the checks written on them, we make it more or less difficult for them to have enough reserves. If we want interest rates to go up, we keep them short of reserves. They become worried and do various things to raise interest rates.

From our perspective, then, the required reserve ratio is unimportant. The system could operate perfectly well without reserve requirements. In fact, Australia essentially has no required reserve ratio. There are prudential ratios, but they certainly are not ratios that are changed for purposes of monetary policy. Over time they have actually decreased, as other systems of prudential controls have been added, such as capital adequacy requirements. The important thing, though, is that reserve requirements are not the fulcrum of the monetary policy system. The system would work perfectly well with zero reserve requirements.

When a country sets up a monetary policy system or when someone offers suggestions on such systems, the key point to remember is how costly and distorting those high reserve requirements can be. In Australia back in the 1950s, the banks provided about two-thirds of financial intermediation. By the early 1980s, because reserve requirements had been placed on the banking system, their role in intermediation had fallen to 40 percent. Other participants had entered and taken the action, largely because of the various constraints imposed on the banks. When constraints are imposed on the banks, the action moves elsewhere. The financial system moves away from the controls, and the central bank finds itself controlling just a small piece of the system.

As further evidence of how bad the distortion can be, consider what occurred when Australia reduced the re-
serve requirement so that it became solely a prudential requirement. After September 1988 when the reduction occurred, the action moved back to the banks. The effect showed in the balance sheets. In the year after the reduction, M3 (a bank-based measure of the monetary aggregate) grew by 30 percent. Any unaware outsider—a Martian versed in the economics of Milton Friedman—who came into Australia in that period in late 1988 and early 1989 would have thought we had a hopelessly loose monetary policy. M3, the aggregate we had previously targeted, was growing at 30 percent a year. In fact, Australia had quite tight monetary policies at that time. The abnormal growth in M3 was simply the effect of this intermediation returning to the banks' balance sheet after we sharply reduced the reserve requirements. As it returned, things which hadn’t been caught in M3 were suddenly being captured.

All this churning within the system also explains why we have not been successful in targeting any of the monetary aggregates in Australia. But my main point is that things like reserve requirements can be very costly if they are not properly set up. At present, we do not want much in the way of reserve requirements at all. We have a system that works perfectly well with no reserve requirement.

Speaking of potential heresies, I should add that we could operate the system without bonds, too. We happen to use bonds for our open market operation because it is convenient. Still, it is not at all the textbook model. We are not selling bonds to change the price of bonds so that the inverse of the price—the interest rate on bonds—changes. Rather, we are interested in the other “leg” of the bond transaction. When we sell a bond, we receive cash. It is the cash “leg” in which we are interested, because we want to change the state of liquidity in the banks’ check-clearing system. What happens on the bond side of the transaction is not important. What does matter is the cash that was paid for that bond when we sell it, and this reduces banks’ liquidity, leaving them uncomfortably short of funds when they come to clear their checks with each other. Alternatively, when we buy a bond we put cash into the system.

I do not want to leave the wrong impression. Bonds are very convenient to use in open market operations because there is no credit risk. The government issues them; they are homogeneous. But you could operate with anything. You could sell the office furniture, if you had enough office furniture and you could do the transactions. If you are selling the office furniture and getting cash for it, that would work perfectly well because it is the cash leg of the transaction that matters. Of course, selling the office furniture would be very messy, it is obviously better to sell pieces of paper. Even if those pieces are private paper, that is all right from the standpoint of controlling liquidity. The real question concerns whether the central bank wants to hold that private paper on its balance sheet. Is the paper secure? Is it homogeneous? Those are the important issues. So neither reserve requirements nor bonds as such are important to our open market operations.

Now comes the part that will probably be the greatest heresy of all. With respect to operational targets, and I emphasize operational targets, our concern is the interest rate rather than the quantity of any aggregate. We do the calculations to estimate whether the system is in surplus or deficit—or, as we say, “up” or “down.” That estimate is taken into account in the daily open market operations. Ultimately, however, we are looking at the interest rate in a very short-term, operational sense.

We all know the reasons why interest rates cannot be used as a long-term goal. First, they are normally nominal rates, and all sorts of problems arise in relating them back to real rates. Secondly, there is the problem of dynamic instability that the text books discuss. If a nominal interest rate is being targeted and nothing else, the system is unstable. If the system receives a shock that increases inflation, the real interest rate decreases. Therefore, the economy goes even faster. That is the dynamic instability that results if a nominal interest rate is the sole long-term target. So again, do not misunderstand me; I am not suggesting interest rates as a long-term ultimate target. Rather, in practice one is forced operationally to use interest rates as the operational objective.

Of course, in the conceptual framework I explained, a monetary target is still possible in principle. The balance sheet (Figure 4-1) still balances. The funding of those loans is the monetary aggregate. And so, by operating on interest rates and thereby influencing loans, deposits are affected. Since deposits are affected, the monetary aggregate is being affected. So, whatever one takes as the long-run target, it can still be envisioned within the framework presented in the diagram. Still, operationally the interest rate in the short term is what one must follow.

**Issues for the Australian Model**

While Figure 4-2 is very simple, it encompasses what the Australian authorities are trying to do, at least at the conceptual level. The curve SS is the supply of bank liquidity, which is what we think the central bank can control. Through the central bank’s actions, SS is moved to the left or right. By doing that, we operate on the demand for bank liquidity and change the interest rate. At the conceptual level, that is what occurs, and it raises three issues. The first is how one actually moves SS, the supply of liquidity. Since that is the purpose of perform-
Figure 4.2 Supply and Demand for Bank Reserves

Interest rate

\[ S \quad S' \]

\[ i \quad i' \]

Bank Reserves

Credit somewhere in the system. If it were only the banks' checks that were being cleared, the system would always balance exactly at the end of each day. But the payment system is hit by other shocks from outside the system, largely things that originate on the central bank's balance sheet. Such things include the central bank's transactions on the foreign exchange market. Others originate in the government, because the government runs a budget deficit and government debt impinges on the system. So the clearing house system is being hit by a great many shocks each day. Those shocks are, in effect, moving the SS curve left and right and affecting interest rates. Some are rather large shocks, in fact. The system should have some safety valves.

We can use this diagram to show, at least at the conceptual level, how to put safety valves into the system. In a system as simple as the one portrayed, the safety valve would simply be to release liquidity into the system when the interest rate reaches a level you want. Normally, this would be something like a rediscount rate or lender-of-last-resort interest rate. If the central bank assesses the supply of bank liquidity incorrectly, interest rates go up but only until this safety valve level is reached. To prevent rates rising above that level, the system would supply as much liquidity as the system demands, once interest rates get to that level.

In this simple conceptual model, if the demand curve had no slope, interest rates could not be changed by changing the supply of liquidity. There is a raft of issues concerned with ensuring that the demand for bank reserves is interest-elastic. Ensuring interest elasticity is not always easy in a system like ours, where clearing house requirements absolutely must be met. The interest elasticity of the demand for liquidity is not so clear. A certain amount is required, but more than that is not needed. It is an on-off demand with a hair trigger. That, however, is a story for another day.

The third issue concerns the importance of a safety valve. In practice, operating a system like this requires that something like a shock absorber or a safety valve be built into it. The payment system, through which the central bank performs its operations, is hit by all sorts of shocks every day. The clearance of checks between banks is very easy—they always match exactly. For every person who has written a check, for every debit, there is a credit somewhere in the system. If it were only the banks' checks that were being cleared, the system would always balance exactly at the end of each day. But the payment system is hit by other shocks from outside the system, largely things that originate on the central bank's balance sheet. Such things include the central bank's transactions on the foreign exchange market. Others originate in the government, because the government runs a budget deficit and government debt impinges on the system. So the clearing house system is being hit by a great many shocks each day. Those shocks are, in effect, moving the SS curve left and right and affecting interest rates. Some are rather large shocks, in fact. The system should have some safety valves.

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There is one final point to be made about this model. There is a tendency to want to smooth out all the little bumps in this system. As the payment system is buffeted by all sorts of shocks and those SS curves for the supply of liquidity move back and forth, one may desire to get rid of the movement. One can, of course, get rid of many of the bumps. The government has the power to set up institutions that remove many of them. A case can be made, though, for not getting rid of every bump in the market.

Central banks fall along a spectrum. At one end are those that want to control the rate of interest in the market exactly, every single day. The Bank of England is at that end of the spectrum. At the other end, some central banks are prepared to leave a fair amount of latitude, on a day-to-day basis, to the system. The rates are left to bump up and down from day to day. Leaving the market a certain degree of latitude helps to depoliticize interest rate determination. Central banks that rigidly control every short-term interest rate can be asked by politicians to lower them, or worse still, to attempt to lower long term rates over which they have little or no control.

In addition to providing this political heat shield, a degree of flexibility also dampens the public's expectation that the central bank should explain every little fluctuation in interest rates. In Australia, we found this quite useful. When the rate on interbank liquidity funds fluctuated, there were not a great many persons—journal-
ists and so on—ringing us up to ask if we were tightening monetary policy. Most persons accepted that there were day-by-day fluctuations. By the time it became apparent that we had tightened monetary policy, the journalists were too embarrassed, having missed when it actually occurred, to ring us up. It was a technique for softening that difficult time when you want to raise interest rates.

**Use of Open Market Operations to Affect Monetary Demand**

I shall now return to the first of the issues raised above: how to actually go about shifting the supply curve SS through open market operations. Three things are needed to carry out open market operations: (1) the central bank must have control of its own balance sheet; (2) the system needs a good, professional, money market; and (3) the commercial banks must be unshackled. I shall expand on each of these requirements individually.

**Gaining Control of the Central Bank’s Balance Sheet**

Barry Johnston and Paul Meek both alluded to the first requirement, control over the central bank’s balance sheet. I think we have all said, in one way or another, that open market operations cannot be done if the central bank does not have control of its balance sheet.

The simple model of a central bank balance sheet in Figure 4-1 can be used to illustrate the point. In the past in Australia, we lost control over the balance sheet in three places, basically. The first is marked as “Foreign Exchange” in the figure. We had a fixed exchange rate. From the point of view of the central bank, a fixed exchange rate is an obligation to deal at that rate with anyone who comes to the central bank with currency to exchange. At the end of the day, they come to the bank with their foreign exchange, and it must give them domestic currency. These transactions increase the other side of the central bank's balance sheet. The two items for Bank Reserves and Currency are, of course, reserve money. So the transactions increase base money.

Thus, as long as the exchange rate is fixed, there is at least the potential for the central bank to lose control over its balance sheet. If the exchange rate is set in the right place, so market participants do not want to deal with you, that is fine. That is one way of maintaining control over the balance sheet. A pure floating rate is not necessary, if the market clearing rate can be predicted exactly every day and if the exchange rate is set at that point. In Indonesia, which Paul Meek discussed earlier, the rate is set every day. In my view of the world, that is a fixed rate; it is a fixed rate that changes every day. But at the end of the day, the central bank is left with this obligation to deal with all comers. This obligation worries those of us who want the central bank to gain control over its balance sheet. The fixed exchange rate entails an obligation; the central bank has no choice but to deal with people who either want to exchange foreign exchange for local currency or vice versa.

Foreign currency, then, can become a window through which a central bank may lose control over its balance sheet. Another such window may occur through the second item on the asset side of Figure 4-1. Although this item is labeled “Bonds,” it includes all means of funding the government deficit. Suppose that, when the government runs a deficit, it funds that deficit not by selling bonds to the public but by selling bonds (or some piece of paper like a bond) to the central bank. In the process, reserve money increases.

To close this second window, the central bank must strike some sort of deal with the government on what will be done with the budget deficit and how it is to be funded. By now, Australia is fortunately in the position where there is a very pure separation of government debt policy from monetary policy. This means, of course, that the government has undertaken to fund deficits by selling government bonds or other securities to the public and will not ask the central bank to fund it.

Not every country can afford that luxury, and Paul Meek reminded us earlier that it is not something every central bank should absolutely demand. It may be very nice to operate in a system where the central bank need never worry about the government's deficit messing up its open market operations, because the deficit is always fully funded by selling bonds.

Although that is the ideal situation, in Australia a system that lacked that commitment until about 1982 worked reasonably well. They had a few different methods of selling bonds: these methods all had in common that they never sold enough bonds to fund the government deficit. This meant that the first part of the central bank bond sales, which looked like open market operations, were really debt management in disguise. We simply could not leave that liquidity from unfunded budget deficits in the system, so the first requirement of our open market operations was to sell bonds to soak up that liquidity.

That kind of system works all right, too, but it is a bit messy. In our case, it meant that bonds were being sold by the treasury to the public—a rather reluctant public—at a certain price X. For the most part, the purchasers were captive bondholders, who were in fact forced to buy our bonds. That necessarily constrained our open market operations, because having sold government debt to these poor captives at price X, it was difficult to
sell it to the public in the form of open market operations at a more attractive yield. We did do a bit of that but it was difficult.

We are now in a much better system with full separation of debt policy from monetary policy. But if you can’t get perfection at once, you work with whatever constraints you have.

The third window for loss of balance sheet control does not show very clearly in Figure 4-1. It concerns the rediscount facility. Especially when one is setting up a market for government securities, the tendency is to want to provide rediscount facilities. One way to provide liquidity to that market is to tell potential purchasers that if they buy these government securities and subsequently want to sell them back, they can do so, perhaps at a different price. Yet, whenever the central bank has a commitment of that nature, it has lost control over its balance sheet to some extent.

In Australia, we had fairly generous rediscount, lender-of-last-resort, facilities when we were trying to build up a government securities market. Over time we have made those facilities less and less attractive. In terms of Figure 4-2, we have pushed the line for the rediscount rate far above where we want interest rates to be. In other words, we prefer to control interest rates by our open market operations, rather than by the public tapping the safety valve of the rediscount rate to get their extra funds. If people were consistently coming to our rediscount window for significant sums of money, after several days of that, those in charge of the open market operations would have to run onto their swords. It would be regarded as a failure.

We would not want to do that because interest rates would once again be controlled. We would be back to a form of the old system; the rediscount rate would in effect become an interest rate that we were imposing on the system. And one of the reasons for going to a system of open market operations is to get away from setting an interest rate. We want to maintain a system where the market has a big hand in setting interest rates. So we do not want that rediscount safety valve to be operating very often. It is there in case somebody makes a mistake, if an individual bank or financial institution needs it. But it should be seen as a safety valve and not as a normal way of setting interest rates.

All these things must be done to get control over the central bank’s balance sheet. Ideally there should be a floating exchange rate, which closes the Foreign Exchange window. Ideally debt policy is completely separated from monetary policy, which closes the window of loans to the government. And ideally the rediscount facility is only used for trivial sums of money. All these things are designed to do one thing: to give the central bank control over its balance sheet.

Fostering A Strong and Professional Money Market

The second major requirement for open market operations is to have a market in which to operate. A country may be able to get by with something pieced together and held in place with bits of wire, so to speak. But the central bank cannot really carry out good open market operations until there is what I would characterize as a professional money market.

An interesting example came up in the course of a previous floor discussion. Suppose the country is running a budget deficit and sold instruments to households, for instance, to finance that deficit. As a case in point, Australia had a very successful household instrument, which was called an Australian Saving Bond. When we set its interest rate at the right level, households—meaning small investors—bought these like hot-cakes. That was the way we funded our budget deficit when it started to blow out in the middle of the 1970s. It was a very successful form of funding for a budget deficit.

Why not make instruments like these Australian Savings Bonds the basis of the central bank’s open market operations? The instruments are out there; why not buy and sell those? The argument against doing so is that this instrument went into households. In fact, it was given the special characteristic of a constant principal value, because we allowed them to be discounted at any stage at their face value. For that reason, they would not have made a good instrument for open market operations. But even if these bonds had not had that characteristic, by using them as the basis of open market operations we would have been imposing capital gains and losses on households.

Now it is possible to operate on that basis, but I think it makes it difficult; it is a constraint on open market operations. If you are planning an open market operation that will impose a capital loss on households, then you will probably encounter constraints. It is much better to be operating in a deep professional market, where big players are operating who understand there are risks of capital gains and losses, so they cannot complain when you impose capital losses on them. That is the sort of market required for open market operations.

One fortunate side effect of our long history of budget deficits in Australia was that over the years we became good at selling government securities. We had a well-developed market in government securities long before we decided to do any open market operations. The market was not in fact deep enough to sell all the bonds needed to fund the budget deficit, but it was a well-developed
market. It had been operating since 1960 or so; open market operations only started about 20 years later. We were lucky, then, in that we could do it in two stages. We developed the government securities market in the 1960s and 1970s. And then in the early 1980s, we started to use that market for open market operations.

Perhaps ten years ago, the buzz words for a sound market were “width, depth, and resilience.” What should be done to encourage a market with those characteristics? Let me start with some things one should either not do or do only with great reluctance. The first, to which I have already alluded, is to have captive holders of government securities. Captive holders are parties—persons or institutions—who in one way or another are forced to hold the government securities that you are selling. You may put honey around this instrument to make it attractive for them, but you get into trouble when you rely on captive holders to take all your government securities.

In Australia we relied on the savings banks and the life insurance companies in particular. We gave the life insurance companies a tax break if they took a certain proportion of government securities. The problem was that once those securities were on their balance sheet, they would not sell them again. We had sold the securities to them at the wrong price; if they sold the securities, they would actually take a loss in their accounts. So they held them to maturity. Of course they actually took a loss on day one when they bought the securities from us. But they did not have to crystallize that loss as a capital loss at all. The way they avoided having the loss show up was to hold them to maturity.

If your intention is to develop a secondary market in government securities, then you do not want parties holding the government securities to maturity. A great temptation when trying to develop the government securities market is to find a few ready victims, a few captives, and load them up with government securities. That does the job if you just want to fund the budget deficit. It does not work if you want to use that market to carry out open market operations. So we got rid of those captive holders.

Figure 4.3 illustrates how important the captive holders were. In addition, the big holders in those figures are the banks. To some extent they were captive holders also. For instance, we made the savings banks hold government securities as their major asset. Of course, there were also prudential reasons for requiring the banks to hold government securities. So there was some sense in which banks should be made to hold government securities. The relative importance of the prudential role and the deficit funding role cannot be clearly separated. However, the effects are markedly demonstrated by the life insurance companies. As soon as we unshackled them, they stopped holding government securities. As everyone else did in the 1970s, Australia had negative real interest rates. We burned those captive holders badly at that time. They will not be easily burned again, and their balance sheets now reflect that.

In summary, one must get past the stage of captive holders as quickly as possible. Open market operations cannot be effective in a market dominated by captives.

Another thing not to do is to give tax breaks. There is a great temptation to use tax breaks to encourage mar-

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Figure 4.3  Holders of Commonwealth Government Securities (End-June Figures)
kets, but there are disadvantages in doing so. They segment the market between those who can take advantage of them and those who cannot. They distort secondary market activities if preferential tax treatment is not accorded to all securities. They are inequitable in terms of income distribution. They are a hidden indirect subsidy, which does not appear on the balance sheet and whose effectiveness therefore cannot be assessed.

More legitimate methods are available to foster a market with width, depth, and resilience. Anything that encourages secondary markets is a good idea. Sometimes it helps if the government, the authorities, are active in trading in the market. But, as Paul Meek pointed out earlier, this must be done carefully. Do not take all the business away from those whose interest is to earn a profit by trading in the market. If the authorities do all the job, nothing may be left for private traders. A balance must be struck.

In Australia, for instance, we deal in the government bond market almost every day for reasons unrelated to our open market operations. Each day, more or less, two separate operations are done. The open market operation occurs early in the morning. Later, towards midday, we do some dealing in the bond market. Now that's just designed to help the bond market along. However, if the central bank dominates that market, then that can hurt the private traders whom you want to develop.

A rediscount facility is another possibility. I have already presented the case against an over-active rediscount facility as a threat to control of the central bank's balance sheet.

Yet another possibility is derivative markets. In Australia, the introduction of a ten-year futures contract for bonds gave a great boost to the bond market. The central bank had nothing to do with its introduction. It was a private initiative that started because the market was there. Still, it certainly has increased the liquidity of the bond market.

The central bank may be able to encourage institutions in the market to repackage government paper. For example, the holder of a large block of government securities may hold that on one side of its balance sheet, while repackaging it into smaller instruments to be sold on the retail market. You can encourage that.

Trivial as the point may seem, it is nonetheless important to determine the right kind of securities and the right length of the issues. Issues to be decided on include: should the instruments carry capital risk or be redeemable on demand at face value, be bearer bonds or inscribed, what should be the maximum holding period, should there be dealers or just brokers, who are the market makers, and what is the size, maturity and target market for each issue. The authorities also must decide how much information should be given to the public on the central bank's portfolio and on estimates of government funding requirement over the longer term. Lastly, if securities are being sold by tender, the authorities must decide:

- How much information is provided to tenderers
- Administrative details such as settlement period
- Safeguards to ensure that bidders actually fulfill their bids
- Who can participate in the tender
- Whether the tender is the sole method of setting bonds, or is there a limited "tap" as well
- How the authorities participate in the tender
- Whether there is a reserve price (i.e., maximum acceptable yield)
- Whether to settle the tender at the differential yields that tenderers have bid or to settle it by the "Dutch auction" system of a uniform price
- Whether non-competitive bids are accepted (i.e., bids for a limited quantity that will be allocated at, say, the average price of the competitive bids)
- How to ensure that the tender is covered. (The issue here is whether to use a select group which, in return for some special concessions, ensures that the tender is fully covered.)

When we first started selling bonds in Australia, we had an implicit understanding with the market that bonds with the same characteristics would not be issued twice. If we put out 15-year bonds due to mature on a particular date with a particular yield, we would not issue bonds with exactly those characteristics again. I suppose the reasoning was that the market should know exactly how much of a security would be placed. They did not want the risk that, after they had bought from one issue of securities, the central bank would subsequently flood the market with securities having exactly the same characteristics.

At the start, the market seemed to want a variety of securities. At one stage, there were over a hundred different government securities issued with different yields and different maturities. Some were very popular; some were not. Figure 4-4 shows what the yield curve looked like. The dotted line with all the spikes is a yield curve, although no one would recognize it as such from the textbook description of a yield curve, which is supposed to be smooth. That did not happen with instruments such as we had on issue, some of which were liquid while others were not. Those with a ten-year maturity that had the advantage of corresponding to the ten-year bond futures were very liquid. They are represented by the two downward spikes in the figure. Other issues, which in fact had similar characteristics, nevertheless had vastly different yields.
By giving that kind of yield curve, the market was in effect telling us that it did not want the degree of product differentiation we thought it wanted. Instead, it wanted the product to be uniform. In fact, the liquidity was greatest when most of the market was ten-year bonds. That was what the market wanted; the more of those that were put out there, the better. That was the way to get liquidity.

So, trivial as it may seem, one must look at what is happening in the market all the time. What suits the market at one stage may not suit it later. As the market develops, its requirements might become different. When we realized what the market was telling us, sometime around March 1987, we started consolidation operations. We would buy back the unpopular securities and sell more of the "hot" (i.e., popular) ones, which we got the government to issue. We did more than a billion dollars worth of these highly profitable deals, just quietly doing some every day. No one realized what was happening; the yield curve stayed unchanged. Gradually the market realized what was happening, and the yield curve did what the textbooks say it should. It became more or less a straight line. The solid line in Figure 4-4 shows the yield curve several years later, for May 4, 1990. In fact, the market caught on to us much sooner than that and flattened out the yield curve.

In summary, this example illustrates that the actions needed to encourage liquidity in the government securities market may be roundabout and may change over time. The important thing is to stay in touch with the market at all times. Read the market's signals, and take advantage of the opportunities that arise.

The critical issue for achieving liquidity in the secondary market is to get the pricing right. The price of the issued instrument must be a market price. How does one determine a market price? I shall be dogmatic here and say a tender is necessary.

As an intermediate system before we went to the full tender, we tried a tap system. A stock of government obligations was made available at specified terms. If it sold well, which indicated that it had been correctly priced, we kept it at that price. If the price was wrong in either direction, that issue would be closed off and another put in its place. Table 4-1 lists all the stocks that were issued during the period of about 20 months when the tap system was operating.

We thought this tap system might work well because it enabled us to take a stock off the market if it was either unpopular or too popular; that is, if we had mispriced it. In that period of 20 months, we issued 22 different stocks. We worked hard to get issues on the market at the right price. Yet, I must say that I believe we failed. For example, although we intended to sell $A500 million of stock 7, we sold $A12 million. Stock 16 went the other way. We intended to sell $A300 and sold $A352 million. As the table shows, it was extremely difficult to get the price right, even though we were issuing new stock whenever we thought we had gotten the previous price wrong. Even with all that effort, we could not make it work.
Table 4-1  Tap Stock Sales

<table>
<thead>
<tr>
<th>AMOUNT ($MILLION)</th>
<th>MATURITY</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDICATED</td>
<td>SALES</td>
<td>OPENING</td>
</tr>
<tr>
<td>1  500</td>
<td>237</td>
<td>Apr 82</td>
</tr>
<tr>
<td>2  250</td>
<td>263</td>
<td>Apr 85</td>
</tr>
<tr>
<td>3  400</td>
<td>281</td>
<td>May 86</td>
</tr>
<tr>
<td>4  500</td>
<td>293</td>
<td>Nov 82</td>
</tr>
<tr>
<td>5  250</td>
<td>59</td>
<td>June 90</td>
</tr>
<tr>
<td>6  500</td>
<td>145</td>
<td>Feb 83</td>
</tr>
<tr>
<td>7  500</td>
<td>12</td>
<td>Nov 84</td>
</tr>
<tr>
<td>8  300</td>
<td>224</td>
<td>May 82</td>
</tr>
<tr>
<td>9  300</td>
<td>20</td>
<td>Sept 82</td>
</tr>
<tr>
<td>10 150</td>
<td>77</td>
<td>Dec 87</td>
</tr>
<tr>
<td>11 400</td>
<td>253</td>
<td>May 83</td>
</tr>
<tr>
<td>12 400</td>
<td>47</td>
<td>July 84</td>
</tr>
<tr>
<td>13 500</td>
<td>383</td>
<td>Apr 83</td>
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<tr>
<td>14 150</td>
<td>74</td>
<td>Aug 88</td>
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<tr>
<td>15 500</td>
<td>539</td>
<td>June 84</td>
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<tr>
<td>16 300</td>
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<td>17 500</td>
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<tr>
<td>22 400</td>
<td>128</td>
<td>Aug 85</td>
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</table>

*Until Tap Stock 13 excludes subscriptions by the RBA and LCIR. Thereafter, RBA subscriptions only are excluded.

In 1982 we went to a tender. That seems to me to be crucial in getting the price right. In turn, getting the price right is crucial to ensuring an active and liquid market. Figure 4-5 shows average daily turnover in the bond market. Within a year after we went to a tender system, the market liquidity began increasing; it just grew like wildfire. If you get the pricing right a lot of other things will look after themselves.

**Figure 4.5  Bond Market Average Daily Turnover**

With respect to the requirement to unshackle the commercial banks, most countries start with their banks surrounded by constraints. If open market operations are to be effective, all those shackles must come off.

The simple reason is that the commercial banks are the conduit, the core of the financial system. Why carry out open market operations, if they are not being used to affect the banking sector, which in turn passes the effects on to the rest of the economy? The ultimate aim of carrying out open market operations is not merely to change interest rates in the short term cash market but to let those rate changes act as a basic building block of the cost of funds, which a banking system or financial system then passes on to its customers. Therefore, unless the banks are freed from constraints on interest rates and on their balance sheets, open market operations will not be effective.

Unshackling the Banking System
It used to be that way in Australia; the banks' balance sheets were tied so rigidly that they could not move without coming to the central bank for permission. They were not able to manage the liability side of their balance sheet to match the asset side. They were passive deposit takers; they took whatever the customer brought to them in deposits and loaned them out. Because the system was very bumpy, the banks had to hold large reserves. Figure 4-6 characterizes their balance sheet management. Until the early 1980s, they needed to hold large excess reserves. Those reserves changed a great deal during the year. All their efforts went into managing that intra-year liquidity flow. The whole of their effort was aimed merely at trying to figure out what was likely to happen and how to respond.

Now that the banks have been unshackled, they can enter the short-term money market to get whatever deposits they need. They operate with much less excess liquidity. With that off their minds, they have time to think about other things than how to maintain their intra-year liquidity. They can get on with the job that banks are supposed to be doing, which is to decide who the good customers are and lend out the money they take in to customers who will pay them back.

Other changes in the banking system also occurred in response to the removal of constraints. Figure 4-7 compares cash rates in 1983 and 1985. Under the old system, cash rates bounced around a lot; they smoothed out when the shackles came off. As Figure 4-7 shows, the changes also smoothed the intra-year pattern of interest rate swings.

We are now using our liquidity operations to smooth out these rate variations. The point of doing so is not simply to have a flat line instead of a wobbly line. The major benefit gained from all this is that the attention of persons in the financial sector could move away from concern with having enough liquidity each day and turn to the real business of intermediation: the work of bringing in money deposits and lending it out productively to borrowers who will be able to repay it with interest.
Conclusions

Let me say that, while this is how we did it in Australia, imitating us might not be the best way. In particular, open market operations are not necessarily the right way to go for every situation. It was long ago that the old preacher said there is a time for everything. I believe that applies as well to open market operations. As a country’s financial system develops, the central bank needs more sophistication in its operations. In a sense, the two things go hand in hand; if a very unsophisticated system of central bank operations is left in place while the financial market is becoming more sophisticated, the market will roll over that system, leaving the authorities unable to achieve their objectives. Increased sophistication not only creates the need to change the system of operations, it also creates the environment in which the new system can succeed. It is a matter of choosing the right time, ascertaining the appropriate moment for the change.

The progress in Australia was, in my view, paced by developments in the market. Among the critical events, our financial integration with the rest of the world during the 1970s was extremely important. It forced us down this path. But once started down that path, we had no choice.

I must say I do not think the current system answers all of our problems. The current system has the potential to let us control the monetary aggregates with a high degree of precision. That is what we wanted; it is why we put the system in place. Yet, now that we have the ability, we are not sure we want to use it. We have much less confidence now that we can steer our system using an intermediate goal. To be more specific, in Australia we have abandoned the idea, at least for the moment, of an intermediate target. We shoot straight for some ultimate targets.¹

Therefore, even when one has put one of these sophisticated systems in place, they don’t solve all of the problems. Central bankers will still be left with a great many difficult issues on how to run monetary policy.

Note

1. Editor’s note: The interventions by Lindsey and Goodhart in the next section elaborate on this point.
Discussion

Question: I have a question regarding the stability of demand for reserves. Your graph makes it look easier than it is in practice. You said that the supply of bank reserves should be controlled, but in fact the demand for money, the demand for reserves, can be extremely unstable. In Colombia, many of the shocks to the system, particularly the pressures coming from the Treasury, such as withdrawing money by collecting taxes or abrupt changes in expenditures, will shift this demand for reserves drastically. This introduces a tremendous instability in the interest rates. What has been your experience of the demand for reserves? How stable has it been during the process?

Mr. Grenville: The demand for reserves in our banks is fairly well defined and relatively stable. The big changes come on the supply side. In terms of Figure 4-2, all the action is on the supply of reserves, which is hit by huge shocks every day. The success of our more recent policy is that we have become better at offsetting those shocks. For example, government taxes used to fall due at one time of the year. We have persuaded the government to spread those out during the year. We now have much more information on what shocks are hitting the system, so we have gotten better at capturing the changes in supply. The results, as Figure 4-7 shows, have been that interest rates, which were very jumpy on a day-to-day basis and showed a clear seasonal trend, are now stable.

Nothing was done to the demand curve, which is in fact quite stable. One reason it is so stable is that the banks have faith in our ability to maintain adequate reserves in the system. The short answer to your question, then, is that the demand has not been a problem for us, the supply was what we needed to stabilize.

Question: You stressed that the operational focus is the interest rate, not in a long-term sense but rather in a short-term sense. Since your ultimate objectives may be something like the price level or the level of nominal income, I suppose that your statement means that you change the short-term target as circumstances vary. Could you give us some idea of how you change your operational targets as a function of the ultimate variables that you want to achieve? Perhaps you could get into the intermediate aims and the ultimate aims of the exercise.

Mr. Grenville: That would really require another two hours, but I will answer briefly. From 1975 to 1985 we searched for an intermediate target. In those days, we had M3 as a target. In the 1970s, we usually missed it but not by much. Then in the 1980s when the system was deregulated, we missed it by more and more. We felt it was becoming less relevant because it focused on the banks while other financial institutions were increasingly important. In January 1985, we abandoned targeting of M3. We got out of the way just in time; we had targeted 10 percent growth in M3 for that year, but it turned out to be 18 percent. We would have lost all our credibility if we had been that far off our declared target. Yet, and this is the key point, monetary policy at that time was tight. No one said we had missed our target because monetary policy was loose. All the churning on the balance sheets, with deposits moving out to thrifts and then back, led us out to broader and broader aggregates in the attempt to nullify those intra-institutional changes. So we went to broad money. But that was not quite broad enough because it excluded bank bills, which we found were being used a good deal in intermediation.

That led us to the broadest of the aggregates, which we call credit. It does not matter that it comes from the other side of the balance sheet, it can be liabilities just as well as credits, so long as it captures the total amount of intermediation. But it turned out that aggregate was not good, either. In the mid 1980s the credit aggregate grew at 20 to 25 percent a year for the five years from 1984 to 1989. At this time, inflation was declining and nominal income aggregates were growing at around 12 percent.

To make a long story short, we do not think there is any intermediate target that will serve for us. Like all good central banks, we are concerned with inflation and price stability. So we are interested in forward-looking indicators of inflation: how fast is the economy running; how tight is the labor market; what is happening to price expectations? We try to read the last of these from the shape of the yield curve.

When we think those indicators are changing, we adjust interest rates because of our general view that the direction of causal transmission is from interest rates to economic activity. We have done extensive Granger tests but have not been able to find that connection directly. Although we cannot prove the causal direction, we accept the common sense view that, if interest rates are raised enough, projects become unprofitable, and growth of activity decreases.

That does in fact happen, but the calibration of the transmission mechanism is extremely poor. For example, in October of 1987 we realized that monetary policy needed to be eased. Starting in April 1988, we realized the economy was running too fast. So we started to
tightly, and we tightened again and again. Interest rates
rose progressively. The treasury bill rate, for example,
climbed from 11 percent to 18 percent over a period of
six to nine months. At 18 percent, the real rate of inter-
est was around 10 percent, which we reckoned was a suf-
ciently tight monetary policy. The economy still was
growing at 10 percent in real terms; employment was ris-
ing at 4 percent annually. So, although we think we know
the transmission mechanism, the lags on it are extreme-
ly long and the calibration extremely poor. Eighteen
months after we first began tightening, the economy
slowed, and that should eventually bring down the infla-
tion rate.

Question: Do capital flows from outside affect the lag
in the transmission mechanism?

Mr. Grenville: That should act as a second lever for
transmission. As interest rates rise, external capital wants
to come into Australia, but it cannot come in because we
have a floating exchange rate. On an adjusted basis, there
should be no movement.

Mr. Honohan: So the exchange rate increases, which
makes your exports less competitive, which also slows ac-
tivity?

Mr. Grenville: Yes, so the transmission mechanism not
only adjusts interest rates for the activity but also may
lead to a higher exchange rate. The exchange rate went up
sharply from $A0.57 per U.S. dollar in the middle of 1988
to $A0.87 several years later. Still, economic activity did
not begin to slow until eighteen months after the tight-
ening started.
PART II

MONETARY TARGETING AND CONTROL
Introduction

Moving away from bank-by-bank credit ceilings raises the question of appropriate intermediate targets for central bank policy. The presentations and discussions in this section focused on the extensive lessons of the industrial countries with targeting issues and their relevance for developing countries. David Lindsey, Deputy Director of the Division of Monetary Affairs at the Board of Governors of the Federal Reserve System, provided a comprehensive insider’s view of the difficulties in achieving monetary control in a period of rapid financial change and of the Fed’s search for stable money and credit relationships with real activity. In European countries, too, as Charles Goodhart reported, various monetary aggregates, credit, interest rates, and exchange rates have all been considered as potential targets. (Goodhart, who is now Norman Sosnow Professor of Lending and Financing at the London School of Economics, was formerly Adviser at the Bank of England.) But, regardless of the intermediate target, central bankers keep their eye closely on the ultimate targets of inflation and output and, even in formerly more monetarist central banks, have moved to an eclectic view of monetary policy. An important lesson of industrial country experience is that there is no guaranteed method for attaining monetary policy targets (direct methods included). Officials must avoid regarding econometric relationships with unconditional belief and instead be prepared to adjust to behavioral changes associated with financial reform.

In many countries with a floating exchange rate, interest rates have become the more important intermediate target, as they were before the rise of monetary targeting. But the authorities are now more alert to the long and variable lags of monetary policy. Professor Goodhart explains how lags probably contributed to the difficulty of targeting money aggregates in the early 1980s.

Questions arose concerning the use and design of reserve requirements. Several countries—such as Canada and the United Kingdom—have operated with no reserve requirements. Lindsey noted that reserve requirements help implement monetary policy when some aggregate reserves measure is being targeted; if interest rates are the real operating target, then there is little monetary control function for required reserves. When reserve requirements are employed with an aggregate reserves target, it is helpful to keep them uniform; otherwise the money multiplier can be altered by shifts among different institutions.

In countries participating in fixed exchange rate arrangements, national monetary policy becomes ineffective as capital mobility and asset substitutability rise. These forces recently have been at work in the European Monetary System (EMS), with the dissolution of barriers to capital flows and the rising substitution among EMS currencies. Not unlike the experience of the Southern Cone countries in South America a decade ago, Goodhart described how, as the exchange rate peg has become credible, members of the “European Southern Cone” have been experiencing inflows of capital, deteriorating current account positions, relatively high inflation rates, and appreciating real exchange rates. In this situation, it is important that governments be able to use fiscal policy to restrain inflationary pressures, since monetary policy has been sacrificed to maintain the exchange rate peg.

Governments in several countries are recognizing that monetary policy deliberations should be insulated from political pressures and that therefore it is important to increase the independence of central banks. A society can choose to peg its currency to one that is managed by an independent and firmly anti-inflationary monetary authority, or to erect legal barriers around its own central bank. A discussion ensued regarding the difficulty in establishing a proper incentive structure for central bankers; some feared that monetary incentives
favoring only low inflation might bring about such a result at a high price.

While Lindsey and Goodhart describe monetary policy practice in industrial countries, Don Mathieson (Chief of the Financial Studies Division in the Research Department of the IMF) concentrates on developing countries in asking why there has been a traditional reliance on credit controls and why they are coming under pressure. Exogenous shocks tend to be relatively larger for many developing countries than for industrial countries. The former do not have the depth of financial markets to absorb and spread out the effect of such shocks. It is partly as a result of this that developing countries rely on "financing" large losses, caused by such economic shocks, through the central bank's balance sheet, and thus effectively through the inflation tax and other forms of repression of the financial system. Rather than allow crises to lead to greater instability through their effect on skyrocketing interest rates, the authorities in developing countries have had recourse to direct controls. Mathieson adopts the pessimistic view that such recourse, in times of crisis, will continue to be a feature of developing country policy.

Dr. Mathieson also describes the macroeconomic and structural preconditions for successful transition to market-based methods of monetary control. One may be allowed the optimistic opinion that careful attention in advance to ensuring that these preconditions are satisfied (including the changes in net credit demand noted by Johnston in his paper) would minimize the need for policy reversals.

Central banks can only hope to be independent within a government, rather than independent of the government. When shocks are sufficiently large, be it a stabilization program in a Latin American country or a drive to currency union in Europe, a central bank will ultimately have to make some compromise or see its independence limited. The true art of central banking, then, concerns the nature of the trade-offs bargained by the monetary authorities. Goodhart noted that the importance of discretionary changes in policy will persist as long as governments maintain their monopoly of the right to issue money.
Monetary Targeting: Lessons from the U.S. Experience

David Lindsey

I will attempt today the ambitious task of weaving a conceptual discussion of U.S. monetary control techniques into a chronological discussion of four separate periods in recent U.S. monetary history: 1970 through October 1979, October 1979 through the fall of 1982, the fall of 1982 to the fall of 1987, and the fall of 1987 to date. I will address changes both in the tactics of operating procedures and in the strategy toward intermediate targets used by the Federal Reserve Open Market Committee (FOMC) over the four periods. The outstanding issues related to monetary targeting in the U.S. will, I hope, emerge clearly from the discussion.

1970 through October 1979

Over the 1970s, the Federal Reserve gradually strengthened its reliance on monetary aggregates. Step by step, the monetary aggregates—mainly M1 and M2—supplanted interest rates as the primary intermediate targets for monetary policy. In the early 1970s, the Federal Reserve began focusing internally on the growth rates of monetary aggregates as indicators of monetary stimulus or restraint. The Federal Reserve started announcing publicly its desired ranges for annual growth rates for selected monetary aggregates in response to a joint resolution of Congress passed in 1975. Later, Congress legislatively mandated this practice.

The current provisions of the Federal Reserve Act, as amended by the Full Employment and Balanced Growth Act of 1978, require the Board of Governors of the Federal Reserve System to report to the Congress twice each year on the “objectives and plans of the Board of Governors and the Federal Open Market Committee with respect to the ranges of growth or diminution of the monetary and credit aggregates.” This section of the Act also states that “nothing in this Act shall be interpreted to require that the objectives and plans [for the monetary and credit aggregates] ... be achieved if the Board of Governors and the Federal Open Market Committee determine that they cannot or should not be achieved because of changing conditions ... provided ... the Board of Governors shall include an explanation of the reasons for any revisions to or deviations from such objectives and plans.”

The Federal Reserve’s record in attaining the announced annual ranges for M1 and M2 from 1976 to 1979 was somewhat mixed. The ranges for each calendar year are shown by the lines in the top panel of Figure 5-1 and the actual growth rates of M1 and M2 are shown by dots, using the definitions of these aggregates in force during these years. Over each of these calendar years, only one of the aggregates grew within its range, while the other exceeded its upper bound. In addition, M1 exceeded its upper limit during the first three quarters of 1979.

For most of the decade, the Federal Reserve relied on the federal funds rate—the interest rate that banks charge one another on overnight loans of reserves—as its operating target in attempting to attain its monetary objectives. When money growth was faster than desired, the FOMC raised its operating range for the funds rate, shown by the solid bands in Figure 5-2. The FOMC lowered the range when money growth was undesirably weak. The trading desk at the Federal Reserve Bank of New York altered the supply of nonborrowed reserves to keep the supply of total reserves equal to the demand for total reserves at the desired funds rate. This kept the actual funds rate, shown by the crosses, generally within the operating range.

Through these procedures, the Federal Reserve sought to influence directly the quantity of money demanded by the public. It tried to select a level of the funds rate that would make the public want to hold an amount of money equal to the targeted value. When the trading desk raised the funds rate, other short-term interest rates tended to rise in sympathy. The public then
found market instruments more attractive relative to money balances, which were subject to interest-rate ceilings or outright prohibitions on the payment of interest. The resulting transfer of funds from monetary to other financial assets was reflected in a reduced stock of money. Over time as well, the higher interest rates and accompanying tighter credit conditions tended to damp spending and hence transactions demands for money. In practice, when money demand strengthened, the FOMC did not always alter the funds rate promptly enough or sufficiently to keep monetary aggregates consistently within their ranges, even over the longer run.

October 1979 through the Fall of 1982

On October 6, 1979, facing above-target monetary expansion, worsening inflation, and their consequences in domestic and international financial markets, and dissatisfied with the old procedures, the Federal Reserve switched its operating target from the federal funds rate to nonborrowed reserves as a sign of its commitment to longer-run restraint on money growth. The Federal Reserve announced that it had switched procedures "to support the objective of containing growth in the monetary aggregates [by] ... placing greater emphasis on the supply of bank reserves and less emphasis on confining short-term fluctuations in the federal funds rate."

Holding to a nonborrowed reserves target path essentially gives the short-run total reserves supply curve a positive slope, as in Figure 5-3. The stock of total reserves is on the horizontal axis and the federal funds rate is on the vertical axis. The supply curve is positively sloped mainly because an increase in short-term interest rates relative to the discount rate induces depository institutions to increase their borrowing at the discount window. With nonborrowed reserves fixed, total reserves supplied will be higher, and hence the stock of reservable deposits that can be supported by the outstanding nonborrowed reserves will be larger.

The increase in borrowing induced by a given rise in the funds rate has a limit, though, because depository institutions are expected not to make repeated or continuous use of the discount facility for adjustment credit under normal circumstances. Thus banks experience some rising implicit cost to added use of the discount window as they anticipate more administrative pressure to adjust reserve positions in some other way. Banks will increase their borrowing until the implicit cost on the
last dollar of discount borrowings has risen by an amount equal to the initial change in market interest rates. In equilibrium, the marginal cost to a bank on each of its managed liabilities is equalized, including the sum of the explicit discount rate and the implicit marginal cost of discount window borrowing.

A nonborrowed reserves operating target, therefore, provides an automatic self-correcting mechanism acting partially to resist divergences of the money stock from its targeted value that could be mimicked only through judgmental adjustments under a federal funds rate guide. Under the nonborrowed reserves procedure, a surge in nominal money demand relative to target—owing to an increase in real income, a rise in the price level, or a positive random disturbance—will cause required reserves to increase and shift the demand curve for total reserves to the right. As banks increase borrowed reserves to fill the gap, the implicit cost of the borrowing rises and they bid up the funds rate. As the funds market moves up and to the right on the total reserves supply curve, the funds rate rises. The surge in money will be partially checked by the induced rise in short-term interest rates.

Figure 5-4 shows how this automatic mechanism worked during the three years after October 1979. The two panels indicate monthly levels of M1 and M2 relative to the upper and lower bounds of their annual ranges. A strengthening of money relative to target raised required reserves. Since nonborrowed reserves were held to a fixed path by the trading desk, reserve positions of depository institutions were automatically tightened as institutions in the aggregate were forced to borrow the extra reserves at the discount window. These adjustments plus seasonal borrowings are shown in Figure 5-5.

Institutions were induced to borrow additional reserves at the window only after they had first attempted to acquire the needed reserves from other institutions. In doing so, they bid up the federal funds rate relative to the discount rate. This response of the funds rate may be seen in Figure 5-6. Higher short-term interest rates in turn encouraged depository institutions and the public to make secondary adjustments to balance sheets that curtailed deposit expansion and helped to bring money back to path. This process occurred automatically in the absence of additional deliberate actions by the Federal...
Figure 5.3 Reserves Market

Federal Funds Rate

Total Reserves Demand: Required + Excess(*)

Total Reserves Supply: Nonborrowed + Borrowed(**)

Discount Rate

Nonborrowed

Reserves

(*) This schedule shifts with changes in the demand for reservable deposits or in the willingness of banks to hold reserve surpluses.

(**) This schedule shifts with changes in open market operations, in the discount rate, or in banks' willingness or need to borrow.

Reserve. However, the Federal Reserve also frequently opted to amplify these automatic effects. For example, in the case of a monetary overshoot, it might have lowered the nonborrowed reserves target or raised the discount rate.

From October 1979 to the fall of 1982, divergences of money, especially M1, from long-run targets were closely associated with changes in borrowed reserves and the federal funds rate in the same direction. Such variations in short-term interest rates were part and parcel of the process that returned money to longer-run objectives over time in the face of divergences. For those three years the nonborrowed reserves operating procedures permitted short-term interest rates to move over a much wider range in the intermediate run than under the previous procedures.

Over those three years, the Federal Reserve slowed the trend rate of money growth, and while real economic activity stagnated and unemployment rose to a postwar record, the rate of inflation essentially was halved. But as monetarist critics noted, money growth as well as interest rates showed more intermediate-term variability. What explains this behavior? That money and interest rates moved in the same direction establishes a prima facie case that the demand curves for money and total reserves varied over a wider range than their supply curves did. Moreover, there is evidence that the Federal Reserve in fact confronted a more unpredictable demand for money after the inception of the new procedures.

At the start of 1981, negotiable order of withdrawal accounts (NOWs) were authorized nationwide, boosting actual M1 demand. Working in the other direction, cash management techniques evidently spread to medium-size corporations, and some demand depositors also shifted into money market mutual funds. As in the mid-1970s, the high market interest rates that accompanied high rates of inflation prompted money holders to economize on conventional checking account balances subject to interest-rate ceilings, and prompted the Congress and the financial regulatory agencies to allow the creation of new accounts paying higher returns.

By 1982, the growth of fixed-ceiling NOWs had evidently raised the interest elasticity of M1 demand. The sizable declines in rates in the second half of 1982 began to engender a larger increase in desired money holdings than suggested by conventional money demand functions. Figures 5-7 and 5-8 show that declines in the three-month bill rate relative to the NOW rate (Figure 5-7) narrowed greatly the opportunity cost of M1 (Figure 5-8). The NOW account component, and M1 as a whole, had become more elastic with respect to market interest rates than was true of demand deposits or currency. After all, using hypothetical figures, a fall in short-term market rates from 15 percent to 10 percent represents a decline of one-third in the marginal opportunity cost of holding a demand deposit (even one paying a positive average implicit return via services independent of account size). By contrast, the marginal opportunity cost of holding a NOW account paying a 5 percent explicit rate of return is reduced by one-half. For 1982 as a whole, M1 growth substantially exceeded its upper bound, while the measured velocity of M1, shown in Figure 5-8, posted a nearly 6 percent decline, unprecedented in the postwar period. In light of these circumstances, and with further impending deregulation having uncertain effects on M1, Chairman Volcker announced on October 9, 1982, that for the time being the FOMC was placing reduced emphasis on M1 as a guide to policy relative to broader monetary aggregates.

The Fall of 1982 to October 1987

The de-emphasis of M1 in the fall of 1982, together with the more flexible strategy that followed regarding the monetary aggregates more generally, was mirrored by a shift in operating procedures. The nonborrowed reserves operating procedure, with its automaticity deriving mainly from variations in required reserves on
transaction deposits, has to be modified if M1 is dethroned as the primary intermediate monetary target (or if a more judgmental approach is taken in reacting to M1 movements). The Federal Reserve did not return to a federal funds rate operating target. Instead, the nonborrowed reserve strategy and its automaticity gave way to a technique that allowed the funds rate to be determined by the market, through the targeting of discount win-

**Figure 5.4**  *M1 and M2 Growth Relative to Annual Ranges, 1980-1982*

**Figure 5.5**  *Discount Window Borrowing, Adjustment Plus Seasonal Borrowing, 1979-1982 (monthly)*
Figure 5.6 Federal Funds Rate and Discount Rate, 1979-1982 (monthly)

Figure 5.7 Three-Month Treasury Bill Rate and NOW Rate

dowing borrowing from one reserve maintenance period to
the next, implemented by allowing a flexible nonbor-
rowed reserves path. Over longer periods, "the degree of
restraint on reserve positions," as reflected in the level of
adjustment plus seasonal borrowings at the discount
window, was altered more judgmentally in response both
to movements in monetary aggregates relative to short-
term objectives and to other economic and financial de-
velopments.

The shift in operating procedures weakened the earli-
er correspondence between movements in monetary ag-
gregates relative to their ranges, on the one hand, and in
discount borrowings and the federal funds rate, on the
other. As the top panel in Figure 5-9 shows, the funds
rate from the fall of 1982 to late 1987 displayed a much
smoother pattern than it did during the previous three-
year period.

The use of borrowing as an operating guide afforded
the FOMC, through the desk, considerable influence
over conditions in the federal funds market and to a less-
er degree other money markets, while still enabling the
funds rate to fluctuate in response to changes in market
expectations of policy actions and other forces affecting
money markets generally, as well as to disturbances in
the supply and demand for reserves. There was a system-
atic, if somewhat loose, association between the spread
of the funds rate over the discount rate and the willing-
ness of institutions to draw on adjustment plus seasonal
borrowings. Greater discount borrowing in the aggre-
gate tended to be associated with a wider spread of the
funds rate over the discount rate—which encouraged
more institutions to rely on the window more frequently
and for larger amounts. This association between actual
borrowing and the spread remained discernible from
1982 through 1987, as may be seen in the lower two pan-
els of Figure 5-9.

Although a borrowing guide provided an anchoring
mechanism that generally acted to confine unexpected
movements of the funds rate, upon occasion the two-
week average funds rate varied significantly from the
area expected to be typically associated with a given discount rate and a given intended level of borrowing.

Several episodes of more sustained shifts in the funds rate-discount rate spread relative to borrowing can be seen in the lower panels. In the summer of 1984, in the aftermath of the troubles of Continental Illinois Bank, the spread widened while borrowing stayed around U.S.$1 billion, as large institutions became more reluctant to be seen borrowing at the window. Subsequently, this reluctance disappeared and the relation returned more to normal. Then, in early 1986, borrowing declined, but the spread fell by less than would be expected. This greater reluctance seemed permanent, perhaps reflecting more caution in reserve management after the Bank of New York's publicized computer breakdown on November 21, 1985.

October 1987 to the Present

After the stock market break on October 19, 1987, adjustment borrowing dropped still more, relative to the spread, in several steps. Recently in 1990, adjustment borrowing has averaged only US$100 million. The weakness in adjustment borrowing has been overlaid by wider swings over the calendar year in seasonal borrowing. The predictability in the relation between the funds rate-discount rate spread and adjustment plus seasonal borrowing has all but disappeared in the last three years.

Under circumstances of such evident shifts in borrowing behavior, the FOMC has chosen to alter its borrowing operating objective more flexibly in the last two and a half years to prevent unexpected funds rate movements, rather than to allow the funds rate to diverge persistently from expectations. The FOMC may not have reverted all the way back to the funds rate targeting procedure of the 1970s, but it has come close.

The desired funds rate has been adjusted fairly frequently since late 1987, as was the borrowing objective from late 1982 to the fall of 1987. But these adjustments have been more judgmental than in the early 1980s, and are made on the basis of a wide range of incoming data, not just M2 and M3. The reason partly stems from the swings in GNP growth relative to the growth of the broad aggregates, that is, from variations in their velocity. Movements in M2 velocity in the 1980s are shown in Figure 5-10; the three-month treasury bill rate is compared with the average rate on M2 in Figure 5-11. M2 has not proven to be a reliable short-run indicator of GNP or thus a reliable short-run guide to policy.

The chart suggests that this problem is attributable to a sizable interest sensitivity of M2 demand, though it has less sensitivity than M1 demand over annual periods. Swings in M2's opportunity cost, in Figure 5-10, are fairly well mirrored over time by swings in V2. Thus, the FOMC has been forced to consider the likely interest rates associated with prospective M2 paths, and the effect of those rates on spending, production and inflation pressures.

The article on "Monetary Policy" by Henry Wallich and myself notes the problems in some circumstances for macroeconomic stabilization when the central bank adheres rigidly to a predetermined target for the money

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**Figure 5.8 M1 Velocity and Opportunity Cost**

![Graph showing M1 Velocity and Opportunity Cost](image)

(*Two quarter moving average. Assumes zero return on demand deposits.)
Figure 5.9  *Money Market Conditions*
*Federal Funds and Discount Rates and Borrowings*

**Federal Funds and Discount Rates**

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**Spread between Federal Funds and Discount Rates**

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<td>6</td>
<td>8</td>
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**Adjustment plus Seasonal Borrowings(\(^*\))**

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<td>Millions of dollars</td>
<td>3200</td>
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\(^*\) Excludes special situation borrowing.
Portions of the Long-run Paragraph Adopted at the February 6-7, 1990, FOMC Meeting

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability, promote growth in output on a sustainable basis, and contribute to an improved pattern of international transactions. . . . The behavior of the monetary aggregates will continue to be evaluated in the light of progress toward price level stability, movements in their velocities, and developments in the economy and financial markets.

Operational Paragraph Adopted at the February 6-7, 1990, FOMC Meeting

In the implementation of policy for the immediate future, the Committee seeks to maintain the existing degree of pressure on reserve positions. Taking account of progress toward price stability, the strength of the business expansion, the behavior of the monetary aggregates, and developments in foreign exchange and domestic financial markets, slightly greater reserve restraint or slightly lesser reserve restraint would be acceptable in the interimeting period. The contemplated reserve conditions are expected to be consistent with growth of M2 and M3 over the period from December through March at annual rates of about 7 and 3.5 percent respectively. The Chairman may call for Committee consultation if it appears to the Manager for Domestic Operations that reserve conditions during the period before the next meeting are likely to be associated with a federal funds rate persistently outside a range of 6 to 10 percent.


Box 5.2 Underlying Monetary Relations

Lower case variables are the logarithms of the upper case variables.

Quantity Equation

\[ (1) \quad M \times V = P \times Q = GNP \]

\[ M = \text{money} \]

\[ V = \text{income velocity of money} \]

\[ P = \text{GNP deflator} \]

\[ Q = \text{real GNP} \]

Long-Run Price Concept

\[ (2) \quad P^* = M \times V^* \]

\[ Q^* \]

\[ V^* = \text{long-run velocity} \]

\[ Q^* = \text{real potential GNP} \]

Identity Between Price, Output, and Velocity Gaps

\[ (3) \quad (p - p^*) = (q^* - q) + (v - v^*) \]

price gap output gap velocity gap
As a consequence of the more eclectic approach to policy guides, monetary growth ranges since 1982 were made less confining and, even so, have not always been attained. This is shown in Figure 5-12. The M1 ranges were widened and twice the base was shifted to midyear, reflecting its de-emphasis in policy. Nonetheless, they were missed in two of four years before ranges were dis-continued in 1987. The ranges for M2, M3, and domestic nonfinancial debt were widened in 1988, with the dominant consideration for M2 being its significant interest elasticity. M2 ranges were attained in all the years since 1982 except 1987. But M3 ranges were attained only in 1985, 1986, and 1988. This year both aggregates were within their ranges through March. To be sure, M3 was close to its lower bound, and as Figure 5-12 shows, M3 is estimated to have fallen just below its lower bound in

Figure 5.10  M2 Velocity and Opportunity Cost

![M2 Velocity and Opportunity Cost graph](image)

(*) Two quarter moving average.

Figure 5.11  Three-Month Treasury Bill Rate and Average Rate on M2

![Three-Month Treasury Bill Rate and Average Rate on M2 graph](image)

(*) Rate on components weighted by shares of components in M2.
Figure 5.12  Monetary and Debt Aggregates

**Figure 5.12**  Monetary and Debt Aggregates

![Graph showing M1 and M2 monetary aggregates, and Debt aggregates over time.](image)

**Figure 5.13**  M2 Velocity

![Graph showing M2 velocity from 1955 to 1990.](image)
April. The weakness in M3 since the spring of 1989 owes mainly to the downsizing of the thrift industry and the lessened need of these institutions for managed liabilities in M3.

Despite the shorter-run looseness between monetary aggregates and GNP, some justification for continuing to announce ranges for the broader aggregates and for giving them weight as a longer-run guide to policy can be advanced. That rationale involves M2's successful properties as a long-run indicator of price trends. This indicator property may be seen making use of the concept of M2 per unit of potential GNP and of an equilibrium level of M2 velocity. My discussion draws on some work that has been done by Board staff (Hallman, Porter, and Small 1991).

Box 5-2 reviews the key concepts and relationships. Equation 1 is the equation of exchange MV = PQ, which states that the stock of money M times its income velocity, V, equals the product of prices, P, and real output, Q. If we consider a long-run situation where velocity may be presumed to have settled down to an equilibrium level V* and real output is at its potential level identified as Q*, the quantity equation can be rearranged to determine the long-run price level toward which actual prices presumably are headed, for any given level of the money stock. This long-run price concept, which is called P*, is defined formally in Equation 2. The equation states that, in the long run, prices will be proportional to the money stock per unit of potential real GNP, with the proportionality constant given by V*.

From the quantity equation for actual prices and the equation for P*, we can derive an identity for the gap between actual and long-run price levels from the difference between equation (1) and equation (2). Specifically, Equation 3 in the bottom panel of the first exhibit states that for the logarithms of the variables, the gap between P and P* is equal to the sum of the output gap, the difference between potential real output Q* and current real output, and the velocity gap, the difference between the current value of velocity and its long-run value V*.

To implement P* empirically, we need to select a monetary aggregate with a long-run velocity level that can be readily determined. Based on the long-run stability of M2 velocity, V2, shown in Figure 5-13, it appears to be much easier to specify a long-run velocity estimate for this aggregate than for any other aggregate. While V2 is sensitive to the movements in its opportunity cost, flexibility in M2 deposit rates tends to stabilize these costs in the long run. Evidently, V2 eventually returns to a level close to its historical average, shown by the long dotted line in this exhibit. In what follows, V* will be set equal to its longer-run historical average in the construction of long-run prices.

The price level, as measured by the GNP deflator, is plotted with the value of P* in the top panel of Figure 5-14, which uses a ratio scale. The four-quarter average rate of inflation is shown in the lower panel of this figure. Nine vertical lines are shown in both panels at the point where the price level crosses the curve for P*.

In general, this chart shows that when the long-run price measure is above the current deflator, inflation will accelerate, and, conversely, it will decelerate when the long-run price measure moves below current prices. The chart also shows that the change in the inflation rate usually lags the change in the gap between P and P*. In the latest episode in which P* rose above the deflator in early 1985, prices did not show much tendency to accelerate on a four-quarter average basis until 1988. In 1989, P* fell to approximate equality with the current price level, suggesting a roughly stable rate of inflation over 1989, which, in fact, transpired. I have simulated the model over 1990 and 1991, assuming M2 growth over both years at the midpoint of the announced range for this year: 5 percent. The model suggests a gradual declining trend in inflation, to about 3.75 percent.

This evidence indicates that M2's growth, when averaged over extended periods, minus the accompanying growth of potential real GNP, may not diverge too much from the long-term average rate of inflation. Accordingly, some role, though clearly not an exclusive one, especially over short-term horizons, for M2 in the making of monetary policy seems warranted.

References


Figure 5.14  *Inflation Indicator Based on P(*)*  

*Logarithmic scale*

Current price level ($P$)  
Long-run equilibrium price level ($P^*$)

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Inflation (bottom panel) is the percentage change in the implicit GNP deflator from four quarters earlier. For 1990:Q2 to 1991:Q4 $P^*$ is based on M2 growth of 5 percent over 1990 and 1991, and $P$ is simulated using the price gap model developed by Hallman, Porter and Small.
Discussion

Question: There is often a question about the levels of optimal reserve requirements. I think that several years ago, some people argued for uniform reserve requirements when M2 was itself a target for monetary policy. I believe it was argued that shifts of the portfolio would be neutralized or offset through the system of uniform reserve requirements. If these assertions are true, why aren't reserve requirements in the United States uniform?

Mr. Lindsey: Prior to the Monetary Control Act of 1980, the Federal Reserve argued fairly strongly that uniform reserve requirements on transactions balances would be helpful in tightening the link between total reserves and M1. In part because of these conceptual arguments for uniform reserve requirements behind transactions deposits and M1, the Monetary Control Act, as passed, embodied an almost ideal structure for controlling M1 through reserves.

There are some ironies here. In the late 1970s, Paul Meek and I debated whether, to control M1, one would find not only uniform reserve requirements helpful but also contemporaneous reserve accounting. So shortly after the passage of the Monetary Control Act, the Federal Reserve Board staff went to work and pushed through the Federal Reserve System a procedure for contemporaneous, rather than lag, reserve accounting. As a result, in the United States we really have a very good system for controlling M1 through a reserves operating target. The irony of the situation, of course, is that in 1982 we abandoned M1 as an intermediate target and in 1987 even stopped giving ranges for M1. But we also abandoned using reserves as the operating instrument. We fell back first to discount window borrowing as the operating instrument and now, in effect, use the federal funds rate.

So I would say to Paul Meek, looking back over these years, that I may have won the battle but lost the war. In reality, when an aggregate reserves measure is not being used as the central bank's operating instrument, I think there is only a very weak intellectual case for having any reserve requirements. As Charles Goodhart can tell you from experience at the Bank of England, if an interest rate is being used as the operating instrument, interest rates can be controlled just fine without required reserves.

The only theoretical concession I would make (and I know some disagree even with it) is that reserve requirements do prevent depository institutions from paying an offering rate that is fully comparable to the rate of return on their assets less some service charge fee. It drives a wedge between a market rate, like a three-month bill rate, and the offering rate on the monetary deposit liability of the institution. This means that, as market rates rise, the wedge may stay constant as a percentage, but it opens up a wider gap in terms of basis points. Since this tends to reduce the demand for the aggregate, it gives the central bank the ability to control the growth of the aggregate on the demand side via an interest rate handle.

As a hypothesis, suppose required reserves are completely eliminated, so that institutions can pay virtually the same amount on their MMDA (money market deposit accounts, which pay market-determined interest rates) that they return on their assets—their holdings of treasury bills, for example. I would argue that in this case the rate of return on money will move very close to the rate of return on market instruments. There will be a kind of Keynesian liquidity trap that would fill the entire money demand space on a chart of interest rates and money demand. Then it would not matter where the central bank set the short-term interest rate, in the abstract at least, because offering rates would follow. Banks could make up for their cost by charging explicit fees; they could carry the same rates on MMDA as they return on their assets. It seems to me that the depositors would be more or less indifferent between the MMDA and a treasury bill. The demand for money would become very unstable and the utility of money as an intermediate target would, I believe, be even more questionable than it is already.

Apart from this argument, which I admit has a hypothetical tone, the case for reserve requirements is not exceptionally strong if there is a tendency for sluggishness in the adjustment of offering rates. We have seen this in the United States, in contrast to my hypothetical case. If I were making decisions for a developing country, I would think twice before imposing reserve requirements. The case for them is not at all strong. I know of no central bank in the world that uses their total reserves or even their nonborrowed reserves or monetary base as operating targets to control the monetary aggregate. The possible exceptions are Switzerland and Germany, but neither do it all that rigorously.

Question: It seems that because uniform reserve requirements have often been promoted by both the IMF and the World Bank. I was never convinced that we should have uniform reserve requirements in the first place and, in the second place, that they should be set so high.
Mr. Lindsey: Well, uniform reserve requirements are helpful if you are trying to set a path in advance for total reserves. It means that any switches of deposits from one institution to another will not affect the “money multiplier,” that is, they will not affect the relationship between total reserves and money. Therefore, if you are controlling the money supply by controlling total reserves, uniform reserve requirements are helpful. But that is a big “if.” Few central banks are eager to walk up to the precipice of what they saw the U.S. Federal Reserve do between 1979 and 1982: letting market rates move over a very wide range just to keep money under short-term or intermediate-term control. Also, a 15 percent reserve requirement is a pretty big tax that, I would argue, tends to be passed back to the depositor. If there are other nondepository intermediaries, such as money market funds, that can start offering transactions-type or savings-type deposits and do not have this reserve requirements “tax” imposed on them, they certainly have quite an advantage. It’s not a level playing field if depositaries are stuck with reserve requirements but other players who can enter the field, such as money market mutual funds, do not have those requirements.

Mr. Honohan: Reserve requirements of 15 percent are even more penal when the country has double-digit inflation or even 80-90 percent annual inflation, as occurs in some of the countries affected by these requirements. The penalty becomes really severe.

Mr. Lindsey: Yes, in terms of percentage points, that is right.

Mr. Caprio: We will see this issue again on Friday in the case of Italy. It is discussed in the paper, which is in the conference readings, by Padoa-Schioppa. It details very clearly the problems the Italians had with dramatically different reserve requirement levels and the resulting controllability problems like those to which David [Lindsey] has alluded.

Mr. Lindsey: Charles Goodhart has made the point that this competitive disadvantage of depository institutions can occur in such a way that your measure of the M1 money aggregate is compromised by shifts of transactions services out of the depository system and into components that are not included in your transactions-deposits. In a limited way, we saw it in the United States with NOW (negotiable order of withdrawal) accounts. At first these were not included in M1, but our fleet-footed central bank soon altered the definition of M1 to include them. So that’s a potential issue that needs to be considered as well.

As a conceptual matter, I would argue that if this is what worries you about reserve requirements, then just pay interest on them. If you really want to control money via total reserves (which no one wants to do), then keep the reserve requirements but pay interest on them. You still run into the problem in my hypothetical case that the own rate comes close to the market rate. The demand for the aggregate may become highly unstable. But at least you don’t have the problem of the reserves “tax.” If you think there will be this problem with instability of demand anyway, there is no point in trying to control the monetary aggregate closely. You might just as well take off the reserve requirements.

Question: But in the 1950s or 1960s, deposits with thrifts were not included in M2, were they?

Mr. Lindsey: They were not then. Indeed, they were not until 1980. At the same time that we put NOW accounts in M1, we redefined our concept of M2 to encompass deposits at thrifts. This measure of M2 is the one used in Figure 5-13. However, Figure 5-1 does not use this definition of M2 but the one in force at the time.

Question: Isn’t there substantial evidence that in the 1970s people were using deposits at thrift institutions at that time as a substitute for bank accounts and that these deposits were not then included in M2?

Mr. Lindsey: When we worked on that redefinition of M2, we did look at that evidence. Some of my own research suggested it would be a mistake to draw the dividing line of M2 before you got to the small time deposits, then have another money aggregate that included small time deposits. As interest rates vary up and down, we have seen a significant tendency for shifts between small time deposits on one hand and savings accounts, NOW accounts, and money market funds on the other. When M2 is defined broadly enough to encompass all those deposits, the shifts are internalized in that aggregate.

We actually had considered the other definition before, but it was pretty clear there was not much difference, in the United States at least, between the ways savers use their savings accounts at thrifts and those at banks. Thrifts were just beginning to offer NOW accounts in New England at that time, so the decision was made to look at all depository institutions. Although there was a little nostalgia within the Reserve Bank of San Francisco for the old definition of M2 for a couple of years, that was the end of it. No one has really second-guessed that decision.

In evaluating the P* model and the constancy of the M2 velocity in Figure 5-13, one reaction might be, “Is it
not remarkable that the velocity of M2 is so stable over time?" On the other hand, when we defined the aggregate in 1980, we certainly were aware of its movements with respect to nominal income and interest rates at the time. I think that, in a sense, we stacked the cards in favor of a sensible aggregate when we defined M2 that way in 1980. It has held up reasonably well since.

I think one can exaggerate the reliability one should grant the P* model as a mechanism that explains U.S. inflation, given the fact that M2 was very carefully defined, early in the decade of the 1980s, to be as sensible an aggregate as we could come up with. The P* model certainly would not work as well for other aggregates; we knew that, when we defined it that way. Still, I would argue the evidence does suggest it made sense to put thrifts and banks together as depository institutions.

Mr. Honohan: You say the Federal Reserve has, since 1982, moved really towards an eclectic approach to monetary management. Now it may be that this has worked well enough because conditions—at least at the inflation-output side—have been fairly steady in the United States since 1988. In short, it may not be that hard to fine-tune things that are pretty much going all right.

However, in many of the countries with which we deal, things are already very far wrong or are likely to become very far wrong quickly. Would you agree that some anchor might be needed if a lot of things are going wrong? And if things started going badly wrong, would you jump for M2 or for some other kind of main anchor in a storm where so many anchors have failed to hold?

Mr. Lindsey: The Federal Reserve jumped to M1 in late 1979, and I think that served us well. It provided protection from political pressures that otherwise would have kept interest rates from rising to the level necessary simply to bring down aggregate demand and, in time, inflation. At that time, the Federal Reserve could essentially say, as it could not today, "Given the seriousness with which we are pursuing the M1 target, we are not controlling short-term interest rates. They are free to move as necessary to bring the quantity of M1 demanded back toward its intermediate target."

I think that was helpful for the country. It was a break; it provided an anchor for a time. There are many ways in which it was not a perfect anchor. We certainly did not come that close, month to month, to hitting the targets. But when all is said and done, I think it served pretty well, if only as a kind of excuse for doing what we needed to do to get a handle on inflation.

Would I move toward M2 today? That is not an entirely hypothetical question. It is true that things have gone fairly well in the 1980s. We have not come close to price stability—although the projection from the P* model with money growth in the 5 percent range over the next two years (see Figure 5-14) would tend to bring the rate of inflation down gradually. But that is not a foregone conclusion, nor is it a foregone conclusion that M2 will grow at only a 5 percent annual rate. We've done fairly well; we haven't brought inflation down, but we've managed to stabilize the economy reasonably well through the 1980s. Is there a guarantee that we'll continue to do that? I don't think there is.

One can envisage all kinds of exogenous shocks, failures of will, unexpected pressures on aggregate demand, or what have you, which could move us back into escalating inflation. I am not predicting that, but it is possible. And it is possible that in retrospect the FOMC will look back on its behavior over the 1980s and conclude that, once again as in the 1970s, it moved too little too late. "If only we had focused on M2 during that period more than we did, we might have prevented that from happening."

If we ever get to that situation, I think there would be a case for going explicitly to an anchor to try to get a handle on the inflation process and bring things back. Perhaps this should be the final point of my talk: There is a case for keeping your eye on long-term M2 growth—and for that matter on longer-term nominal GNP growth and other nominal variables—just to make sure you are not drifting up and away from the objective of price stability rather than toward it.
Monetary Targets: European Experience

Charles Goodhart

I want to start with a digression prompted by David Lindsey's excellent paper. In particular he addressed the question of what happened in the United States in 1979-1982. That will be a period in monetary history which economic historians will rake over again and again, rather like 1929-1933 in United States monetary history and various occasions in Britain, such as the suspension of convertibility in the Napoleonic wars. I thought that David's presentation of that period, though admirable, was still what one might describe as the Federal Reserve's normal position. This position holds that both interest rates and the relatively short term movements of the monetary aggregates, notably M1, were extraordinarily variable over that period because the demand functions for the relevant monetary aggregates were also extraordinarily variable. Just for the record, I think that it needs to be said that at least two other sets of explanations exist for that period.

One of these, which I will call the second set of explanations, is the one favored by the monetarists here in the United States. They describe it as simply a control failure. The Federal Reserve was using the wrong techniques and the wrong instruments for monetary control. It had a lagged accounting basis, it did not impose penalties for borrowing at the discount window, and so on. Allan Meltzer, Robert Rasche, and others are identified with this view.

Then there is the third sort of explanation, which Charles Freedman from Canada and I have presented. Under this view, what happened in 1979 and 1982 was predictable. We predicted it; we would predict exactly similar events for any similar country that tried to introduce tight, relatively short-term, control over a monetary aggregate in a situation where ultimately the effects on the monetary aggregates were, and had to come, through interest rate changes.

The problem simply arises as a result of lags in the demand-for-money functions, particularly the lags before interest rate changes affect the demand functions. We all know that such lags exist. In Equation 1, I've simply written an equation down with the demand for money (M) as a function of nominal incomes f(Y,i), with interest rates lagged a number of periods.

\[ M^d_1 = f(Y_{t1}, i_{t1}, i_{t1-1}, i_{t1-2}, i_{t1-3}) \] (1)

Suppose that the money supply rises but because you as policy-maker have not yet observed the rise, you are holding interest rates at their initial level. After a month or so, you observe that the money supply is rising rather faster. In the first month, you really don't know whether the trend is real, so you wait another month. The money supply goes up again. After two or three months, you start to raise interest rates.

If there is a lag in the effect of interest rates on money demand, the first month that you push up interest rates very little will happen. So the following month, money supply growth looks even worse; you push up interest rates again. If the lag requires six months before interest rate increases affect the demand for money, you continue pushing interest rates up in each of those months until rates are very high. Given that the interest rate effect on demand is significant but lagged, once it starts to work it works more and more. It also introduces indirect effects on income (Y), which starts going down. So a lot of things start going in reverse. It is not difficult to show that if you have lags in the demand-for-money functions, particularly with respect to interest rates, the more you try to maintain stable control of M on a monthly basis, the more you run into what is known technically as instrument instability. You end up in a total quagmire. In my view, that is what happened in 1979-1982. And it would happen again in any other country attempting to do the same thing. Don't try to do it on a continuous basis; it cannot be done.
On Monetary Targets

That was the digression; now to my theme proper. I am going to ask you to remember why we are concerned with monetary targets at all. I shall argue that among the requisites for monetary targets are relatively stable relations between the monetary aggregate and nominal incomes in the short run and between the monetary aggregate and prices in the longer run. I shall then indicate that, in the European context, these relations have not been sufficiently stable over recent years. For the majority of countries involved, this has not mattered at all for a number of years. The exceptions are the Federal Republic of Germany and the United Kingdom, whose philosophy and experience I shall discuss. In practice, the others have not been on a monetary aggregate target at all. Instead, their nominal anchor has been the exchange rate mechanism: their membership in the EMS (European Monetary System).

What I most want to bring to your attention this afternoon are the changing views about the way this external nominal anchor, the exchange rate mechanism, has been changing. This analysis is known as "the new EMS." Then I shall turn to the issue of what happens for those countries without this external nominal anchor, either because they are the hegemonic center of the EMS (Germany) or are outside the EMS (the United Kingdom). Since they lack this external anchor, what should they do if they no longer can, or no longer choose to, adopt a monetary target, whether because of the instability of velocity or another of the reasons why monetary targets are no longer maintained virtually anywhere?

I shall also talk about a constitutional idea whose time has come. This idea is to give the central bank much more independence. In effect, the legislating authorities say, "We don't know exactly how one controls inflation. But if we give the central bank the mandate to do so, particularly if we give them an incentive structure in terms of salaries and reappointments so they will try to do so, we believe they will use their interest rate instruments to achieve it. Although nobody knows exactly what is necessary, we believe it can be done." This, I think, is the current state of thinking about central bank independence in quite a number of countries.

If I have time, which I probably shall not, I shall also talk about the effectiveness and range of various central bank policy instruments in conditions where exchange controls have been removed. This is enormously important. The one term that I did not hear in all the previous discussion of required reserve ratios was "exchange controls." You cannot impose discretionary burdens, which required reserve ratios effectively are, on independent countries unless those independent countries isolate themselves from the world financial system by using exchange controls.

First then, why did central bankers start with monetary targets? One consideration with respect to central bankers which you must forget, and more so now than ever, is that central bankers have a club. I know because I used to belong to it. They all talk to each other. That means that they tend to behave rather like the sheep on my farm; they all tend to move together. There are fashions, and undoubtedly there was a tremendous fashion for monetary targets in the mid to late 1970s and the early 1980s. That fashion has now changed; monetary targets are out of fashion. Even though, as David Lindsey was saying, the United States has a perfectly reasonable monetary target in M2, why isn't the Federal Reserve using it? In part, it is because this is an idea which is unfashionable. In economics you can see ideas going around and around. There is a splendid quote, which I got from Dennis Robertson, that intellectuals are rather like hares; as with any other form of hare coursing, if you stand in one place they always come back to you in due time. So if you like monetary targets, don't worry, in due time they will come back.

Why did we actually have monetary targets? The first point to note is that no one really is interested in M2 or M3 or Mx, as such. When Nigel Lawson established monetary targets, it was said that in the working men's clubs in Newcastle, the talk was of nothing but Sterling M3. But the ultimate reason for concern with monetary targetry is that it is supposed to have a stable link with economic events and developments that affect economic welfare, which does concern us. The supposed link is to either price level or real incomes, via that dear old standard, the quantity identity (Equation 2).

\[ MV = PY \] (2)

\[ i ==> PY \] (3)

If money velocity is predictable—which is even more important than its being stable—then a given M will equate, in the short run, to a given nominal income. In the medium to longer term, where one hopes to be able to assume that real incomes will revert to some equilibrium, the relation between money and price level implies that monetary growth and the rate of inflation are closely related. This relation is considerably stronger than relation (3) that the central bankers had relied on in earlier periods, which was just to vary interest rates in a way thought appropriate to bring P and Y back into line.

The problem with reliance on the interest rate relation is that the effect on expenditures, and therefore on the ultimate general price of output, is in fact influenced by real interest rates rather than nominal rates. Whereas
nominal interest rates can be measured exactly, expectations of price inflation are highly variable. Therefore, one does not know real interest rates with any clarity, and nominal interest rates are a misleading indicator. On the other hand, as long as velocity remains relatively predictable, control of M gives you a good idea of what to expect of P and Y.

David Lindsey commented that if velocity, even though predictable, is very variable because the interest elasticity of the money aggregate is high, then you can't run a monetary target; you will not be able to explain to people at large the re-entry problem, which he described, and problems of that kind. I am not entirely persuaded by his reasoning. Certainly, such variability does make monetary targetry more difficult. It would be nice to have velocity be both predictable and stable, but predictable alone would probably get you most of the way.

Another advantage of using monetary aggregates rather than interest rates is that a monetary target allows for almost rule-based adjustment. Interest rate adjustment, which is clearly discretionary, is subject to political control and political influence. There is also the considerable concern that the authorities would always be tuning too late and vary interest rates too little if they were allowed to use their discretion. Targeting monetary aggregates is supposed to reduce the risk of that.

Yet another factor is the use of monetary aggregates as a leading indicator. As I said before, our interest is not in Sterling M3 or M2 for its own sake; we are concerned with P and Y. If we could actually observe P and Y, immediately and accurately, why worry about M? M is simply an indicator with noise—it certainly has a lot of noise. If a rule can be introduced that is tied to M, why not introduce a rule that is tied directly to P? Take, for example, the discussions earlier about nominal anchors. According to this view of M as just a noisy indicator, what some of these countries should do is to collect data for an economic series on wages. Once you have that, require the central bank to raise interest rates by 1.5 times the increase in wage earnings in the previous 6 months, or something like that.

What you really want is to ensure that, every time you start getting an inflation, interest rates go up fast enough and far enough. Now if you can observe P and Y accurately, why bother with M? This would be a form of “Tobin” approach on nominal incomes.

There are several counter-arguments to this noisy-indicator case against monetary targets. First, it may be that M, though noisy, is a leading indicator. The causal chain linking money with nominal incomes and prices may be indirect. As has happened in many countries, you can first get credit expansion, monetary expansion, asset price inflation, and then on to commodity price inflation. There can be quite a period of time between the effect on M and the consequences for P and Y. If you see M moving first, you may see PY moving later. This leading indicator argument, then, is an important one. Why look at the noisy indicator of what really concerns you, which is inflation, rather than directly targeting what concerns you? Well, if M is a leading indicator, and if it is causal—if the reason for the increase in P and Y is essentially monetary—that is an argument for targeting M.

These arguments did exist in my own country and many European countries. The received position held that V (velocity) was stable and predictable, that M was a leading indicator, and if it is predictable, control of M gives you a good idea of what to expect. But the authorities would always be tuning too late and vary interest rates too little if they were allowed to use their discretion. Targeting monetary aggregates is supposed to reduce the risk of that.

Yet another factor is the use of monetary aggregates as a leading indicator. As I said before, our interest is not in Sterling M3 or M2 for its own sake; we are concerned with P and Y. If we could actually observe P and Y, immediately and accurately, why worry about M? M is simply an indicator with noise—it certainly has a lot of noise. If a rule can be introduced that is tied to M, why not introduce a rule that is tied directly to P? Take, for example, the discussions earlier about nominal anchors. According to this view of M as just a noisy indicator, what some of these countries should do is to collect data for an economic series on wages. Once you have that, require the central bank to raise interest rates by 1.5 times the increase in wage earnings in the previous 6 months, or something like that.

What you really want is to ensure that, every time you start getting an inflation, interest rates go up fast enough and far enough. Now if you can observe P and Y accurately, why bother with M? This would be a form of “Tobin” approach on nominal incomes.

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trols on your own banks a large part of your banking intermediation simply moves offshore. We could see that happen.

One can never tell what the actual effect is of direct controls and banking system regulation. But one factor that was important was the effect on bank strategy. After deregulation, the banks changed the kind of lending they did. Prior to 1979, banks did very little mortgage lending in the United Kingdom; it was all left to the specialized building societies, which are our more stable, profitable, and better-run equivalent of the American Savings and Loans (S&Ls). (We do not have an S&L problem for all kinds of reasons; deposit insurance is just one of them.) In any case, the banks went into mortgage lending, and the increase in the rate of lending after deregulation altered dramatically as the banks shifted their strategic policy. So their lending went up; the rate of increase in bank lending, after deregulation removed the supplementary special deposit system in 1979, has averaged well over 20 percent per annum in the 1980s.

This was financed in large part by issuing more attractive interest bearing deposits of various kinds. David Lindsey's nightmare occurred; most of the money supply was effectively offered at market-related interest rates. Furthermore, the increased competition meant that the margin, or the spread between lending rates and deposit rates, went down. If you ask, "What is the cost of intermediation?" the answer ought to be, "the spread." If there is zero cost of intermediation and intermediation provides any service for you, the amount of intermediation that you ought to undertake ought to be infinite. If you get some particular liquidity from holding deposits, while the cost of borrowing is the same as the cost of deposits, you borrow an infinite amount and you have an infinite amount on deposit. There is no charge and you are totally liquid. It's a wonderful life.

The lower the spread, the more intermediation people will do. In the United Kingdom, the total volume of borrowing by persons and companies has shot up, and the total amount of deposits they hold has shot up. The degree of intermediation is inversely related to the spread. This is in large part where reserve requirements come in. The reserve ratio requirements increase the cost of intermediation. They are important in this respect. I am not saying that it is particularly desirable, simply in pursuit of some monetary aggregate that may or may not have a stable relationship with nominal incomes, to lessen the efficiency of the banking system in a developed country, which needs proper financial intermediation. But that is another story.

In large part then, the stability of a monetary aggregate is likely to be a function of the degree to which its own interest rate is artificially or institutionally constrained. The one monetary aggregate that does not pay interest is M0, which is cash in the hands of the public, (although it could in principle pay interest). M0 was the monetary aggregate to which the British authorities retreated when all the other monetary aggregates lost their stability and went haywire. Barry Johnston, who is not here at the moment, wrote a paper for the U.K. Treasury showing that the demand for M0 was reasonably stable and has remained so. This provides a fig leaf for the Chancellor of the Exchequer; he can say that monetary targets have not been completely abandoned; when they have been.

Why in practice does M0 not matter? It doesn't matter in practice because nobody believes that it is a leading indicator or causal factor. Everybody knows that anyone can get currency on demand. It would be inconceivable for the Bank of England not to allow anyone to obtain cash when they try to cash a check. The convertibility requirement on the banks must remain. This means that a change in M0 neither causes nor predicts a change in nominal incomes or consumers' expenditure. It is simply a coincident indicator. It is not a bad one, although it is a bit noisy; it is a coincident indicator of consumers' expenditure.

However, we already know consumer's expenditures; we get data promptly. M0 does not tell us anything we do not know already. Accordingly, insofar as the Chancellor of the Exchequer, the Treasury, and, to a degree, the Bank of England are concerned about consumers' expenditure, they will raise interest rates anyhow. But they do not really look at M0; nobody looks at M0. It is a pure fig leaf.

Let us move on to Germany, where the concerns and problems are different. Germany has not had so much high inflation, has not had so much structural change. Therefore, for a long time, there was far less disturbance to the demand-for-money functions and the velocity of money than in the United Kingdom. The Germans maintained, and attached a great deal of importance to, their Central Bank Money (CBM) target. CBM was simply the total liabilities of the central bank. But they never considered it as a simple monetary base aggregate; they considered it as a weighted broad monetary aggregate. Nevertheless the weight in currency was far higher that the weight of the other constituent elements, which were weighted by the reserve ratio applicable at a particular point in history.

In recent years, the amount of deutsche mark currency, particularly that held in Eastern Europe for savings and other purposes, started to increase. For this and other reasons, about two or three years ago the relationship between currency, CBM, and what was happening to German nominal incomes just went haywire. One of a
number of problems with currency is that it is frequently held abroad in large quantities; this is true of the U.S. dollar and the deutsche mark. In addition, a large proportion of what is held is either held for nefarious purposes or whenever a survey is done, nobody knows why it's held, or both. So the Germans moved from a CBM target to a broad monetary aggregate.

That broad monetary aggregate is about to be devalued even further because the German monetary union, or GMU as it is now known, means that "Ostmark" (mark of the German Democratic Republic) will be exchanged for deutsche mark in some ratio. Nobody has the slightest idea of what the East Germans are going to do with their new deutsche mark holdings. The complexity of monetary changes will be of the same order as those which I have been talking about in the United Kingdom. The Deutsche Bundesbank will not know how to apply their monetary target to make sense of what is happening there over the next couple of years. So they will go back to adjusting policy in response to concern with the non-monetary aggregates: inflation and a whole series of other factors.

Finally let us turn to Italy and Spain, where the removal of exchange controls in 1992 will cause such structural change that again the demand-for-money functions will go out the window. The marginal—indeed the average—reserve ratios in Italy are on the order of 25 percent. Although some interest is paid on reserves, there is something like a 10 percent difference between the interest paid on reserve requirements and the interest available in money markets. Now 10 percent on 25 percent is in effect a 2.5 percent burden in addition to the spread. I can tell you that bankers in London are looking forward with enormous enthusiasm to intermediating in lire at the moment that exchange controls are lifted.

The Spanish have already started to dismantle their reserve ratios. This has nothing to do with monetary union; it has everything to do with the removal of exchange controls in the run-up to the single European financial system. Once exchange controls go, bank clients will move to the cheapest possible intermediary center. If there are significant differences in the burdens on banking systems, they will move very rapidly.

In any case, Italy and Spain and all the peripheral countries in the ERM (European exchange rate mechanism) have really not been concerned with monetary targets over the past years. They have had an external anchor in the form of maintenance of the exchange rate mechanism. The EMS, or ERM, has moved through at least three stages since it was introduced. Never think of the EMS or the ERM as something that is static; it is very dynamic and changeable.

### The European Monetary System

The first stage of the EMS was between 1979 and the time in 1983 when Mitterrand switched horses and reversed the whole thrust of French policy. In these first few years of the EMS, there were frequent realignments through which the nominal exchange rates were realigned to accommodate the wage and price adjustments that had occurred since the last realignment, thereby maintaining the stability of real exchange rates. In other words, during its early years the EMS did not really have any long-term discipline. It was merely a short-term pegging of nominal rates until they were realigned in light of differing inflation rates.

The French change of strategy, which occurred in March 1983, was the crucial occasion in the history of the EMS. This began the period of what is known as German hegemony. During this period, the Deutsche Bundesbank set monetary policy, implemented through monetary targety, to try to achieve domestic price stability in Germany, without significant or serious concern for what was happening in the other EMS countries. Having changed their strategy, the other countries were primarily concerned with holding the nominal peg to Germany and trying to achieve convergence. Initially the private sector, having observed the earlier realignments to maintain the peg, did not believe their monetary authorities. Because the private sector did not believe them, the nominal interest rates in the peripheral countries had to rise to something like the inflation differential plus a risk premium to balance the fear of an adjustment.

Since 1987, the situation has changed again. Private agents in the various countries have increasingly come to believe that the peripheral governments can achieve and maintain fixed nominal parity. An influential recent paper by Giavazzi and Spaventa (1990) analyzes the current situation through the following set of equations:

\[
\begin{align*}
  y &= -\beta r + \mu_s - \delta u \\
  (p_{t+1} - p_t) &= a(p_t - p_{t-1}) + f_y \\
  s &= e + p^* - p \\
  r^h &= i - E(p_{t+1} - p_t) \\
  r^s &= \min\left\{ i^* + E(e_{t+1} - e) - E(p_{t+1} - p_t) \right\}
\end{align*}
\]

Equation 4 expresses the real output \( y \) in a particular country as a function of the real interest rate \( r \), the real exchange rate \( s \), and fiscal policy \( u \). Equation 5 is a partially backwards-looking determination of inflation, while equation 6 defines the real exchange rates, where
the nominal exchange rate, $e$, is defined as the domestic currency price of foreign exchange.

The last two equations are the truly important part for the authors' analysis of peripheral economies. In particular, the peripheral economies under discussion are the European southern cone economies, including Italy, Greece, Portugal, and Spain. One may also include Ireland and England as honorary members of Southern Europe. The authors divide a peripheral economy into two groups. Those in the household group can borrow only within the domestic economy. For them, the real interest rate, as expressed in Equation 7, is the local interest rate $i$, less the expected rate of inflation. The second group comprises firms, which can borrow either at home or abroad. If they borrow at home, they face the real interest rate, which again is the local domestic interest rate less the expected rate of inflation. If they borrow abroad, they borrow at the foreign rate $i^*$, which for this analysis, is the German rate, less two expectation factors (Equation 8). The first is the expected exchange rate depreciation over the next period of borrowing. The second is the expected local inflation rate.

The authors' point is that after 1987, the expectation has been that, for the foreseeable future, the governments of countries such as Italy, Spain, Portugal, and Ireland will not devalue but will maintain the peg. Because of their relative success in doing so, they need not devalue even if their inflation is higher than Germany's. Thus the expected rate of depreciation is much lower than the expected rate of inflation. Firms in Spain, Italy, Portugal, and so on, finding a German interest rate a great deal lower than the domestic rate and having a low expectation of a change in the exchange rate, have borrowed abroad heavily, because their effective real interest rate is thereby substantially reduced. In addition, foreign investors, for example from Germany, will put money into these countries because doing so offers a considerable economic advantage, as long as one does not expect the exchange rate of deutsche mark for the local currency to be reduced. Accordingly, the real interest rate in Spain, Italy, and Ireland—and in the United Kingdom, if it were to enter the EMS—goes down with a bang.¹

The immediate effect on these peripheral countries of maintaining their EMS position (or of entering the EMS system) now becomes much more stimulatory than in the period of periodic devaluations. It produces a highly effective expansionary monetary policy because local firms are borrowing abroad and not expecting a devaluation. The countries experience huge capital inflows. This creates a tremendous problem for the Italians, the Spanish, the Portuguese, and others in sterilizing the inflows. Their foreign exchange reserves have risen enor-

mously. If they cannot sterilize the inflows, their domestic nominal interest rate goes down, which reinforces the expansion.

In this situation, a peripheral economy's exchange rate goes to the top of the EMS band. At the moment, whose exchange rates are at the top of the band and whose are at the bottom? Those at the top of the band are Spain, Portugal, and Italy. At the bottom are the Netherlands and Germany. Because these peripheral countries are booming, there is no monetary discipline. A great deal of pressure builds on the wage front. For example, wage increases are now a source of concern in Spain.

The EMS discipline is beginning to disintegrate under these particular influences. If the discipline disintegrates, the real exchange rate of course starts to go wrong and increasingly wrong. But if the relative size of the real interest rate effect is greater than the relative size of the real exchange rate effect, the whole system can become unstable. This may lead to very severe problems and turbulence. These effects can be offset and dealt with, but they should be offset and dealt with by fiscal policy. In other words, if a peripheral country in the EMS (or one entering the EMS as a more inflationary member) finds that the credibility accorded to its exchange rate will lead to capital inflows and monetary easing, that country must introduce a much more deflationary fiscal policy, or things will go badly wrong.

In a sense, the message that I want to leave with you is that, as the European Community approaches irrevocably fixed exchange parities, there will increasingly be just one European monetary policy. This applies both to the current EMS and the even more ambitious development towards European Monetary Union, expressed in the Delors Committee report. At the limit, with a single currency, there would be no national monetary policies at all. The interrelation between fiscal policies and monetary policies is of the essence. When national monetary policy becomes predicated upon the maintenance of a fixed exchange rate, operating fiscal policy within that conjoined system, in an EMS or European system, will become increasingly important. Unfortunately, one of the great difficulties with economic analysis of EMU has been that much of it has assumed freely flexible and perfectly adjusting markets. There has not been nearly enough analysis of how fiscal policy should be coordinated with monetary policy in all this.

Central Bank Independence

We have not yet addressed the questions of what monetary policy ought to be in the hegemonic center or of what monetary policy should be in the United Kingdom if it stays outside the EMS. We are in a world in which,
as I have said, monetary targetry is out of fashion. The instability of the velocity function has made it effectively unusable. If you are either the “center” country or too big to link to somebody else’s currency, or for some other reason you want to maintain national autonomy, what do you do? This brings us to the idea of central bank independence, towards which I think a lot of countries are moving. This idea has become increasingly fashionable.

What does central bank independence mean? It does not mean giving the central bankers the independence to print money to pay themselves large salaries. The independence will be qualified. As part of the central bank’s constitutional mandate, its overriding priority will be to maintain price stability. This has occurred in New Zealand and to a degree in Chile and probably other countries. To some large extent it is intended for a “EuroFed,” a European system of central banks. Indeed, the idea may possibly expand to provide an incentive structure for compensating the central bank governor and senior officials linked to that priority.

My suggestion is that the central bank governor should be paid some lowly regular salary irrespective of outcome, perhaps a salary equivalent to that of a professor of economics. As the governor gets increasingly close to the desired rate of price increase over an appropriate period, he or she receives a bonus. In the United States, I would recommend this should rise, in total, to something on the order of a million dollars; in the United Kingdom to something like half a million pounds. So the central bank governor becomes a very rich person if price stability is achieved.

There are arguments against my suggestion. If the only incentive for the central bank governor is to achieve price stability and the central bank does not care about anything else, one can always achieve price stability by shoving interest rates up to 30 percent. If I will get a million dollars to achieve price stability in the United States in three years and nothing else matters to me, I will push interest rates up to 30 percent today to bring about a major depression over the next few years, then lower interest rates down gently and run away with my million dollars after three years. So there are problems about trying to set out the central bank objectives in a way that does not actually encourage such behavior.

Another major argument against a simple incentive structure concerns coordination with fiscal policy. The coordination argument is an important one, and must be addressed.

The last topic I was going to talk about was monetary policy instruments. Can we introduce direct credit controls in a world without exchange controls? The answer is probably “No.” Do we want to maintain exchange controls in our various countries? Not in the medium term if you can get away from it. Concerning interest rates, there is an interesting paper in the latest Bank of England Quarterly Bulletin (Bank of England 1990). It indicates that, as a concomitant benefit of reducing spreads and having a far greater gross increase in both borrowing and deposits, interest rates in the United Kingdom now impinge on a far wider community. Many of the English young are so overborrowed with huge mortgages that when interest rates go up, if they are to pay their mortgage they cannot go on holiday, they cannot buy consumer durables, they can barely eat. So you can understand why political popularity is affected by interest rates. When your personal sector is heavily borrowed, it has an effect.

Finally there is monetary base control. Is monetary base control anything other than an alternative way of bringing about interest rate variability, which you could bring about directly? Or is there some direct, supply side effect that it has, in addition to its effect on interest rates? In the United Kingdom recently, Gordon Pepper has stirred some interest by arguing that there is a difference. Most of the rest of us do not believe that there is, but it is still an issue of some interest.

Note

1. Editors’ note: Sterling entered the ERM in October 1990 (five months after the conference), and interest rates did initially come under some downward pressure.

References


I was asked to discuss the relevance for developing countries of the previous speakers' points on the use of market-based monetary instruments. I would like to touch on four basic issues. First, why have developing countries traditionally favored credit controls rather than market-based monetary instruments? Secondly, why are these credit controls coming under increasing pressure in developing countries? Third, what are some of the preconditions for a successful transition from credit control to a market-based monetary instruments? Finally, why is it unlikely that developing countries will completely abandon the use of credit controls and directed credits.

In discussing these issues, I want to make two caveats clear. Developing countries are a rather heterogeneous lot, and I shall be considering only a middle-income, middle-sized economy. My second caveat concerns the objectives of monetary policy. I shall assume that the fundamental objective of monetary policy is price stability. I don't care whether “price stability” is defined in terms of a price index or a nominal aggregate such as nominal GNP. I want to stress this objective because I don't think it has been pursued by most developing countries. For most of them, price stability has been only a second or third order objective.

Let me turn first to why developing countries use credit control systems. Although a number of developing countries, particularly in Asia, are beginning to move toward market-based monetary policy instruments, this is still not a widespread trend. I see two reasons why most developing countries have relied so heavily on direct credit control programs throughout the past two or three decades. One reason stems from the desire to have some control over macroeconomic developments; the second reflects fiscal policy concern.

Credit ceilings can be applied to lending by all financial institutions to the private sector or they can be applied to lending to both the private and government sectors. Whatever their form, credit ceilings have been perceived in many developing countries as a useful instrument for macroeconomic control, regardless of the exchange rate structure that is in place. This statement should be qualified slightly, since it assumes that the overall fiscal position of the economy is not wildly out of control. If there is a large fiscal deficit financed by the provision of central bank credit to the government, there is no hope for any control. Moreover, attempting to maintain some sort of overall credit ceiling in such an environment would mean a sharp shift in the distribution of credit from the private sector to the government, with all the attendant effects on private activity.

Let's assume, therefore, that the authorities do have some fiscal control. If credit is not available from foreign markets (in contrast to the case that Charles Goodhart was considering), it is difficult for the country's residents to escape the constraints imposed by credit ceilings, at least in the short run, even if there is a fixed exchange rate. Domestic firms, for example, would find it difficult to quickly adjust output in order to increase their exports to the rest of the world and thereby acquire foreign exchange. As a result, credit controls have often been viewed as quite effective in restraining aggregate demand.

Credit ceilings have also been important because they complement the credit allocation rules and self-contained tax-subsidy programs that are often a part of a system of financial repression. The tax-subsidy systems reflect the ceilings on lending and deposit interest rates and the credit allocation rules that direct credit to favored borrowers or activities. The overall credit ceilings specify the total level of credit; whereas the tax-subsidy scheme allocates the credit across users.

Why have these monetary systems based on credit ceilings been under pressure? There are two reasons. First, as everyone here is well aware, the effects of financial repression on economic efficiency have become
clear, and this has stimulated efforts to liberalize financial systems. In such liberalized systems, the market rather than the authorities determines the level and distribution of credit. This has removed one of the pillars supporting the use of direct credit controls, which is to ensure consistency of the overall distribution of credit. The second reason has been development of “pseudo” capital mobility in many developing countries. I do not mean by this that a country’s residents can borrow in the international markets; most domestic borrowers do not have access to these markets. Rather, it reflects the fact that, over the previous decade or two, the domestic residents of many developing countries have accumulated a large stock of external assets. These can be effectively repatriated through various means during a period when credit is severely restricted. No one, however, would say that this is a good way to reverse capital flight; it certainly is not a way to get capital back on a permanent basis. Even so, one often sees this phenomenon and, when it occurs, it undermines the effectiveness of a credit ceiling.

So from both the “fiscal pillar” side and the monetary control side, the effectiveness of the credit control programs that have been so heavily used by developing countries is being eroded by structural changes. One response has been to move to market-based monetary policies as a way to regain control (or to try something new—I think there has been an element of that as well). But there are a number of requirements for making this transition, including the freeing of interest rate and the development of broad-based and liquid securities markets. Not every country is really willing to meet these requirements or make the transition at this stage. In addition, any fiscal control problem must be addressed if the transition is to succeed. From various studies of financial liberalization, we know that a net loss of revenues can result when the financial liberalization occurs. These revenues have to be replaced.

Thirdly, I do not think enough attention has been given to the requirement, which Charles Goodhart stressed, for a nominal anchoring in the system. In developing countries that are contemplating a move to market-based instruments, one often hears a lot of discussion of the technical aspects of the move, such as how to introduce markets for central bank securities into the system. These are important issues. However, the fundamental problem of moving to the new system is the one that the previous three speakers addressed: what is the nominal anchor? Is there going to be an exchange rate anchor or a monetary aggregate anchor? Or is another choice going to be made? This problem was never adequately addressed under the direct credit control system, which is one reason why many developing countries have had inflationary biases.

A fourth requirement for successful transitions concerns the issue of whether there will be any stable relationships maintained among the authorities’ policy instruments, any intermediate targets, and the nominal income or price level targets they have selected. In the United Kingdom and the United States, there have been difficulties with the stability of these relationships as a result of what I would call, by developing country standards, second-order structural changes.

Finally, let me explain why I do not think direct credit controls, or what I would call directed credit, will disappear from the set of tools used by central banks in developing countries. There is a fundamental structural difference between the size of the shocks experienced by industrial and developing countries. While a major terms-of-trade shock or a move of three or four hundred basis points by international interest rates may be difficult enough to absorb for the industrial countries, they can have first-order effects on almost all enterprises and the entire financial sector in a developing country. In such situations, central banks in developing countries can find themselves faced with a financial system that is effectively insolvent.

While the losses associated with these shocks could be absorbed immediately by the private sector, most developing countries prefer to absorb the loss over time through the fiscal process. However, there is a real difference between how this can be done in developing countries as opposed to industrial countries. For example, consider the way in which the United States is handling its Savings and Loan crisis. The crisis was, in effect, a large financial shock and there have been dead-weight losses that have to be absorbed into the system. This has not been done by having the central bank purchase the Saving and Loan’s bad assets; nor is a large proportion of the losses being brought into the current fiscal accounts. Instead, the bad assets are being taken into the accounts of the Resolution Trust Corporation, which is financing itself through the issuance of long-term government-guaranteed bonds. It is only as the interest and principal payments on these bonds are made that the full losses will be realized over time.

Developing countries don’t have this option. They don’t have domestic bond markets where they can spread out the costs of a financial shock over time. They cannot go to the external markets to borrow because, when the shocks hit, their creditworthiness usually deteriorates. So how do they handle this shock? Basically, they take it into the accounts of the central bank. It is as if the United States were to combine the balance sheets of the Federal Reserve and the Resolution Trust Corpo-
ration. If you look at the central bank’s balance sheet (with its assets and liabilities marked to market) in a period after major shocks, you will see negative net worth, which represents an implicit future tax liability that is associated with distributing the cost of the shock through time.

One of the problems in developing countries is that the authorities have tended to impose most of the taxes that are needed to pay for erasing this tax liability from the central banks accounts on the holders of domestic assets. This has often involved, especially in Latin America, either the inflation tax or taxes on financial wealth and financial income. The realization that holders of domestic claims are likely to pay for most of the cost associated with large shocks to the economy has become, I would argue, part of the “received wisdom” that is passed on from one generation to the next, at least in Latin America. It is deeply ingrained in the public’s perception of the risks of holding domestic assets, and I think it is one of the principal reasons why capital flight from this region has been so large. Moreover, even with good policies and good financial returns in normal periods, this perception may persist. It may be hard to dispel this perception until such time as another shock occurs and the government demonstrate that the holders of financial assets will not be taxed (or taxed disproportionately) to pay for it.

The difficulties involved in dealing with large financial shocks also explains why directed credits and credit ceilings are likely to remain a part of the “tool kit” of central banks in most developing countries. Since there are no domestic bond markets or external markets in which developing countries can obtain long-term finance in a crisis period, the only shock absorber they have is the central bank. One part of the process of absorbing a shock will indeed be direct credits to specific industries and specific classes of borrowers that are presumed to be viable if they can get through the current period. Whether the presumption is true or not is another issue.

To close, I would like to consider what type of monetary system most developing countries are likely to be using in the future. Again, I must stress that I am generalizing in an area where generalization is hazardous at best. I would say that a two-tier system of instruments is gradually emerging in most developing countries. One tier will consist of the use of market-based instruments to handle the day-to-day operations of monetary policy. These instruments may also be used to control expansionary trends in the monetary base, although, as an alternative, countries may very well choose to peg the exchange rate. But there will continue to exist a second tier of crisis management tools focused on direct credits and institutional aids.

Whether this is good or bad deserves a lot of analysis, and I will not attempt to reach a judgment on it. But I do think that the institutional and structural differences between industrial countries and the developing countries will contribute to fundamental differences in the structures of their monetary policy regimes.

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**Discussion**

**Question:** As you said, there is a problem of coordinating monetary and fiscal policy. But there is also a problem of coordinating monetary policy and exchange rate policy, or management of exchange controls. How do you see that relation? Would you suggest that the central bank manage both monetary policy and exchange rate policy? Or should it be more like the Bundesbank in Germany, where the responsibilities for exchange rate policy are not that clearly in the hands of the central bank?

**Mr. Goodhart:** The answer to this question, in my view, is certainly “yes.” You would run into difficulty if you had a central bank that was given independence for monetary policy, while the exchange rate was determined by somebody else. There would be a number of points of conflict. For one thing, if the central bank were given the priority of achieving price stability, it would be difficult if somebody devalued the exchange rate against the central bank’s wishes. For another thing, particularly with flexible exchange rates, the movement of the exchange rate is closely related to the monetary policy. If there is to be a pegged exchange rate, then the central bank has got to vary monetary policy in order to maintain the peg.

In the New Zealand case, the act says that the Federal Reserve Bank of New Zealand shall aim for price stability, with the assumption that the exchange rate will be flexible. If, on the other hand, the authorities introduce an override to try to peg the exchange rate with another country, then of course the central bank should—its requirements must—shift to maintain that peg. Then it cannot at the same time control the rate of inflation, because, as long as the peg is maintained, the rate of inflation will depend on the inflation rate of the currency to which New Zealand is pegged, whether it is pegged to Australia or America or a basket of currencies.
The same thing applies, for example, in Hong Kong, which has its currency linked with the U.S. dollar. The Hong Kong monetary authorities have no control over the domestic rate of inflation. In a sense, then, if you are going to give the central bank independence to achieve price stability, you must effectively allow it a degree of exchange rate flexibility. If you want an exchange rate peg, then you cannot require the central bank to achieve price stability. You either have the external anchor or the domestic nominal anchor. Central bank independence really only makes sense when you are looking for an internal anchor. If you have an external link or an external anchor, then the central bank’s instruments are entirely dedicated to maintaining the external link.

Question: I confess I do not follow the EMS problem. Perhaps you can help me by explaining how this problem would be different, and how the possible adjustment mechanisms would be different, if it were occurring within a country. For example, suppose it occurred within two very distinct regions of a country that had these two different sets of characteristics. Could the same kinds of problems develop? Could the adjustment mechanisms within a national boundary perhaps differ from those which exist across national boundaries?

Mr. Goodhart: It is in part a transition problem, in the sense that countries like Spain, Portugal, and to a degree Italy, are entering a system to which they had not previously belonged. Within a single country, the rate of inflation isn’t all that much different from region to region. The wage levels can differ, but the price inflation rates are not all that much different within a country. When the previously floating currencies of two countries are pegged, however, different inflation rates will persist for a while despite the peg. One will see capital inflows, monetary expansion, wage inflation and a worsening of the current account in the country with the higher inflation rate.

This corresponds to a number of stylized facts about the EMS at the moment. Which are the countries into which there are large capital flows? Which are the countries which have had very large increases in reserves? Which are the countries which are at the top of the band? Which are the countries which have the greatest inflation rate? Which are the countries whose current accounts are worsening rapidly? Which are the countries whose real exchange rate is appreciating while the nominal exchange rate remains pegged? The answer to each question is “the southern cone countries of Europe.”

Mr. Honohan: It seems very like the euphoria that has occurred in other countries, including Chile, at a time of similar policy changes. I wonder, does it have something to do also with the publicity about 1992, which also started to get going around that time?

Question: If I have it right, it seems that the problem for southern European countries is basically one of the real equilibrium exchange rate. The inflation coming from the inflow of reserves is basically a mechanism that puts upward pressure on the exchange rate peg. If that is so, then I don’t see how a contractionary fiscal policy would help.

Mr. Goodhart: Regarding the southern European cone, I think the concern is that the inflows of money will result in much less discipline on wages than had been hoped. So there will be less convergence and, consistent with a fixed nominal exchange rate, the real exchange rate will appreciate. That leads to a worsening of imbalances in the current account. It will tend to worsen quite sharply, with a shift out of the tradeable goods sector into the nontradeable goods sector. A fiscal contraction could help in two ways. It would put downward pressure on interest rates and thereby slow capital inflows, and it would directly affect the labor market and slow wage inflation.

If corrective fiscal action is not taken, the growing internal and external imbalances will ultimately provoke a revision, perhaps sharp, of expenditures, precipitating fairly drastic measures.

You can have large currency realignments occur again, which defeats the purposes of those who desire to bring the exchange rate system ever closer to irrevocable parities. Or it will require a major change in policy. Either of these will increase the potential for a fairly drastic change or shift in the policy arrangements at some stage in the next couple of years. And they might have fairly devastating effects on, for example, Stage 1 of the Delors committee proposals or the next stage of the European monetary union.

Question: Generally speaking, in Latin America the lowest rates of inflation occurred before 1920, when there were no central banks. Is there anything one can learn from this for the future?

Mr. Goodhart: Oh, yes, absolutely indeed. The radical idea whose time has come is central bank independence. The radical idea whose time has not yet come, but may come, is to get the government out of the monetary system altogether.

The really radical libertarians say that there has been a close correlation between endemic inflation and the involvement of the government, through central banks,
with monetary creation. They say the sole appropriate function of the government is to define the monetary unit—the pound, peso, peseta, or whatever—as being the equivalent of a particular basket of commodities, of real assets; or of some foreign asset, such as one escudo is equal to one U.S. dollar. Then it should be left completely to the private banking sector to maintain the currency's reputation by maintaining convertibility with private bank notes, private deposits, and so on. There should be no central bank, no lender of last resort. The government defines the currency unit, but otherwise gets out of the monetary creation system altogether.

That idea's time will come if central bank independence turns out to be ineffective and we go on having endemic serious inflation. But for the moment it's not practical politics. It is the idea of a fringe of libertarian thinkers like George Selgin, Kevin Dowd, David Glasner, and Lawrence White, whose ideas are fascinating, but for the moment are not practical politics. Central bank independence is practical politics. Getting the government out of the monetary system isn't for this decade.

Mr. Honohan: If may use my privilege as chairman to make a gloss on the point, I believe I have observed a system very similar to this. It is a "real bills" system in operation in Central Africa, in the Banque Des Etats De L'Afrique Centrale (BEAC) zone, where the central bank has, until recently, more or less unconditionally discounted all bills satisfying certain arbitrary criteria. This means the private bankers decide how much credit to give out. The result is essentially "free banking." This system fell afoul of the trap foreseen by the nineteenth-century monetary theorists. Namely, it does not have a nominal anchor; and there is a fallacy of composition in that the so-called real bills are not clearly identifiable in advance.

Mr. Goodhart: But the libertarians' proposal is not "real bills." It is the gold standard, but with the added gimmick that gold is too variable as a commodity relative to general prices. So, instead of making gold the standard, a general basket of goods is the standard.

Mr. Grenville: I agree that central banks could move in the direction of greater independence and then concentrate on price stability. A small country can choose between various anchors, including the currency of a larger country (as the smaller EMS members have done). Speaking as a little country, as an Australian, we have informally thought about the joys of anchoring to another currency because we have seen the great power of this "safer island" to get us from high rates of inflation back down to low rates of inflation with very little cost in terms of output. In other words, it would allow us to jump down the long-run Phillips curve.

With respect to what occurred when the new members of the EMS joined up, the point that was raised earlier was about credibility. Suddenly the new members had credibility that they would lose their inflation costs. We would love to have that. The reason countries like Australia hesitate is that we think we are very different from the countries that we might join onto.

It has been suggested at times that we should hitch ourselves onto Japan. However, given that our comparative advantages are exactly the opposite of Japan's, we would find our exchange rates doing exactly the wrong thing for us. The terms of trade would be moving in a direction unfavorable for us but favorable for Japan. So the adjustment, the softening effect, that we currently can get by changing our exchange rate would not only be lost but reversed. It is not because these ideas are a million miles away from the views of central bankers that we do not act on them. It is because, at least for the moment, we think that on balance this is not the way to go. There are softer ways of adjusting.

Of course, these considerations return us to the old idea of optimal currency areas. Optimal currency areas are geographic regions that have a lot of similarity. I suppose that the counter-argument to that idea is Charles Goodhart's example of the United States, which has very different zones and yet manages to operate with one currency. So there are a lot of issues here that don't quite hold with theory.

Mr. Goodhart: One consideration that does surface from time to time (and I would think it surfaces more frequently among World Bank countries) is the option of removing the central bank from the system as much as possible. One can take the Panama route to this, which was also considered seriously by Israel. You just change from having a local currency to a currency in U.S. dollars. In effect, then, you have local fiscal policy, but you don't have monetary policy.

In a sense, that's what has been attempted in Hong Kong. The problem is that, if you haven't gone too far down the hyperinflation route, the only thing you can do is to relate the currency base strictly to the availability of U.S. dollars. Even going too far down the hyperinflation path will usually lead to being a dual currency economy, in any case. There are some countries that could have gone on a dollar base some time ago, and they would have been much better off. But relating the currency base strictly to U.S. dollar availability, and holding to it, gets the central bank out of local monetary policy. It gets you onto a credible, reasonable, monetary basis and leaves the fiscal authorities to do what they can.
Mr. Honohan: Is it not difficult, though, to keep the central authorities out of the system? I think of the case of Liberia, which started with the Panama system and then decided to mint Liberian dollar coins. Next it decided to mint Liberian five-dollar coins. Very soon there were more Liberian coins than U.S. notes, in effect because the authorities would not leave the system alone.

Question: Although I agree with the independence of central banks and central bankers, I would like to raise a question. Basically, someone has got to set performance criteria for the central bank—a job description—and then assess performance against those criteria. Who is going to do that and on what basis?

We can set price stability as one criterion, but it is generally recognized that another of the central bank’s tasks is to maintain the stability of the banking system. For example, if, in order to restrain inflation, interest rates are raised by 30 percentage points and banks fail as a consequence, the central bank may have fought inflation but has created other problems. So we come bank to the issue of designing a role for the central bank and setting its objectives.

Mr. Goodhart: Well, those issues are actually being addressed. If you read the Reserve Bank of New Zealand Act or the various paragraphs in the report of the Delors committee, or what will no doubt come out of the Economic Community’s intergovernmental discussions at the end of this year, those exact issues are currently being seriously addressed. There are legislative acts that include statements of the objectives of the central bank.

Now, the relationship between financial stability and macroeconomic control—and there may be a conflict between them—is indeed a serious one. A number of people have argued that the more serious you think it is, the more you might want to separate the role of lender of last resort from the macroeconomic activity of the central bank. In the United States, this is done by separating the FDIC (Federal Deposit Insurance Corporation), which provides stability against runs on banks, from the Federal Reserve. Conceivably you might have an independent institution to make lender-of-last-resort loans under certain criteria; the central bank would offset the macroeconomic effect of such loans through its open market operation. It would have one arm deciding on a specific loan and another arm deciding to maintain the monetary base and interest rates to affirm overall price stability. In any case, this is a real problem that has to be faced, although there are various ways of facing it.

Question: We have been working on some countries where legislation related to the central bank’s role is now being introduced or considered. Brazil and Argentina are two that come to mind. Questions have arisen as to how they might restructure the relationship. One such question, as an example, is what exactly should be done about the extra-judicial liquidation function, which is usually housed in the central bank. Should one keep that function within the central bank or take it out of the central bank and let the central bank worry about monetary policy, exchange rate policy, and so on. I am curious as to what your thoughts are on this point.

Mr. Mathieson: I suppose the issue is what advantages this separate institution would have over the central bank. What would be its source of funding? If you think in terms of the Resolution Trust Corporation, it is able to get resources because its bonds carry the guarantee of the U.S. government and can therefore issue bonds onto the world markets.

I don’t see that any agency will have that capacity in developing countries. In most developing countries, going to the external markets during a major crisis is typically just out of the question. So the problem faced by developing countries is, “how do you absorb this type of shock or meet this lender-of-last-resort function, when you don’t have the same tools of finance available to the industrial countries?” They are always in the realm of second-best choices.

In most developing countries, the outcome is that the central bank absorbs this function, because no other institution is able to do so. Fiscal policy is not flexible enough to generate the resources needed through, say, a large hike in taxes or a sharp cut in expenditures. So more or less by default, the shock is absorbed by the central bank.

In the near term—which means about the next five years—I don’t see the situation changing for most of the developing countries. Ideally the capacity you would like these countries to have is what the United States can do, which is to finance its shocks through time: spread them out, take some cost up front, take some over time. While most of the industrial countries can do that, developing countries just simply do not have that ability.

Mr. Caprio: But this liquidation function will be housed with the bank supervisory function. Some argue that, both because it is difficult to create independent institutions, and because there are some complementarities between conducting monetary policy and bank supervision, it is sensible to combine the two powers in one institution. But no hard and fast rules emerge from cross-country experiences.
Question: I have a question on this point of spreading costs over time. If a banking system or a bank fails in a developing country, if the government then issues debt instruments which that bank holds on the asset side and these instruments provide a spread to that bank over their deposit rates, does that help to address the issue?

Mr. Mathieson: When I say the central bank absorbs the shock, what it really does is to take over the bad assets of the financial system. In reality, these assets often do not earn anything, or they earn some small fraction of their contractual return. That is the basic problem; the central bank has issued liabilities of some face value, but—if you want to think of it in the terms you used—it has taken on assets that, although they have the same face value, their real value is much less.

So the central bank has already taken a loss. If its assets and liabilities were marked to market, it would end up with a negative net worth in its balance sheet, which is going to be worked out of the system in some sense. It may be done through the inflation "tax," which erodes the real value of those outstanding liabilities. The ministers of finance and presidents of central banks in developing countries are quite good at thinking up different ways to accomplish this "working out" process. Unfortunately, most of it ends up affecting the whole range of financial instruments. But I really don't see them having much flexibility here. For large shocks—to terms of trade or something like that—they just do not have the absorptive capacity except to take it onto the central bank's books.

Mr. Honohan: When you say "taking it on the central bank's books," I take it that you do not necessarily mean the actual accounting treatment but more that the central bank is going to have to take care of the problem? It can do so through any of a variety of measures. It can print money; it can lower reserve requirements; it can set interest rate ceilings. These are the only actions available to it. In other words, there must be some taxes but, because the fiscal authorities do not have the means to raise taxes, the residual course of action is to go through the central bank.

Mr. Mathieson: What you describe is not the only possible outcome. There could be a gradual transfer from the fiscal authorities over time. They could generate tax revenues that could be used to buy up the bad debts from the central bank. This would, in a sense, unwind the shock through future taxes. So it does not necessarily have to come through an inflation "tax." Although it often does, it need not.

But my point is that this is a question of financing technique. Right now, it is the only financing technique for a large shock. If these countries really had access to international markets, then presumably this would give them an alternative way to finance a shock over time. But for most of them, the access is just not there, and I doubt it will be there for most of the 1990s.

Mr. Caprio: It is probably worth adding that, although industrial countries have deeper capital markets that allow them to "stretch out" more easily various shocks, they continued in the 1970s and 1980s to resort to direct controls when they thought that indirect methods would take too long to operate or prove insufficient to the job. Thus we saw "the corset" in the United Kingdom in the 1970s, various credit control schemes in Italy in the 1970s and 1980s, and a short-lived credit control scheme in the United States in 1980. In either developing or industrial countries, such programs may be a mistake in that they inhibit the efficient allocation of credit. Thus Dr. Mathieson's point that developing countries will for a long time continue to use such tools does not imply that indirect methods should not be developed. Rather, the inefficiencies of direct controls should heighten one's resolve to assist in the movement toward market-based methods of monetary policy.

Mr. Queiroz: If you have real central bank independence, absorbing a fiscal shock will remain the responsibility of the fiscal authorities and the government, because the central bank would not be financing the government in any way. On the other hand, if the central bank is not independent, it will tend to assume responsibility for absorbing the shock. So the government in general has a great interest in not having an independent central bank.

The extreme case of central bank independence would be a bank that never financed any government paper, only private paper. This creates an adversarial relation, with the central government on one side and the central bank on the other side. This is a war, a terrible war, the worst war between the two that could occur. In this case, there would be no inflation in any country in the world. So my question is, which is the country, who are the politicians, the congress, the president, the first minister, that would like to have an enemy of this kind? Nobody.

Mr. Goodhart: Well, the Deutsche Bundesbank is independent. Although, we've seen in recent months the limits of that independence when you have something at stake that is as important politically as German monetary union. Where I do think you are right is that there is a feeling among commentators and economists—now
quite fashionable—that central bank independence will help to deliver greater price stability, in part because the Bundesbank has been the most successful central bank.

I think that your argument can also be reversed: one tends to get central bank independence when the population as a whole, and the politicians as a whole, put the highest priority on price stability. If they did not, they would not make the central bank independent. So what is really creating the price stability is the shift in priorities of the public as a whole, not the constitutional change to the central bank. Ultimately there will always be some kind of political override of central bank independence. There is a political override in the Reserve Bank of New Zealand Act. And I have difficulty believing that most of the European countries will accept a “Euro-Fed” (European Federal Reserve Bank) that is subject to no political control under any circumstances. But that degree of independence is what the Delors committee actually advocated.

An Elaboration

Editors’ note: The following exchange took place during the question and answer session of Barry Johnston’s presentation. It is reported here because it directly relates to the content of this session.

**Question:** Under the heading of helping the captain steer the ship, Charles Goodhart suggested yesterday that narrow monetary aggregates are not particularly useful in guiding the ship. I would like to give you the opportunity to rebut him, because I know that you have done a lot of work on that.

**Mr. Johnston:** On the first point, I think Charles and I have had some long-standing disagreements on the merits of different monetary aggregates. Charles has always felt that broad money was the only reasonably sensible aggregate in the economy. I believe the main reason for this view is that broad money can be broken down into credit counterparts; one can analyze broad money in terms of the absorption of funds by the government, by the banking system, and so on.

My approach has always been more empirically based. It addresses such questions as the underlying stability of the aggregates that are being examined and the information content, in any sense, of those aggregates. The movement to M0 in the United Kingdom, to which Charles referred, was based on an extremely extensive study of all the monetary aggregates. This study also included measures of money not usually studied or published, because we were trying to find what measure was the most stable. The results showed that the demand for currency was consistently the most stable monetary aggregate in the United Kingdom.

There were very good reasons for this result. All of the broader aggregates, including M1, had been distorted by significant financial innovation. In M1, for example, there had been the growth of interest-bearing sight deposits. The broader aggregates had been affected by the development of the building societies. In the U.K. context, the liberalization of restrictions on credit expansion increased the demand for holding broad money.

As I suggested in the presentation, the demand for money, at least for broad money, depends not just on income but also on broader portfolio restrictions. When access to credit increases, the demand for money increases as well as the demand for other assets. This will shift the demand for money. This was indeed shown empirically by the U.K. experience, the details of which have been published.

**Mr. Grenville:** As I understand what was said yesterday by Mr. Goodhart, as an empirical, informational variable to show what income is doing, a narrow monetary measure might be fine. But for a monetary aggregate to be operationally useful, there needs to be a causal sequence that begins with M and finishes with Y (in the quantity identity), not the other way around. What the tests of stability show is simply the informational content. I know that the reason we get such good relationships on the narrow aggregates in Australia is that we do not operate policies through them; when people demand currency, we simply give it to them. The critical thing is not whether they are stable now but whether, if we try to push on them, they would remain stable.

**Mr. Johnston:** I think the fundamental difference lies in the way the monetary policy operates. If the policy operates through discriminatory restrictions, then your aggregates will not remain stable. The experience in the United Kingdom is that if policy operates on an instrument that is not restricted or discriminatory, such as interest rates, then the narrow aggregates do not become structurally unstable. Indeed, the experience in the United Kingdom has been that, although M0 has been targeted since 1984, the results still show that aggregate has maintained its properties despite having been the principal monetary target.

I think the real problem with the broad aggregates was that they used things like the corset, which really made aggregates rather meaningless and led to a large amount of disintermediation. While there has been a trend or structural change in the currency aggregate (M0), it has been taken into account by including various variables.
I should also point out that the choice of M0 was based not just on stability of demand but also on findings of very extensive causality tests. The work looked at a very wide range of money components. I ran them in every conceivable way that we could think of. We ran very large statistical testing over subperiods and for different definitions of the equations. Nevertheless, again the result was still that currency systematically turned out to have the best information content of all the aggregates we examined.

**Question:** One explanation for your results may be that as interest rates go up, the economy slows and the narrow aggregates also slow. The narrow aggregates slow because there are financial flows into interest-bearing securities. So one can find lots of reasons why the Granger test might be passed. The point that strikes me is that there are such good substitutes for currency. If you really want to press on that—and that is what monetary policy is all about, pressing... some aggregate—then people will find ways around it.

**Mr. Johnston:** But how do you press on currency? Certainly you do not stop people from coming to the bank and withdrawing it. I would agree with your point if pressing on the aggregate meant that you said to the populace, “You cannot have any more currency today.” But raising interest rates works on the demand for money function, which is stable and does not deteriorate. What you said about the Granger causality is precisely why it is M0 that is targeted. The transmission mechanism is the effect of interest rates on the economy. Nobody ever believed that cutting back currency actually affected anything; it was designed simply as an intermediate target. This, I think, is the crux of my difference with Charles. He feels that money should do something, not just be an indicator.
PART III

BUDGET DEFICITS AND MONETARY POLICY
Introduction

Of the pressures which can cause central banks to lose control over their balance sheet and therefore over monetary conditions, perhaps the most common is the need of governments to finance large budget deficits. How monetary policy has functioned when confronted with large public sector deficits is the subject of this section. Speakers recounted the experience of Italy, Chile, and Brazil.

The late Cesare Caranza, former Executive Director of the World Bank and previously with the bank of Italy, summarized the lessons from Italy. Double-digit deficits (as a percentage of GDP) have been the rule in Italy since the mid-1970s, and government debt—most of it held internally—is equivalent to one year’s GNP. The authorities’ ability to market government paper (helped by high household saving) has greatly helped to maintain a successful anti-inflationary monetary policy. They have been able to broaden the debt market by using instruments of a variety of maturities and in small denominations. Indeed, this “structural” approach to monetary policy, which is argued to have been essential to the Bank of Italy’s success in restraining inflation, should be of interest to those officials who believe that only captive markets can be relied on to finance large deficits.

Together with the shift from a pay-as-you-go to a fully funded social security system, the indexation of all financial contracts accounted for much of the success in developing medium-term and long-term financial markets in Chile, according to Juan-Andres Fontaine, who was formerly Director of Research at the Banco Central do Chile. Indexation is controversial; some believe it weakens the resolve of governments to control inflation. (Also controversial have been debt-equity swaps, of which Chile is the leading exponent. Fontaine explained why, as operated by Chile, these swaps need not have an inflationary impact.)

Recent monetary policy in Brazil, as described by Carlos Alberto Queiroz, Chief of the Open Market Trading Department at the Central Bank of Brazil, has had the more limited objectives of stabilizing bond market conditions and avoiding financial distress of intermediaries. The use of floating rate instruments with daily revision of yields has helped tide the Brazilian financial system until budgetary control is restored enough to allow monetary policy to resume the role of stabilizing system.

The independence of central banks faced with government deficits has depended on a wide variety of considerations. Despite the 1981 “divorce,” which ended its role as automatic purchaser of unsold treasury bills at each auction, the Banca d’Italia is endowed with relatively limited de jure independence, inasmuch as monetary policy is set by an ministerial committee chaired by the Treasury Minister. Yet its high professional reputation and its relative stability in the rough seas of Italian politics have accorded it considerable de facto independence.

Dr. Fontaine underlined the role of greater central bank independence in the Chilean context, with the enactment in 1989 of a new law prohibiting the central bank from lending to government; the law could probably be evaded but only at a cost. The Brazilian situation leaves the central bank with less independence, at least for the present.
Impact of Government Deficits on Monetary Policy:
The Case of Italy

Cesare Caranza

Italy makes an interesting case for study because of all the potential for conflict between fiscal and monetary policy. With a public debt that roughly equals GDP and a fiscal deficit of about 11 percent of GDP, this conflict is a fact of life.

I shall begin with some basic facts and figures that are essential for understanding the Italian experience. Then I shall describe the policy response of the monetary authorities, the strategy they followed to finance these growing fiscal deficits while maintaining a reasonably sound monetary policy. Thirdly, I shall review the results of these policies and the problems still unsolved. Finally, I shall sketch the prospects for the future.

The Economic and Financial Picture

We begin, then, with the facts and some figures. During the last two decades, Italy has experienced high and continuous public sector deficits and a ballooning public debt. At the same time, it has had a restrictive monetary policy aimed at maintaining the exchange rate of the lira within the EMS band. Although the lira has been devalued from time to time with respect to the German mark, those changes did not compensate for the inflation differential with our major trading partners in Europe. In effect, Italy maintained a relatively strong exchange rate policy to reduce inflation to the level prevailing in our major European trading partners.

This objective of reducing inflation has been largely achieved. Consumer inflation peaked in 1980 at 21 percent. From that extremely high level at the beginning of the decade, it has declined to an average over the last three years of between 5 and 6 percent. The latest figure is 5.8 percent, but some slowing is expected over the next few months.

At the same time, real growth improved. In the first half of the 1980s, GDP grew at an annual average of slightly less than 2 percent; in the second half of the decade, it grew at slightly more than 3 percent. More importantly, the productive sector of the economy recovered during the 1980s from the dark years of the 1970s. Private enterprises regained productive efficiency, competitiveness, and financial strength.

Meanwhile, the status of public finances deteriorated sharply. A few numbers will convey the basic scenario. The public sector borrowing requirement (PSBR) averaged 13 percent during the 1980s. From 14 percent in 1983, it decreased to the present level of about 11 percent. For the next fiscal year, the government is aiming to reduce the deficit to about 10 percent, but that goal may prove elusive. As a consequence of these continuing high fiscal deficits, the stock of public debt grew rapidly. This year it will roughly equal GDP. Interest payments on public debt grew from 5 percent of GDP in 1980 to 9 percent this year. Therefore, of the 11 percent I quoted earlier as the PSBR, 9 percent represented interest payments. Primary deficits (that is, net of interest payments) climbed to 6.5 percent of GDP in 1983, then decreased gradually to 1 percent this year. The primary deficit, which is a key element in the story, has been cut. Yet this improvement has been too slow and half-hearted to break the vicious circle of high deficits, higher debt, higher interest rates, and still higher deficits. That, in brief, is the scenario of the 1980s: a dramatically improving private sector; satisfactory real growth; a sharp reduction of inflation; but deterioration in public finances.

A New Strategy for Monetary Policy

By what strategy have the monetary authorities tried to reconcile the financing of this growing deficit with an acceptable monetary discipline? The monetary authorities, and the central bank in particular, did not implement just a quantitative monetary policy, aimed at control of the monetary base and control of aggregates. They tried to implement a structural monetary policy,
one that would develop the financial structure of the country in order to cope with the huge demand for funds from the public sector, while also modernizing the instruments of monetary control. They sought, of course, to keep the creation of base money under control. At the same time, they sought to change the rules of the game for the financial sector. They tried to deepen and broaden the financial markets, to channel savings, and household savings in particular, into public securities.

A positive peculiarity of the Italian situation is the high savings propensity of its households. It is important to assess those high fiscal deficits of 11 or 12 percent of GDP against the high savings in the other sectors, savings of between 20 and 21 percent of GDP. If a channel can be activated to transfer a major part of these savings into funding of the public debt, money creation can be reduced and kept under control.

In pursuit of more depth and breadth in the markets, the authorities introduced an enormous amount of financial innovation. They floated new kinds of securities: financially indexed securities, short-term and medium-term securities. Many new instruments appeared in the financial markets, as well as new intermediaries. Some years ago, Carlo Cottarelli and I wrote an article on financial innovation in Italy in which we called it a lopsided process. Although there was all this financial innovation during the 1980s, it was lopsided because the public sector was the major, and almost the only, innovator. The reason was simply because its appetite for funds was so huge that it had to find new sources of funds.

So this broadening of the markets, to channel more private savings into public debt, was the first major element of the monetary strategy. The central bank in particular also tried to improve the instruments of monetary control, to regain some maneuvering room for interest rate policy. One of the more significant developments in this direction was the “divorce” in 1981 between the Treasury and the Bank of Italy, whereby the central bank discontinued the commitment to act as the residual buyer of treasury bills at auctions of public securities. This divorce, which strengthened the role of the central bank in setting short-term interest rates, wrought a crucial change in the conduct of monetary policy in Italy.

Results of the New Policy

These were the broad directions of policy; now we come to the results. The effort to channel private savings into public debt was a major success. The distribution of public securities in the economy changed dramatically. In the late 1970s, only about 20 percent of public securities in circulation was held in private sector portfolios; by the late 1980s, this increased to more than 70 percent.

Of course, concomitant with this increase in the private sector holdings was an equally dramatic decrease in the share of public securities held by commercial banks and the central bank. This redistribution meant less creation of base money and broad money. And in fact, money creation decelerated throughout the decade. In 1984 the Bank of Italy began to announce money targets, such as growth targets for M2 and for credit to the private sector. Although the credit target was usually overshot, the M2 money target was almost always attained. The predominant tool for controlling money growth was interest rate policy, as credit ceilings on bank loans were removed in 1983.

Real interest rates had, for the most part, been negative in the late 1970s. After the credit and monetary crunch at the beginning of the 1980s, real interest rates jumped to relatively high positive levels. Over the remainder of the decade, real rates remained at a high level, although they showed a slight declining trend from the early highs. Even today real interest rates in Italy remain a bit higher than in other major industrial countries. This differential, by the way, explains the huge influx of capital into Italy during the most recent years. These relatively high real interest rates notwithstanding, Italy continued to enjoy a very good performance of private investment.

I have already mentioned that inflation was reduced. And last but not least among the major results of the strategy has been the gradual liberalization of foreign exchange controls. We took the final step just this week; since May 14, 1990, capital controls have been completely removed, even on short-term capital movements. The EMS had agreed to remove these controls by the beginning of July. France made the last step at the beginning of this year. Now Italy has taken this last step. This liberalization is a crucial element of the story; from now on, our financial markets will not be protected from external competition by artificial barriers.

This increasing financial openness of the Italian economy has thus far brought huge capital inflows. The reason, simply enough, is the higher real interest rate, relative to other countries, combined with the prevailing expectation of exchange rate stability. For foreign investors, Italian financial markets provide good buys. There is a plentiful supply of bonds, treasury bills, and treasury certificates, all with relatively high yields.
The Remaining Problems

The results summarized above represent the positive aspects of the Italian situation. But the coin has a dark side as well. Of the two problems I want to discuss, one is more technical, the other is more general.

The technical point concerns the implications of the shortened average maturity of Italy's public debt. To market that enormous amount of debt to the private sector during a period of high and variable inflation rates, the Treasury had to accept a major shortening of maturities. This occurred not only as a direct shortening, by which I mean an increasing amount of treasury bills, for instance, but also as an indirect shortening. The Treasury issued large quantities of so-called treasury certificates with maturities of between four and seven years. However, their yield is linked to short-term rates, to the treasury bill rate, so the interest payments on them reflect the movement of short-term rates.

Today the average maturity on public debt is something less than three years. That is not drastically short, although it is much shorter than the average maturity some years ago. Still, a shorter average maturity of the public debt creates special pressures on monetary policy. At the same level of debt and of annual deficit, a shorter average maturity means that the debt stock must be recycled more frequently. Each month, Italy's public issues equal 5.0 percent of GDP, which is ten times the average stock of bank reserves. This high rate of turnover constitutes a major threat to monetary policy. If a treasury bill auction is not completed satisfactorily, a serious problem of monetary control ensues. If not enough bills or bonds are sold in a month, bank reserves are out of control. So refinancing becomes a continual and delicate game.

For the economy as a whole, this situation represents a high degree of financial fragility. The system is acutely exposed to external shocks coming from abroad and from changing expectations in domestic markets. This is one cost Italy has paid and will continue to pay for this delicate equilibrium, which has so far been maintained but remains a cost and a threat for the future.

The second and more general point is that Italy has had a primary deficit since 1965. I remarked earlier that the annual deficits grew in the late 1970s and early 1980s; in fact, for the last twenty-five years interest payments on the public debt have been covered not by taxes but by the issue of new securities. In this situation, public debt is no longer "irrelevant" in the Ricardo-Barro sense. The private agents in the economy consider their holdings of public debt as net wealth and its stream of interest payments as part of their disposable income with expansionary effects on their spending decisions.

The Keynesian description of interest payments as measuring the conflict between producers and rentiers does not hold in this situation. The absence of a conflict of interest between the taxpayers and the recipients of interest payments weakens the pressure of public opinion on Government and Parliament to cut the deficit and act for the consolidation of public finance.

Potential Solutions

What solutions to these problems are possible? For a number of years now, the central bank has been insisting that the primary deficit must be cut. Indeed, the deficit should be reversed into a primary surplus, as other European countries with high ratios of debt to GDP did during the 1980s. Belgium moved to a primary budget surplus in 1984; Ireland in 1987. If this first step is achieved, one can expect a reinforcing circle of improvements. Less demand pressure on the financial markets, because of the reduced deficit, would lessen pressure on interest rates. Since interest payments at short-term rates are a major component of the deficits, lower interest rates would further lower the overall deficit and so on. It is easy to say that the starting point for readjustment should be cutting or even reversing the primary deficit, but it is difficult to do. In the end, the issues are sociopolitical and require a sociopolitical decision. If the country really wants to do this, it must choose to pay more in taxes or to cut public expenditure.

Italy has lately made some progress in the right direction. The government plans to reduce the primary deficit to zero for the next fiscal year. That forecast seems reasonable. In any case, the only way out is to move ahead in that direction and to move reasonably fast.
Impact of Government Deficits on Monetary Policy: The Case of Chile

Juan Andres Fontaine

The Chilean experience is interesting because of the many changes that have been introduced over the last 15 years in financial markets and monetary policy. We have moved from a repressed financial sector with substantial government intervention to something much more liberal. Financial markets have grown and become much deeper. Chile has moved from high inflation—nearly 400 percent per year in the mid 1970s—to about 20 percent a year, which is moderate by Latin American standards. During this process, the country has undergone some traumatic experiences. The fact that I am talking here now shows that a country can survive those experiences.

One such traumatic experience was a severe financial crisis in the early part of the 1980s. It was solved with a rescue plan in which the Central Bank took high losses. These losses have created a quasi-fiscal deficit in the Central Bank, and I shall explain how this quasi-fiscal deficit is being managed.

As a starting point, I shall describe a few institutional features of the Chilean financial market that are closely linked to this process of financial liberalization. These features should be of interest, since many developing countries have financial systems similar to the Chilean system before the mid 1970s.

Factors in Chile's Financial Liberalization

The key to successfully liberalizing a financial market is creating confidence. All financial markets depend on confidence. The fundamental problem in the Mexican situation, which was raised in the previous floor discussion, is exactly a lack of confidence. One way to create confidence is to lift all exchange controls. Doing so means granting free exit to those confident enough to risk their capital on the domestic markets. Typically, however, lifting exchange controls implies a substantial devaluation of the domestic currency and a corresponding reduction in real wages. For this reason, governments in countries with high inflation or with high uncertainty are reluctant to follow this route.

In Chile in the mid 1970s, the alternative of removing all exchange controls was not even considered. Liberalizing the financial market by opening up the capital market to international financial flows was much more controversial then than now, after the experience of European countries such as Italy, Spain, and France. Instead, we took a rather long route that has created some problems but, so far at least, is working.

That route had two basic elements. One consisted of some legal changes in the status of the Central Bank. The other was the creation of an efficient indexation mechanism.

The legal changes in the Central Bank law prohibited it from lending money to the government, to the public sector enterprises, or to any entity connected with the government. That prohibition was enacted in the mid 1970s and has remained in place. Although ways of going around this type of legal restriction can always be found, I think it plays an important role because those ways are typically costly. Someone has to figure out how to do it and take the risks, including the legal risks, of getting around the prohibition. So I favor this solution of simply closing the legal window to Central Bank financing of the government. Of course, once that window is closed, either the fiscal deficit must be reduced or it must be financed by other means. This prohibition was taken to the constitutional level in the 1980 constitution. Now the Central Bank is constitutionally forbidden to finance the public sector.

Just last year, a new law governing the Central Bank was enacted. It gave the Central Bank independence on the model of the German Bundesbank. This is a continuation in the same direction as the earlier prohibition on public sector financing. Although the law is quite new and the Central Bank is just starting to work independently, things appear to be on the right path.
The second change to which I referred was the indexation system. Whether this is a good solution or not is still highly controversial. Chile had the problem of a long history of very high inflation. A way had to be found to create a financial market in that environment. So we decided to try to make financial markets function as if inflation did not exist. The indexation mechanism that was created was based on a unit of value, called the UF, in which almost all financial assets and loans are denominated. The UF changes its value daily, according to the inflation of the previous month expressed as a daily rate. In essence, this nearly perfect mechanism created a new currency, the UF, whose real value is constant. It is now widely used for most medium-term and long-term contracts.

Creation of this mechanism made possible the development of the medium-term and long-term financial markets. Now the Treasury and the Central Bank issue paper, which is indexed, with a maturity of ten to twelve years. Private banks issue mortgage bonds with maturities of twelve to twenty years to finance housing loans of equivalent maturities. Private firms are issuing long-term bonds. So the market is functioning as if inflation did not exist.

Of course, one must be aware of the risks of this sort of institution. It may create some "inertial" inflation as contracts start to be denominated in this new currency. However, I do not agree with Mr. Caranza's position that this indexation necessarily reduces the political pressures to fight inflation. The Chilean experience shows just the opposite as there are many debtors who are affected by the indexation. For example, when mortgage debtors hold housing loans denominated in UF, the monthly payment on the loan is indexed to the consumer price index. In this situation, any increase in inflation becomes politically a very difficult situation. So in Chile I think we have created a built-in mechanism to fight inflation, because so many individuals are personally affected.

This mechanism of the UF has another effect that is more risky. It has made the demand for money, for M0 and M1 at least, very volatile. I shall address this in more detail below.

A third institutional factor worth mentioning concerns changes to the social security system. In the early 1980s, the pension system in Chile was transformed substantially. It went from a standard pay-as-you-go system to a fully funded private pension system. So the payroll taxes that previously had been collected by the government to finance pensions are now being channeled to the capital market.

Because of this far-reaching reform, financial savings increased dramatically. Financial savings, which comprises not only M2 but also government bonds and similar instruments, grew from 27 percent of GDP just before the reform in 1980 to 60 percent of GDP last year. This change was induced in large part by the pension reforms, although there were also other factors that contributed. The stock of financial assets held by the newly created private pension funds now amounts to 15 percent of GDP. The funds have become long-term institutional investors whose emergence has helped a great deal in developing the market.

This change would probably have been impossible without the UF indexation. There had to be some way to maintain a fully funded pension system in a high inflation environment.

Managing Monetary Policy in Chile

How is monetary policy conducted within this framework? The Chilean economic policy of the last ten or fifteen years has gained a reputation for orthodoxy and monetarism. In actual practice, monetary policy has not been monetarist at all, even though most of the economists in the Central Bank—myself included—have studied in Chicago. For the past five years, monetary policy has basically been conducted through interest rate targeting, which is somewhat heretical in the monetarist world.

Our guiding principle has been that the role of macroeconomic policy, and specifically of monetary policy, is to provide information to the private sector. It is basically an informational role whose aim is to guide the spending decisions of private economic agents so that aggregate spending will be consistent with the production capacity and the availability of foreign financing. Our view has been that real interest rates convey more information than nominal monetary aggregates. This seems especially true when financial markets are relatively young and it is difficult to determine the right rate of growth of monetary aggregates.

Every businessman understands very well what a real interest rate means. The message is clear. We have done this within the framework of a highly indexed financial system, in which market-determined real interest rates are evident. The criticisms of interest rate targeting tend to be arguments against targeting of nominal interest rates. These arguments may well apply in markets where there is no indexation, but our UF-denominated assets allow agents to see the real interest rates clearly. This enables the Central Bank to target real interest rates. This may be a capability unique to Chile.

There is a second reason why we have focused on interest rates. As I mentioned, the variations of the UF tend to render the demand for M0 and M1 very unstable.
When the market incorporates a nearly universal indexation system, nominal interest rates, which are the argument in the demand for money functions, behave according to a modified Fisherian equation. Instead of the nominal interest rate being equal to the real rate plus expected inflation, the nominal rate equals the real interest rate plus the change in the UF. The change in the UF is determined by the previous month’s inflation, and month-to-month inflation rates fluctuate a lot. So the nominal interest rate, which is also the cost of holding demand deposits or currency, also tends to vary a lot. And this renders the quantity of money demanded volatile too. Under these circumstances, targeting a monetary aggregate becomes impossible.

The way we do our interest rate targeting can be viewed as a combination of the Pakistani and Canadian methods, as these were explained by Paul Meek. The Central Bank issues paper in a fixed-rate tender, so it is prepared to sell whatever amount of paper is demanded. The reverse action of adding liquidity to the market is decided case by case. We do not have an open window. Instead, we enter the markets and provide liquidity through short-term and medium-term loans, a method similar to the use of deposits in the Canadian system.

These aspects of monetary policy in Chile all have some bearing on the quasi-fiscal deficit I mentioned in the introduction. As I said, Chile experienced a deep financial crisis in the early 1980s. It was deep enough to arouse fears that the whole financial liberalization process would be derailed. The Central Bank adopted and carried out a strategy of rescuing banks and debtors. In pursuit of this strategy, the Central Bank took on large losses from three sources: (1) liquidation of some banks; (2) recapitalization of the remaining banks through subordinated loans paying interest at less than market rates; and (3) acceptance of the exchange rate risks associated with Chile’s high foreign debt, at a time of major devaluation of the peso.

In short, the strategy succeeded but was extremely costly for the Central Bank. It created a Central Bank deficit whose precise amount has been difficult to compute because it depends on such things as the probability of those subordinated loans being paid. Anyway, this deficit has been estimated at around 3 percent of GDP.

What is the implication of this deficit for the macroeconomic situation in Chile? In the past, this issue of the Central Bank’s quasi-fiscal deficit was disregarded; now it is receiving consideration. And yet, perhaps the pendulum has swung too far. For two reasons, the Central Bank deficit cannot simply be added onto the standard fiscal deficit. First, there is an accounting problem with whether costs are taken on an accrual basis or upon realization. Second, the economic point is that much of the Central Bank quasi-fiscal deficit is a consequence of decisions taken in the past. What appears at the present are just the financial implications of those decisions. Thus, these amounts are not comparable to the current subsidies, taxes, and other economic decisions that are typically managed in the nonfinancial fiscal sector. In other words, the standard fiscal deficit is directly relevant for ascertaining fiscal influence on aggregate demand. In terms of effects on aggregate demand, the quasi-fiscal deficit, which comes from decisions taken perhaps ten years ago, cannot be simply added onto the standard fiscal deficit.

This high quasi-fiscal deficit in the Central Bank does create some problems for monetary policy that are similar to those described for Italy in the last presentation. It generates a large stock of Central Bank debt in the market, on the order of 19 percent of GDP. Most of it used to have a maturity of 90 days, so amortization of those debts posed a difficult problem in terms of monetary management. For example, there was a time several weeks before the 1988 plebiscite in Chile when banks were reluctant to take a 90-day position. Because of the political uncertainty, they wanted to remain liquid. As a result, there was a huge expansion in the monetary base, since this mismatching automatically shows up in the monetary base.

That sort of liquidity problem tended to recur until the beginning of this year. We decided to address the problem by placing long-term bonds at a high premium. We have been able to swap most of the short-term paper for long-term bonds. This action solved the liquidity problem, although at a significant price in terms of a higher rate.

Other considerations with this kind of quasi-fiscal deficit are whether the increase in public debt implied by the deficit is reasonable and the extent to which it will cause problems in the future. In Chile’s case, a counterweight to the deficit was the change in the social security system, which I described earlier. Fortunately, the social security reform created a high growth rate of financial savings, on the order of 14 percent per year in real terms. Of course, this is not money dropping from heaven. When a social security system changes from a pay-as-you-go system to a fully funded pension system, the social security benefits of those who are already retired must be paid. Those current benefits are being paid by the government. The net result of all these changes has been a significant increase in nonfinancial public sector savings. These savings in the nonfinancial public sector offset the quasi-fiscal deficit in the Central Bank. I believe this counterweight explains why the Central Bank deficit has not created problems.
Debt-Equity Swaps

I would now like to turn for a few minutes to the issue of debt-equity swaps. The first thing to bear in mind is that in Chile we did not invent debt-equity swaps or other mechanisms of debt conversion. They did not result from careful planning or discussions among government officials trying to devise an ingenious plan to solve the debt problem. They were basically a market result, which arose spontaneously because there was a difference between the ability or willingness of debtors to pay and the creditors' perceptions of what the debtors would be paying. A common perception is that these are tools of “debt management”; actually, they are just ways of letting the market work. Of course, had we thought secondary market prices for Chilean debt were “too high” (in the sense of overestimating our ability to pay) we would not have gone ahead with debt conversions.

The question was whether to regulate or restrict this market phenomenon or to allow it to run its own course. Within the Central Bank, we did discuss at length how to design appropriate regulations to avoid some of the problems these operations might cause.

In Chile, the process was greatly facilitated by the fact that most of the foreign debt was owed by the private sector, the private banks, and some large companies. There was also some public sector debt, primarily in the Central Bank. Although we did engage in some debt conversion on that public sector debt, priority was given to allowing the private sector to carry out that kind of operation.

Early in 1985, we analyzed the costs and benefits of these operations. On the cost side, we were more or less able to predict the kinds of problems that might arise if the debt conversions were allowed. On the benefit side, however, we erred substantially in our estimate that these would be small-scale conversions. The figure we had in mind was about US$1 billion. Since then, the total value of conversions has been US$9 billion.

We put in place two basic mechanisms for debt conversion. One, which is referred to as Chapter 18, allows Chilean residents to buy debt paper abroad and convert it into pesos through the debtor of that paper. The second mechanism, known as Chapter 19, provides for standard debt-equity swaps, in which foreign investors are allowed to register as foreign investment the equivalent in pesos of the equity they receive from converting debt paper. Of the total of US$9 billion of converted debt, one-third is the standard debt-equity swap; the remaining two-thirds are operations carried out by Chilean residents, plus some relatively small operations by the Central Bank itself in buying back its debt abroad, with the agreement of the commercial banks.

The benefits of these conversions are clear. First, there is the capture of a portion of the discount at which the paper is priced in the international markets. During this period, the average discount on Chilean debt was about 40 cents per dollar. The average discount actually captured by Chile through the two conversion mechanisms, Chapters 18 and 19, has been on the order of 30 cents. So we have been able to get most of the discount. And 30 percent of US$9 billion is US$2.7 billion, which represents a net gain to Chile of an amount slightly more than 10 percent of GDP. A program or policy that yields 10 percent of GDP is not easy to find, so I think the results have been impressive.

There is discussion now, in Chile and elsewhere in Latin America, of whether this debt conversion route is better than the alternative of working with the creditor banks’ steering committee to agree on a debt conversion scheme with a specific discount. Big plans of this type have been negotiated by Mexico, Venezuela, and the Philippines. My impression is that the market mechanism is much more efficient for the debtor country. When a debtor country sits down with a creditor committee in Washington or New York to negotiate a discount, in effect a “bilateral monopoly” is formed. When debt conversions are worked through the market, the debtor country has more options for regulating the amount of conversion and for dealing with small creditors who may be willing to sell at different prices. The debtor country can better exploit the market through mechanisms like those used in Chile, as shown by the capture of the discount in our operations.

As a second benefit, these debt conversion operations allowed us to reshape the country’s “balance sheet.” The Chapter 18 operations brought flight capital back into the country. In the Chapter 19 conversions, a portion of debt liabilities was converted into equity. Over all, we have been able to reduce significantly the stock of external debt. At the start of the program, the total amount of foreign debt was slightly larger than GDP. Now it has been reduced to 60 percent of GDP. The ratio of foreign debt to exports was 4 to 1; it is now 2 to 1. I think the disadvantage of a high level of debt, compared with equity liability, is that a high debt increases the country’s risk of interest rate or terms of trade shocks creating wide fluctuations in domestic output and consumption.

There is another benefit of these debt conversions that is not readily quantified. Typically, when a country has a high level of foreign debt, private economic activity is very low, due in part to expectations. Private economic agents feel there is no solution to the problem, and that attitude tends to depress the economy. A few months after this conversion program started in Chile, the private sector started to move again. People could see the light.
at the end of the tunnel. They saw a way to reduce their debts; they saw opportunities, which got the economy moving again.

Of course, there are also costs to be considered, as well as benefits. To capture those 30 cents on a dollar, you must pay the other 70 cents. Ways must be found to finance that 70 cents.

Then there is the issue of the additionality of the foreign exchange used to pay that 70 cents. Both in Chile and abroad, there have been long discussions on the extent to which the foreign exchange inflows attributed to these debt conversion schemes were additional or would have occurred anyway. In Chile’s case, the balance of payments improved significantly, so it seems the inflows were for the most part additional. Not only did the balance of payments improve generally but cash investment increased substantially, despite the success of the mechanism for investing through debt conversions. At the least, there was no cost with respect to foreign exchange.

We managed our conversion mechanisms to avoid linkages that would affect our foreign exchange negatively. With respect to Chapter 18—the program that used residents’ foreign exchange—a monthly quota was established. We auctioned off portions of that quota. With respect to Chapter 19, we screened each project to determine whether it created linkages—for example, by increasing imports—or would substitute for investment already in the country.

Macroeconomic effects are also an issue when debt conversions are discussed. On the fiscal side, it has been said that converting cheap foreign debt into expensive domestic debt deteriorates the fiscal position of the country. This is a valid point, so the discount on the debt should be used as the basis for determining whether the conversion makes fiscal sense. For example, in Chile at present interest rates have increased to the point that there is little incentive to convert foreign debt. The decline in demand is putting pressure on the price of Chilean debt in the international market. When the price declines enough to make the discount attractive, the market in debt conversion will pick up again.

Inflation is another macroeconomic effect that is sometimes mentioned as a potential cost of debt conversion. This concern arises from the assumption that debt conversion must operate through the central bank itself, which buys and converts the debt by issuing domestic currency. But the conversion mechanisms do not work that way in Chile. Rather, there is usually a private negotiation between the debtor who issued the paper and the new creditor who has bought the paper on the secondary market. No monetary expansion is associated with the prepayment of that debt in local currency. There could only be an effect on the money supply when the debt being converted is owed by the Central Bank. In that situation, however, rather than paying by issuing currency, the Central Bank issues a long-term bond denominated in local currency. The transaction is actually a swap of foreign debt for the long-term bond, which sterilizes the impact on money.

A third macroeconomic effect to consider is pressure on real interest rates. Certainly there is some effect, since the substitution of domestic for foreign financing increases demand on domestic savings. There may also be an effect on real asset prices. When the debt conversion operations began in Chile, real asset prices increased significantly. Foreign investors and Chileans with foreign exchange abroad were using the two mechanisms to buy real assets. So the initial effect was more on real asset price than on interest rates. In the past year or so, we have seen interest rate increases rather than real asset increases.

Weighing these various costs against the benefits, I believe the benefits outweigh the costs. To sum up, I think our mechanisms for debt conversion have been extremely efficient in reducing problems that in 1985 seemed impossible to solve. We have now reduced the foreign bank debt to US$5 billion, which is manageable. We will probably continue to reduce it. Although it creates some problems for management of monetary and fiscal policy, those problems are manageable.
Monetary Management with High Inflation: The Brazilian Experience

Carlos Alberto Queiroz

I will begin by explaining how the money market has evolved in Brazil and how monetary policy has been conducted in that market. I will then look at Brazil’s experience during the super-high inflation of 1989, in which prices rose by as much as 84 percent in a single month. In that kind of environment, open market operations of any kind become difficult.

Development of the Money Market and Monetary Policy

A market for government securities began in Brazil in the second half of the 1960s and grew during the 1970s and 1980s. Beginning in the 1970s, this market grew proportionately more than any other financial market, including the stock market. The growth was primarily in the spot market; only in the 1980s did the first, and not very successful, attempts occur at a forward market in interest rate futures.

In a developing country like Brazil, there is a preference for short-term investment of savings because longer-term expectations face large uncertainties about both inflation and income. The mechanism that made trading of long-term securities possible was the repurchase agreement. It enabled financial institutions to leverage a long-run position on financial assets with funding from the short-term market.

Financing the public debt of Brazil during the last decade has come to depend on this mechanism of repurchase agreements and the associated system of leveraging. Yet this situation imposes enormous restrictions on the conduct of monetary policy. Because the short-term market supports large and highly leveraged positions in government securities, any unexpected variation in short-term interest rates could engender a liquidity crisis. The possibility of hedging against such variations through futures on short-term interest rates has been unavailable.

As a result, a change in the price of financial assets could easily create a situation where private financial markets would collapse without government intervention. On several occasions, the Central Bank had to enter the market simply to provide a hedge for the market. Over the years that the Central Bank has lived with this situation, it has tried to avoid large-scale rescue operations of this kind. Attempts to improve the situation were made in 1986, when Central Bank Bills, or LBCs, were created, and later on when Financial Treasury Bills, or LFTs, were established. LFTs are variable interest rate securities; their daily interest yield equals the average interest rate for that day on all repurchase agreements for government paper. In effect the daily yield on an LFT is equal to its own overnight repurchase rate. LFTs are issued in public auctions every Tuesday, with transactions cleared the following day. The selling price, expressed as an annual discount rate, is determined by competitive bidding.

Introduction of a security that yields its own overnight rate has greatly diminished the capital value risks from unexpected fluctuations in the interest rates. The LFT made monetary control much easier in a setting of high inflation rates coupled with no control of fiscal deficits.

It is important to clarify that the LFT does not solve the problem of financing the fiscal deficit. Because of the ever-growing needs of the public sector for funding, an increasing amount of government paper must be sold at auction. The market requires higher rates to clear the issues, so the discount rate for the LFT becomes deeper and deeper. All that the LFT yield mechanism has accomplished is to insulate the effect of unexpectedly higher inflation on the stock of LFT already held by the private sector.

When open market operations started in the late 1960s, the government introduced a monetary budget by consolidating the balance sheets of the Central Bank.
and the Banco do Brasil, which is a commercial bank owned by the government. Since then, this monetary budget has been the basis for monetary policy.

Lending by the Banco do Brasil to the nonbank public has always been a major source of monetary base expansion in Brazil. This credit was registered in the budget and funded through subsequent sale of government bills and bonds.

In effect, the government was spending first, then borrowing to fund the expenditure. Interest rates would fall at first, from the credit expansion. Then the government would sell securities to balance the monetary budget. Overall, interest rates did not rise, so the private sector did not identify the latter action as crowding out other borrowers. However, after several months' lag, the inflation rate would jump "unexpectedly." Only then did the private sector realize the extent to which government spending was expanding the money base. And only when the monthly inflation rate, which is public information, began to rise did the monetary authorities press for interest rate changes. They began to worry about loss of control over the monetary aggregates. However, interest rates could not be allowed to rise very far, since the financial markets were so highly leveraged. Also, the demand for investments might have been adversely affected.

This situation held for most of the time that the open market was evolving in Brazil. During the 1970s, the inflow of external capital made things easier. During the 1980s, particularly after the Mexican bankruptcy, the inflow of external capital halted. From that time on, the issue of how higher interest rates would affect investment became an important constraint on monetary control.

Monetary policy was therefore being conducted indirectly. Increases in public spending were justified by registering future funding in the monetary budget. Compensating changes in interest rates were too little and too late. Built into this mode of Central Bank action is a causal direction from variation in prices to variation in the monetary aggregates. In other words, the causality was from P to M, not from M to P.

The Year of Super-High Inflation

In many high inflations a point is reached (often termed hyperinflationary collapse) where the supply of goods and services shrinks well below what had previously been available, resulting in a severe worsening of economic conditions and a generalized shortage of goods and services. Typically currency is no longer functioning as a medium of exchange and the economy slides into a costly system of barter. The reduction in national output leads to exacerbation of poverty, and not merely to a recession from which an early recovery could be expected.

During the inflation dynamic, there can be a period of time when the real sector continues to produce goods and services, despite high monthly or even high weekly, rates of inflation. Certainly, this high inflation rate retains the negative aspects of an inflationary process, with all its allocative and distributive problems. It is in fact an intermediate stage that over time will lead to the hyperinflationary collapse as described above. This intermediate stage is what I mean by a "super high rate of inflation," and this is what Brazil experienced in 1989.

With this background I turn to the funding of government debt and monetary policy in circumstances when inflation has reached a monthly rate of 70 percent.

By the end of the "Summer Plan" in May 1989, the government admitted that nothing could be done to control government spending. The goal was simply to find a way to support the political process leading up to the two rounds in the presidential election (the first round in November, the second in December), while avoiding hyperinflationary collapse.

The monetary policy that was adopted in this situation was based on the effect of prices on interest rates, as in the past, but on control of interest rates to affect prices. The nominal interest rate became the main target for monetary policy. The real ex post interest rate, i.e., as measured after the fact, had been the operational target; it was now dropped from consideration. The rationale for this change was a Fisherian concept of the nominal interest rate as having built into it the future inflation rate. Thus the new policy would take the real ex ante interest rate, i.e., as estimated before the fact, as the operational target.

The operating procedure was to set the monthly interest rate so that the expected inflation rate in the next month would leave a real rate on government securities that would be favorable relative to less liquid real assets or speculative financial assets such as gold certificates or foreign currency. The hope was to delay the public's consumption decisions as long as possible by presenting an opportunity cost sufficient to encourage decisions not to spend.

Auxiliary indicators for the real interest rate target were the price behavior of the gold market, the parallel market in foreign currencies, and the stock market. The behavior of the monetary aggregates (base money and M1) became useless. There was little sense in targeting a monetary aggregate when the inflation rate was so high and the government would not reduce spending. In these circumstances, controlling money supply directly could lead to interest rate variations—and resulting fluctuations in prices of financial assets—so large that
the Central Bank would be obliged repeatedly to enter the market with rescue operations. Such rescue operations would only amplify the uncertainties for the private real sector, with further negative effects on the production of goods and services.

The real sector of an economy with inflation rates of 40, 60, or 70 percent monthly experiences considerable uncertainty. As a result, there tend to be abrupt shifts in savings preferences as between real stocks and financial assets. Investment decisions are delayed as the ability to anticipate decisions is eroded, since all the factors that influence investment and production activities are subject to drastic revision at any time.

In this situation, the stability provided by the Central Bank became essential to economic life or death. Without some source of stability, the real economic sector could have exploded at any moment. The trading desk of the Central Bank provided this stability in two key aspects: liquidity of the market and an adequate real return on financial assets.

To achieve the desired nominal interest rate, the trading desk bought and sold repurchase agreements and reverse repurchase agreements. It stood ready to provide adequate liquidity at the targeted interest rates to a highly leveraged financial market. In managing liquidity the trading desk of the Central Bank made outright transactions in government securities: buying those the market did not want and selling those the market desired to hold. At times the market demanded long-term paper; on other occasions, long-term paper was sold back to the Central Bank. Similarly, demand for short-term notes was met by the buying and selling operations of the trading desk.

These trading operations in support of monetary policy made it possible for the private real sector to continue conveying its uncertainties to the financial sector. Even so, the situation could not be sustained indefinitely. Actions that are based only on monetary policy to control interest rates, without adjustment of government spending, eventually lose their efficacy. The stability achieved by the policy became merely a stabilization of the rate of growth of inflation.

Inflationary processes arise from public deficits. With inflation rates reaching 70 percent per month, a government can achieve long-term success only by cutting its own deficit. In March 1990, the government of Brazil introduced a new program built on the three pillars of fiscal policy, monetary policy, and income policy.

The fiscal policy goal is to create a fiscal surplus. It is obviously difficult to transform a chronic public deficit into a surplus. Unfortunately, it is not possible to reduce spending or generate more revenue overnight. In an economy as complex as Brazil's, which is developed in the south but very poor in the north, achieving this fiscal goal will require a long period of hard work.

The new plan also acted to reduce demand in the short run, through the compulsory use of private savings. The financial return on these savings is based not on the old hyperinflationary conditions but on the expectation of future price stability. The intent is to recover a more stable framework in which traditional monetary policy will again be effective.

After March 15, a new monetary base was created, consisting at the outset only of cash in the hands of the nonbank public. All other "new cruzado" (the old currency) assets became nonmonetary assets. Thus there has been an abrupt reduction of the stock of money and free reserves to 20 percent of what it had been. The stock of cruzados will gradually be converted to cruzeiros over a period of eighteen months.

During this period of a year and a half, the public deficit will be managed by reductions in government spending and permanent increases in government revenues. Public enterprises and government real estate will be sold as well. Therefore, we hope to have recovered the classical instruments of both fiscal policy and monetary policy by the end of this transition period.

Note

1. The interbank market for reserves—one of two main short-term markets in Brazil—is entirely based on repurchase agreements in government securities or on outright trading in those securities. Therefore the key interest rate for the national financial market is the overnight repurchase rate for government securities. (The other market, called the administrative check market, trades funds available from the float on checks that have not yet been cleared, and is collateralized with private securities. Because of the one-day delay in clearing, interest rates on the two markets are linked through expectations: the rate on the administrative check market is effectively the market's expectation of the next day's rate on the market for reserves.)
Discussion

**Question:** What Mr. Caranza has described really does seem to be an Italian miracle, at least compared with Mexico, where the public debt is only 20 percent of GDP. Mexico is running a budget surplus of around 7 percent of GDP. Yet the real interest rate on the public debt is about 25 percent. This is creating a tremendous threat to the stabilization program in Mexico. We are looking for financial innovations that will extend the maturity of the debt, because the public debt is almost entirely short term. The average maturity is less than two months. In effect, every two months or less the entire debt must be renegotiated.

We think that this situation may be the result of expectations of hyperinflation in the near future. Those expectations may be grounded in the fear that at some point that demand for the public debt will be too weak to carry out the bimonthly refunding of that debt.

With respect to the financial innovations in Italy during the 1980s, did you investigate the stability of demand for long-term bonds issued by the public sector? Are there other cost-saving schemes, such as contractual savings, retirement funds, and pension plans, that could create a stable demand for long-term debt? Or are there other reasons why households in Italy are willing to hold 70 percent of the debt of the public sector?

**Mr. Caranza:** The link between your two questions is inflation. Last summer, I spent several months in Sao Paulo, Brazil, for I was fascinated by certain similarities between the Italian and Brazilian situations. Brazil, like Mexico, has extremely high real interest rates and a very short maturity on its public debt. The average maturity is practically 24 hours, because they must go to the overnight markets.

Why are real interest rates so high? The level of real interest rates reflects the past inflation history of the country. Mexico and Brazil are paying a huge risk premium to the savers. After years of high inflation—not hyperinflation in the technical sense, but an ongoing “mega-inflation”—how can the authorities convince private savers to hold bonds or even bills? They must pay tremendously high real interest rates, which have a ballooning effect on the debt, whose growth continues the cycle.

In this situation, monetary policy alone is useless. Monetary policy cannot be used without a sound fiscal policy. If the monetary authorities try to push interest rates higher, the deficit balloons and the debt grows even more. The result is a loss of confidence in the country.

**Question:** This is why I say that Italy may be a miracle. If I were an Italian in 1965 and saw that the government was borrowing to pay interest and to cover the budget deficit, the situation would look unstable. The Mexican government is trying to address the problem of inflationary expectations by issuing indexed bonds, which cover the inflation risk. Because this risk is removed, the rate on indexed bonds is lower than on nonindexed bonds. But there is still a substantial premium in the real interest rate because of the default risk. The problem seems to be not the risk of inflation but the lack of stable demand for these indexed bonds.

**Mr. Caranza:** During the 1970s and 1980s in Italy, we discussed all the possibilities, including the pros and cons of issuing price-indexed bonds. We decided not to issue price-indexed bonds because indexation to prices is a way to live with inflation; it is not the way to fight inflation. Price-indexing the debt anesthetizes the system. It is like a drug; one lives with the inflation but loses the stamina to fight it.

You raised another point concerning the results we had in Italy in creating a stable demand for longer maturities. In recent years, we have achieved that result. Here again, inflation calls the tune. Particularly after the fall in oil prices in 1986, Italy had rapidly falling inflation; then inflation stabilized at a lower level. At that point, the demand for longer-term bonds increased. By longer term, I mean four to seven years, which is not all that long, but there was a large demand for such bonds.

**Question:** Were those bonds tied to the short-term interest rate?

**Mr. Caranza:** No, these new bonds are fixed-interest bonds. In the past, from the late 1970s until early in the 1980s, we did use that kind of financial indexation in the treasury certificates. We did not adopt price indexation, but those financially-indexed certificates were used as a passage to more orderly financial conditions.

**Question:** With the reduction in the primary deficit in Italy, what has been the impact on the private sector?

**Mr. Caranza:** That was one of the positive aspects of the story. Notwithstanding the rise in real interest rates, the private sector did not suffer much. In particular, real investment did not suffer much. To be more precise, construction activity slackened somewhat; there was probably some reallocation of savings away from the tra-
ditional investments in housing and dwellings and toward financial investments. Yet real, productive investment was not affected much. When we look at the ratio of investment to GDP growth, there is no sign of significant suffering.

We probably were able to achieve this result by having interest rate and exchange rate policies that served as strong stimuli to the enterprise sector to cut costs and improve competitiveness.

The most important factor was that the enterprise sector generated sufficient internal funds to finance new investment. That sector underwent a tremendous recovery in the early 1980s. By the middle of the decade, their financial situation was so comfortable that a number of enterprises began to invest their extra funds in the financial markets. The results were quite good because of the high level of interest rates.

So this was part of the bright side of the coin. We sought to manage the situation without dampening the real growth of the economy.

Question: Did the Italian recovery benefit from capital inflows when European banks moved away from LDC lending in the wake of the debt crisis?

Mr. Caranza: Not very much, actually. An interesting feature of the Italian experience is that the treasury, which was the big borrower, did not rely heavily on external borrowing. As a matter of policy, we preferred to sell the public debt in the domestic markets. Only in the more recent years has there been a significant inflow of capital from abroad, but that has been completely autonomous. So I do not think Italy benefitted particularly from the debt crisis. There was a major inflow of financial investment from abroad in the last few years, especially for purchases of treasury securities. The crucial point was the expectation of a reasonably stable exchange rate, the EMS effect.

Question: You mentioned that the government was borrowing 11 or 12 percent of GDP and the savings rate was 20 to 21 percent of GDP. For investment, there would also have been foreign savings added from the current accounts deficit. How much was the difference between the total savings, both foreign and domestic, available to the economy and the government deficit? Did that difference change over time?

Mr. Caranza: During the second half of the 1980s, we maintained a small current account deficit. It was less that 1 percent of GDP. On balance, then, the external effect was more or less neutral. When one looks at the financial balances for Italy during this period, the enterprise sector and the foreign sector were more or less in equilibrium, in terms of the trend, although there were significant fluctuations at times. On the other hand, the surplus from the household sector and the financial deficit in the budget sector formed two diverging trends that over time represent an increasing percentage of GDP. These two trends complement each other, but using the surplus of one to finance the deficit in the other required a tremendous amount of financial intermediation. That intermediation had to be supplied by the banking system and the financial markets.

Question: In terms of monetary policy, how did you handle the inflow of resources within the context of a strengthening of the lira in the EMS?

Mr. Caranza: The problem Italy has had in the past two years with capital inflow has been a new experience. In the past, the treasury was typically creating a good deal of money, while outflows through the external sector resulted in net money destruction. The last few years have reversed the situation. There has been a lot of inflow from abroad, and we have had some problems absorbing this liquidity through open market operations. Yet this is just one aspect of the new reality that Italy will be facing even more in the future. I ended my presentation with the present situation, but one can also look ahead to the new framework of European monetary unification within which Italy will be operating. During the last decade, the typical situation was that of one leading economy, Germany, whose money was the linchpin of the monetary system. The leader was the country with the sternest anti-inflation discipline. The other countries tried to follow by linking their exchange rates to the most stable currency. During the 1980s, the followers had the same final objectives as the leader: to reduce inflation. There were costs, and much pain in certain countries, Italy in particular. But they were all determined to reduce their domestic inflation rates towards the German baseline.

Also, a number of the larger followers—France, Italy, and later on, Spain—were countries whose economies were relatively closed through application of exchange controls. Now, however, the economies of France and Italy are entirely open, and Spain is gradually liberalizing its controls.

It is difficult to imagine the new framework continuing to work as it has during the past decade. Although the large followers have not achieved the low level of inflation enjoyed by Germany, their inflation rates are reasonable. And now their economies are totally open. I doubt that Germany can continue to play the role of leader for the following reason. In a scenario of contin-
ued German leadership, the framework would resemble the old Bretton Woods system, but with a crucial difference. Germany lacks the economic and financial weight to have the mark play the role that the U.S. dollar played under Bretton Woods. At that time, the dollar was the currency of the economy of overwhelming importance in the world.

The problem is not one of competing nationalisms; it is a purely economic issue. The German economy cannot defend itself from instability coming from other major European economies. Even within the last few years, Germany has begun to experience problems related to these pressures. When they have had major inflows of capital from other European countries, they have had trouble in controlling their money supply.

Furthermore, price stability in Germany should not be taken for granted. What, for example, may be the consequences for price stability of German reunification? I am not implying that there will be higher inflation in Germany, just that we do not know what may happen.

A preferable outcome to revisiting Bretton Woods would, I argue, be a strong effort by key participants to coordinate their monetary policies. At least the major European countries should coordinate monetary policy ex ante and set mutually consistent monetary targets. Then they must follow developments and make adjustments to keep things on track.

This appears to be the direction in which the EMS is heading. Beginning in the autumn of 1990, the four major continental economies—Germany, France, Italy, and Spain—and the two smaller economies of the Netherlands and Denmark will announce coordinated monetary targets for the following year. They will attempt to implement a system to monitor developments so that a consistent monetary policy can be maintained within the EMS. In the end, this is the only way to achieve reasonably stable exchange rates in Europe. Of course, the whole exercise assumes there is agreement on the final objective of monetary policy. Clearly, that remains the control of inflation in Europe.

**Question:** To what extent can privatization be a potential solution of the debt problem in Italy?

**Mr. Caranza:** That is a very hot issue. Our treasury minister is campaigning vigorously for that kind of solution. Although it is not a complete solution for the debt problem, it would be an important step forward. Major portions of the public enterprise sector could be sold to the private sector. But there is a lot of political resistance, particularly with respect to the banking industry, much of which is publicly owned.

The situation is peculiar. Many of these banks behave like private banks; they do not respond much to political pressure, at least so far. The problem lies in who would be the new owners of the privatized banks. Italy lacks a sufficiently developed sector of institutional investors. Perhaps foreign interests could play a part, but we do not want to sell our banking system to foreign interests entirely. The potential domestic buyers are industrial enterprises or private investors. There are pros and cons that can be argued, but the monetary authorities in Italy oppose industry taking majority positions in commercial banks.

More generally, though, the issue of privatization is important. While not a complete solution to the debt problem, it could be an important step forward.

**Question:** I was just thinking back to when the Germans privatized Volkswagen. They had a system through which they distributed shares to a very wide public, thereby avoiding concentration. Presumably something similar could be used in Italy, if the public authorities were not hostile to it.

**Mr. Caranza:** Yes, that is another possibility. An additional problem in Italy is that we traditionally have had an underdeveloped equity market. Of course, an injection of new securities, such as those resulting from a privatization program, could help to revive the equity market.

This weakness of the equity market is a problem in other countries as well. I am thinking in particular of recent talks on privatization in the Eastern European countries. They have problems with how to market the new shares to small investors. So there are technical problems, but the privatization issue is fundamentally linked to the political decision whether to move in that direction or not.
PART IV

THE INTERACTION OF EXCHANGE RATE AND MONETARY POLICY
The other main source of volatility in the central bank's balance sheet is foreign exchange flows. Charles Freedman and Lin See Yan looked at this problem from the perspective of the central banks of a small open industrial economy (Canada) and a middle income country (Malaysia), respectively. The speakers are deputy governors of these respective central banks.

Central banks can insulate their balance sheet from international flows only by adopting a purely floating exchange rate regime, that is, by avoiding any purchases or sales of foreign exchange for its portfolio. At the opposite end of the spectrum, irrevocably fixed rates entail the sacrifice of all monetary policy autonomy; even with somewhat less permanent arrangements, small countries are forced to adopt the monetary policy of the larger country to which their currency is pegged. In between these two extremes, Dr. Freedman argued that the instruments of monetary policy are more powerful than exchange rate intervention in influencing the path of the exchange rate. Indeed, intervention is likely to have only a very short-run role. With less than perfect substitution among assets, central banks can sterilize reserve flows, that is, limit their impact on the domestic money stock on interest rates.

Dr. Lin emphasized the extent to which a small open economy can have its reserves wiped out if the central bank does not act quickly. Occasional speculative runs in Malaysia's open capital market have been stemmed only by short periods of liquidity squeeze in which money market rates have jumped as high as 100 percent (as against single-digit inflation). In an example of the behavior described by Dr. Mathieson in Part II, the authorities have, on such occasions, acted to protect nonspeculative borrowers with a closely controlled program of subsidized credits. Some participants were skeptical that such selective relief from the liquidity squeeze could be effectively implemented without creating serious distortions.

It should be noted that Malaysian authorities in the early and mid-1980s had a distinct preference for defending the exchange rate, letting interest rates bear the brunt of the adjustment to various shocks. Canadian authorities, in contrast, chose to moderate interest rate movements with greater flexibility in the exchange rate. A variety of factors may govern this choice, including countries' history, with Canada being an earlier experimenter with floating rates in the 1950s. In Freedman's terms, these preferences may reflect relatively less concern on the part of Canadian authorities with importing the credibility of their main trading partner. These choices might reflect as well the particular shocks to which each economy has been exposed, as well as the degree of priority given to combating inflation.

Authorities of developing countries should consider their choices regarding (short-term) interest rate and exchange rate volatility, given that in a liberalized environment they will not be able to control both. The eclectic approach to monetary targeting suggested by Lindsey and Goodhart is consistent with an eclectic approach to the exchange rate as well. Officials might in the end focus more on their ultimate objectives for inflation and less on near-term targets for exchange rates if an independent monetary policy is being pursued. Alternatively they can sacrifice all independence and peg irrevocably to a "stronger" currency. But either choice is compatible with the move to market-based monetary policy. Having established their credibility regarding inflation, and being faced more with incipient capital inflows, Malaysian authorities recently have in fact moved to a more eclectic approach to both interest rate and exchange rate policy. This lesson—that central banks should pay most attention to restraining inflation, and thereby reduce uncertainty facing investors—has much to recommend itself to other developing countries. Malaysia's long-term growth performance suggests that the
growth effects of such a policy orientation may be positive and, indeed, could well be significant.

Notes

1. Steven Grenville (in Part I) discusses the various ways in which a central bank can lose control of its balance sheet.

2. Industrial country experience certainly suggests that long-term interest rates cannot be controlled by monetary authorities.
Exchange Rate Policy

Charles Freedman

This paper is in four sections. The first is definitional: what is meant by exchange rate policy. As will be seen, there are three types of policy that directly affect exchange rates: (i) the choice of fixed versus flexible rates (with and without managed floating); (ii) monetary policy; and (iii) intervention policy. In the second section I discuss the choice of fixed versus flexible rates in a rather broadbrush way. I then go on to discuss in more detailed fashion the conduct of monetary policy and of intervention policy. Finally, I discuss the issue of sterilization of reserve changes in a system of fixed exchange rates or a managed float.

Some Definitions

The term exchange rate policy is somewhat slippery because it focuses on the variable being affected by a variety of policies, rather than on the policies themselves. In this respect, it differs from terms like “monetary policy,” “fiscal policy,” or “commercial policy,” which tend to focus on the instrument of policy (respectively, money or interest rates, taxes and transfers or government expenditures, tariffs or quotas). Hence, rather than talking about exchange rate policy, it is more useful to talk about the elements of policy that have a direct influence on exchange rates: the choices of exchange rate system, monetary policy, and intervention policy. This is not to argue that other policies, as well as exogenous shocks, do not affect exchange rates, e.g., fiscal policy, commercial policy, or exogenous changes in the relative price of raw material on the world market. They do, but it is the three policies that are under the control of the authorities and that have a more direct effect on exchange rates which are typically encompassed by the term “exchange rate policy.” Note also the hierarchy of these choices. The choice of the exchange rate system is fundamental and has a crucial implication for the scope of monetary policy. Intervention policy is the least important of the three policy elements and is much less powerful than monetary policy.

Fixed Versus Flexible Rates

There is a voluminous literature on this subject, mostly for developed countries, but some for developing countries. There are a number of major strands in this literature, some of which I would like to touch upon in this paper. Among the important topics in the literature are the relative potency of monetary and fiscal policy under fixed and flexible exchange rates with various levels of capital mobility and asset substitutability, the mechanism via which policies have their effects in the two regimes, the insulation properties of the different exchange rate regimes in response to various kinds of shocks, and the role of policy coordination and concerted intervention by the G-7 countries.

Broadly speaking, a worldwide system of irrevocably fixed exchange rates (i.e., one currency) would have significant efficiency benefits. Most notably there would be no transactions costs and no need to expend resources on coping with the risk of exchange rate changes. The presumed advantages of flexible exchange rates tend to arise from macroeconomic and adjustment considerations, in particular, the ability of a country under a flexible exchange rate regime to achieve a better inflationary performance than its potential partners and its enhanced ability to respond to real shocks that are specific to it.

Let me begin a detailed discussion of some of the issues surrounding the choice of fixed versus flexible exchange rates by a bald assertion. In a world with perfect asset substitutability, no exchange controls, and fixed exchange rates, there is virtually no autonomy in monetary policy for a small country. There are two key implications. First, a small country that fixes its exchange rate to the currency of a single large country or
to a basket of currencies of a number of countries by and large ties its inflation rate to that of its partner or to a weighted average of its partners. Second, in the face of real shocks to the terms of trade, adjustment of the real exchange rate must take place through differential price movements rather than through nominal exchange rate changes.

A country that fixes its exchange rate (permanently) trades off its ability to influence domestic nominal variables in return for the rate of inflation of its larger partner. This decision is more sensible, the greater the confidence a country has in the central bank of the country to which it is tying its currency and the greater the similarity of the shocks faced by the two countries. In the case of the EMS, for example, other countries have been able to import the credibility of the Bundesbank by tying their currencies to the German mark. And, indeed, there has been a convergence of inflation rates over time among those European countries that have associated their currencies with the mark. The case of those francophone African countries that have maintained their ties to the French currency area serves as another example.

Note that to obtain the full credibility benefit of the fixed rate in such circumstances, the country has to convince the market that the fixed rate is close to irrevocable. Having a fixed but adjustable exchange rate, in my view, does not yield the benefit of an irrevocably fixed rate. The country does not get the full advantage of the credibility, and it may be faced periodically with attacks on the currency followed by large discrete adjustments of the exchange rate peg, with concomitant effects on prices of traded goods (or subsidies).

As mentioned earlier, the choice of an irrevocably fixed exchange rate implies that, in the face of real shocks to the terms of trade, adjustment of the real exchange rate must take place through differential price movements rather than through nominal exchange rates. This implies that, where possible, a country should tie its currency to a large credible country facing similar shocks to those it faces. This will permit it to float against other countries with differing external shocks.

Suppose there is no country that both faces similar external shocks and has a credible anti-inflationary stance. That is, suppose a country faces sizable external shocks which are specific to it and which do not affect its potential partners. A common shock of this type is the shift in raw materials prices relative to manufactured goods prices. In such a case, the movement in the nominal exchange rate can act to offset in part the resulting changes in aggregate demand, to spread the costs and benefits of the change in product prices throughout the economy, and to facilitate the movement in the real exchange rate toward its equilibrium. Of course, even with flexible exchange rates the adjustment is not all that easy. There is always the risk that a currency depreciation in response to a negative terms-of-trade shock will feed into a wage-price spiral. And flexible exchange rates will sometimes move away from equilibrium, not toward it. Indeed, the misalignments in exchange rates in recent years have been the source of considerable discussion about currency zones, concerted intervention, EMS, and other ways of moving back towards the fixed exchange regime. Nonetheless, in the case of a country subject to periodic sizeable external shocks that are specific to it and do not affect its potential partners, it is difficult to argue that fixed exchange rates will dominate flexible exchange rates.

In this connection, it is worth noting the literature on optimal currency areas, which focuses on such matters as the mobility of labor, the size and openness of the economy, the nature of shocks, and the flexibility of real wages. This literature reminds us that the decision regarding fixed versus flexible exchange rates is a multifaceted one, particularly for small countries.

I argued earlier that, if there is perfect asset substitutability and no exchange controls, a country choosing fixed exchange rates will have no monetary policy autonomy. I now turn to the situation in a fixed exchange rate world with imperfect substitutability, exchange controls, or both.

Imperfect substitutability does permit a country to have some degree of autonomy in monetary policy even though its currency is fixed to another country's currency. The same holds true for exchange controls. However, although the central bank in such circumstances can follow a somewhat different policy in the short run from its partner, it has relatively little longer-run autonomy except if it is prepared to adjust its exchange rate from time to time.

Consider, for example, a situation where small country A chooses to follow a somewhat laxer monetary policy than large country B to which it has tied its currency. The lower interest rates in A can coexist with higher interest rates in B since the capital outflow is not overwhelmingly large (because of imperfect substitutability or exchange controls). Over time, however, if A's inflation rate is higher than B's, its currency becomes more and more overvalued. This will lead to pressures for capital outflows from A as the public becomes more and more convinced of the inevitability of a future devaluation. Even if A's government is successful in preventing the outflow via the use of controls the overvalued currency can have deleterious effects on the economy. It depresses returns in the tradeable goods sector of the economy, artificially increases the real wage rate (by keeping import prices low), makes the inevitable adjust-
ment harder to absorb, and raises the value of the rati
don foreign exchange (increasing the return to rent-
seeking behavior).

In sum, the pure logic of the arguments thus far leads one to support either an irrevocably fixed exchange rate (or one close enough to irrevocable so as to enable the authorities to obtain all the credibility benefits) or a flexible exchange rate (with or without management of the float), rather than an adjustable peg. The latter seems on the surface to have a variety of disadvantages without many compensating advantages. This particular judgment is stronger, the greater is asset substitutability and the less the reliance on controls. Having said this, I recognize that most small developing countries have opted for this intermediate outcome. There are a number of reasons for such a result. Political considerations (in particular, concern about the perceptions of independence) may prevent a country from entering into a monetary union, while economic considerations (its lack of credibility) may lead it away from exchange rate flexibility. Also, the experience under flexible exchange rates has made some countries wary of opting for this structure. The second-best outcome in such a case might be to try to mimic monetary union by fixing the currency to that of a credible partner and holding tightly to that link. Moreover, a country may be nervous about tying irrevocably to another currency, because the country to which it is tying may become less responsible in the future. Monetary union also precludes the adjustment of the exchange rate in case of a severe shock. Finally, the desire to capture the seigniorage tax may prevent monetary union.

Monetary Policy and Intervention Policy

This section considers more closely the conduct of monetary and intervention policy under fixed and flexible exchange rates. Consider first the short-run situation in a fixed exchange rate world. A is the small country on which we are focusing and B the larger country to which it has tied its currency. Suppose that A decides to relax its monetary policy and ease interest rates. This will have both direct and indirect effects on its international reserves. The direct effect via capital outflows is generated by the change in interest rate differentials (through transactions of both residents and non-residents). The indirect effects occur via the current account deterioration as output and prices rise in country A. It is obvious that the higher the degree of asset substitutability, the larger the change in international reserves (i.e., the larger the amount of intervention needed) for a given change in interest rates. In the limit, with perfect asset substitutability, even a small change in interest rates results in an extremely large change in reserves, a reflection of the general point that there can be no autonomous monetary policy in a fixed exchange rate system with perfect substitutability.

Returning to the case of imperfect substitutability, I would repeat and amplify on the point made in the previous section that although somewhat autonomous policy is possible in the short run, it is not possible in the long run without a parity adjustment. The easier monetary policy in A results in a capital outflow and a current account deterioration. If A persists in a more expansionary monetary policy, there will probably be some further capital outflow (lagged adjustment to the earlier interest rate change) and a continually deteriorating current account, as domestic price inflation exceeds foreign inflation, with a resulting decline in domestic competitiveness. The continuing and growing current account deficit will eventually exhaust the finite amount of international reserves available to A. Moreover, well before A's reserves are exhausted, the market will recognize the nonviability of A's policies and the inevitability of a future devaluation if they are not changed. The resulting capital outflow, driven by the expectation of a devaluation of A's currency, can be considerably larger than the earlier interest-rate-driven capital outflow because the expected net returns from getting out of investments in a currency that one expects will be devalued can be very high (since the discrete changes tend to be very large). In addition, if there is concern that the authorities will impose capital or exchange controls in such circumstances, the outward movement of capital will be even greater. Experience suggests that residents play a prominent role in such capital outflows; it is not just foreign investors that react.

In sum, in a fixed exchange rate structure a small country's monetary policy has to converge to that of its partner country in the long run, even if asset substitutability is low, and in the short run if asset substitutability is high.

I turn now to the case of a small country with flexible exchange rates. Monetary policy can be used in autonomous fashion by the authorities of the domestic country. In the long run this autonomy enables the country to choose its own inflation rate and facilitates the adjustment to real (terms of trade) shocks. However, the ability to choose an inflation rate can be used for good or for ill. Furthermore, at times the market has pushed exchange rates too far in one direction or the other, resulting in adjustment costs for the tradeable goods sector. These erratic and bandwagon effects provide the rationale for intervention in a flexible exchange rate system.

How does monetary policy get transmitted in a flexible exchange rate world? In a small open economy with
flexible exchange rates, monetary policy is transmitted via both interest rates and exchange rates. And as economies become more open to foreign financial influences, the greater will be the importance of the exchange rate channel. In the typical closed economy model, the tightening of monetary policy operates to increase interest rates; the higher interest rates in turn reduce interest-sensitive expenditures. Typically, the focus is on investment expenditures, residential construction, and consumer durables. In addition, spending on other forms of consumer goods is reduced via the wealth effect, at least in a world where long-term fixed-rate assets predominate. (And in a world with regulation-Q types of ceilings, there would be disintermediation and credit rationing by financial institutions.) In the corresponding open economy model with flexible exchange rates, the tightening of monetary policy tends to increase the value of the domestic currency as well as to raise interest rates. The result is to shift expenditures by domestic residents from domestically produced goods to imports. In addition, the currency appreciation has a direct effect on prices, particularly in the case of the small open economy where the prices of both exportables and importables respond fairly directly to exchange rate changes.

It is important to note that the central bank has very little influence on the split between interest rates and exchange rates of a given change in policy stance. Thus a given tightening of policy may produce a sharp appreciation and little interest rate change or little appreciation and a significant interest rate increase. In large part the split depends on expectations in the foreign exchange market, including most notably expectations regarding the length of time the tighter policy and higher interest rates are expected to last. To assist it in the conduct of policy in these circumstances, the authorities can use a “monetary conditions index” that tries to weight both interest rate and exchange rate changes in terms of their relative effect on aggregate demand.

Beyond the concern with its effect on aggregate demand, the exchange rate is also important in the conduct of monetary policy for a couple of other reasons. At a time of inflationary pressure, one would want to avoid a sharp depreciation of the currency, because it would feed into price changes fairly rapidly and have deleterious effects on expectations of future rates of inflation. And there is sometimes a concern that markets will overshoot and push exchange rates too far, especially if they believe the authorities are taking a hands-off attitude to the exchange rate (“benign neglect”). Both monetary policy and intervention policy can be used to influence the exchange rate in such circumstances, although clearly the former is by far the more powerful influence.

More generally, in a world of flexible exchange rates with high asset substitutability, exchange market intervention is not likely to have long-run or even medium-run influence on the exchange rate, although it may be useful in the short run. Thus, for example, the Canadian authorities tend to think of intervention as, first and foremost, a tool for promoting orderly markets and moderating exchange rate movements in response to shocks and temporary disruptions. The technique of leaning against the wind is used to dampen short-run volatility and to offset random movements. Even in the case of more persistent shocks and more fundamental pressures, intervention is used as a means of buying time in order to permit monetary policy to go to work. The Jurgensen report, prepared some years ago for the G-7, also reached the conclusion that intervention policy could have some short-run effect on exchange rates but could not be expected to have any lasting influence. Intervention can be sporadic or more continuous, the latter being the case in Canada.

The use of exchange market intervention may also have some significance as a signaling device of forthcoming monetary policy action, either automatic (in the case of sterilized intervention) or discretionary (in the case of sterilized intervention). This role for intervention can be of particular importance when a belief has developed in the market that speculative forces have resulted in a considerable overshooting of the exchange rate. If market participants are already concerned about the viability of the currency at the prevailing exchange rate, strong intervention, which signals that the authorities hold the view that the currency is overpriced or underpriced and that they are likely to engage in more fundamental actions to move the rate, is likely to have a direct effect on market behavior. In the absence of clear evidence of speculative overshoot, the signaling aspect will be less effective.

Sterilization of Changes in International Reserves

This last section deals with the technical issue of sterilization of reserve changes. The details of sterilization will differ from country to country depending on the institutional structure (which, itself, is usually the result of the historical development of markets and institutions). The basic principle is, however, very simple. Sterilization involves action (or nonaction in certain cases) by the authorities to prevent changes in international reserves from having secondary effects on domestic monetary conditions through their influence on the cash reserves of the domestic banking system.
Consider the following simple example. Suppose that international reserves are held on the books of the central bank (not a universal practice, as we shall see). The other asset of the central bank is domestic bonds. The central bank liabilities are currency, the deposits of the banking system (reserves), and government deposits. Suppose there is an increase in the desired holdings by foreigners of domestic currency assets, and that the authorities intervene to prevent an appreciation of the domestic currency. The central bank issues a check upon itself in return for the foreign currency (typically a check on a foreign bank). Whether the foreigner buys a bond from a resident or holds a deposit in a domestic bank, the domestic bank will obtain the claim on the central bank and its reserves at the central bank will rise. This will lead to downward pressure on short-term interest rates as the banks with excess reserves act to expand their portfolio of interest-bearing assets, and this downward pressure may be inappropriate.

What options are available to the authorities to prevent the secondary effects? They can do a number of things: (1) The central bank can sell domestic assets on the domestic bill or bond market. (2) It can sell the foreign exchange to the domestic banks on a swap agreement. (3) It can shift government deposits from the banks to the central bank. (4) The government can issue debt instruments and deposit the proceeds in the central bank. (5) The reserve requirement ratio can be adjusted upward. Note that the first and fourth options assume the existence of a reasonably well-developed market for domestic instruments while options two, three, and five do not.

It is sometimes argued that if the central bank or the government sells domestic instruments to sterilize the capital inflow, there will be upward pressure on domestic interest rates, further capital inflows, further need for open market sales for sterilization purposes, further upward pressure on interest rates, etc. This argument involves a fallacy because it does not take into account the destination of the original capital inflow. One possibility is that the foreign investor wants to hold domestic interest-bearing assets, with the result that the central bank indirectly ends up trading its own holdings of, say, treasury bills to the foreign investor in return for foreign currency. A second possibility is that the foreign investor wishes to hold a deposit in the domestic bank. The central bank or government can then supply an interest-bearing asset for the bank to hold (treasury bill or swapped foreign exchange) or it can reduce other (i.e. government) deposits at the bank or it can force the bank to hold more required reserves (either interest-bearing or non-interest-bearing), all of which actions prevent secondary repercussions. It is also possible for a country to impose a secondary reserve requirement, which would force banks to hold certain assets such as domestic treasury bills, in order to influence the demand by banks for the type of assets used in the sterilization operation.

In some countries, such as Canada, international reserves are held on the books of the government or a governmental entity and not on the books of the central bank. This does not change the logic of the above discussion but rather makes sterilization automatic rather than discretionary. In the case of Canada, for example, international reserves are an asset in the Exchange Fund Account and are financed in the short run by a reduction in government deposits at the banks and in the long run by an increase in treasury bills outstanding. The Bank of Canada acts as an agent. Note that if a government financed its increased holdings of international reserves by borrowing from the central bank, we would be right back to the earlier example.

I would note in conclusion that sterilization prevents certain automatic responses from taking place. Thus the autonomous capital inflow just discussed would, if unsterilized, have led to an expansion of the balance sheets of the banks and put downward pressure on interest rates. Hence it would have induced a partly offsetting capital outflow. By engaging in sterilization, the authorities are trying to prevent the secondary repercussions on the interest rate and hence insulate the domestic economy from the capital inflow. Similarly, if the capital inflow were the result of a tightening of monetary policy, the sterilization tries to prevent downward pressure on interest rates, which would offset the original action. Recall, however, that in the limit in a fixed exchange rate system with perfect substitutability, fully sterilized intervention is not possible because of the infinite elasticity of capital flows, while nonsterilized intervention simply reverses the original central bank tightening action (leaving the central bank with more foreign exchange and less domestic assets on its balance sheet).

Notes

1. Capital mobility is defined as the absence of policy restrictions on the movement of funds between countries. Asset substitutability is defined as the willingness of investors and borrowers to shift between instruments denominated in different currencies in response to very small differences in expected returns.

2. I would note that no controls are perfect. For example, black markets develop, and there are leads and lags in current account transactions.

3. Foreign borrowing by the authorities can provide more reserves, but market forces will eventually domi-
nate. Intervention on the forward foreign exchange market has virtually identical effects to intervention on the spot foreign exchange market and appears on the surface to be potentially unlimited in magnitude. However, extremely large intervention on the forward market would result in the authorities' taking on a very large risk and, indeed, might cause counterparties to refuse to engage in further transaction with the authorities because of the perceived risk.

4. In a world with imperfect substitutability, intervention can have last effects but these are quantitatively small.
Interaction of Exchange Rate Policy and Monetary Policy: 
The Case of Malaysia

Lin See Yan

After listening to Dr. Freedman, I think that what I am going to say is very pedestrian. He has covered a lot of ground, especially on the theoretical side. I would like to move away from the theory and go into the nuts and bolts of operations. One thing I have learned over many years is that, while the theory is nice to have, in developing countries where things are always imperfect, very imperfect, even simple statements of theory cannot be taken for granted. As an example, just now Dr. Freedman referred so easily to the option of using government deposits in commercial banks to sterilize foreign exchange interventions. And yet, it took me four years to convince the government to allow the central bank to handle that.

First, then, I shall talk briefly about the Malaysian experience, which has some unique aspects. Within that context, I shall then describe how we operate monetary policy, with particular regard to exchange rate policy and the problems we face.

Malaysia’s Economic Background

I am sure many of you have heard of Malaysia, but you may know little about it. A perspective is important, for unless one knows the environment in which we operate, it is difficult to appreciate what we have done. The starting point for this perspective on Malaysia is 1980. For the twenty-five years prior to 1980, Malaysia had been growing fast with practically no inflation. It is one of those countries that some describe as allergic to inflation. We regard inflation as being like toothpaste; once it’s out, it is difficult to push back in. At present, our inflation rate is 2.2 percent, and already people are talking about inflationary expectations. So, yes, we are allergic to inflation.

I just came back from Geneva, where I was talking to my Latin American friends. It is very difficult to keep in step; I am always unsure whether they are speaking of hourly, weekly, daily, or annual inflation rates. I say this not to belittle but just to show the difference in perceptions of the same thing.

As I said, the starting point is 1980; until then we had been doing very well. Like all Western-trained economists, I thought in 1980 that the world recession coming through then would be short. Everybody—the big brains all over the world including the World Bank and the IMF—thought it would be a short recession. Like good Keynesians, we decided to spend our way through the recession. That was a big mistake for us. By 1983, three years later, we were running a government deficit of close to 19 percent of GNP and a balance of payments deficit of around 14 percent. By then we had increased our external debt four times, and the public debt at that time was close to 130 percent of GNP.

By the way, when the recession began in 1980, the prices of everything that Malaysia produces fell at the same time. I recall that the World Bank had advised us that such a convergence would be statistically a near impossibility. In 1980, we had everything falling for us at the same time, and then it happened again in 1985.

Clearly the situation was not sustainable for us, so we decided to pull back in 1983. This was done on our own volition, without any help from the World Bank or the IMF. By 1984, just before the onset of the second recession, we had decreased the government deficit from 19 percent of GNP to 8 percent. The balance of payments deficit fell from 14 percent almost to balance, with just a small deficit.

Then the second whammy came through. We had to manage it and so could not make further progress for a while. But within another year and a half, we turned the government deficit around to only 2-3 percent of GNP and had a balance of payments surplus as large as the deficit we had in 1980. All this time, inflation was from 3.5 to 4.5 percent. During this period, we also decreased the external public debt significantly. The ratio of external debt service to exports had been 20 percent. By the
end of this year, we will have reduced debt service to 9 percent of exports.

Exchange Rate Policy and Monetary Policy

To put these changes in perspective, you must remember that Malaysia is a small country but very open with respect to capital flows. The only exchange control, ironically, is inward rather than outward. Malaysia has a floating exchange rate. It floats against a basket rather than one particular currency.

More importantly, we turned the economy around by completely restructuring it. We made the private sector, not the government, the engine of growth. In the process, government expenditure decreased from a high of 42 percent of GNP to less than 30 percent today, and it is still falling. That means downsizing government and privatization.

The capital markets in Malaysia, the money market and the foreign exchange market, are not highly developed. In addition, this open economy is situated only 250 miles from Singapore, which welcomes capital inflows with open arms. Hong Kong, which is just three hours away, does the same. So money flows easily. Very few monetary policy instruments are available in such a situation. Most of those which we learn from the textbooks are not easy to implement in such an economy.

In Malaysia as in most developing countries, the medium-term goal is clear: to have growth with stability. Yet, in the process of going from here to there, one must remember that the means to that goal are never clear to politicians, nor to many economists. In practice, there are multiple objectives and insufficient instruments to target them.

Certainly though, the more fundamental objectives include such things as low inflation with high growth. During the last four years, Malaysia’s growth rate has been 8 to 8.5 percent in real terms. As I said, we have handed the whole economy over to the private sector, with exports as the main engine of growth.

A matrix can be drawn that charts these objectives against the available means of achieving them. On one side are the objectives of low inflation, high growth, and dynamic exports. On the other side we list monetary policy, which for us works directly through liquidity management; credit policy, for which interest rates are the main instrument; and exchange rate policy. With objectives like those and limited instruments, and given the sharp structural adjustments in our environment during the past ten years, exceedingly difficult dilemmas are bound to occur again and again. The real problem of the central bank is how to keep all these things in balance.

Without going into too much detail, I want to provide a taste of the dilemmas we face. For example, as I just mentioned we are now in our fifth consecutive year of rapid growth. We will have growth of about 8.5 percent in real terms. We hope inflation for the year as a whole will not exceed 4 percent. However, the money supply is growing fast because of these four years of very rapid growth. There was much pent-up demand that had been held back in the early 1980s by the strict structural adjustments. So money growth is running now at 18-20 percent, while a range of 14-15 percent is more to our liking. In this environment, I think it is important to try to pull back. Monetary policy has to become more restrictive. Credit policy has to be somewhat restrictive, so interest rates must rise. Exchange rate policy should be at least neutral, even a bit below, so that the currency will appreciate.

At the same time, we have a situation where the private sector was brought in just a short time ago to take over from government as the engine of growth. So we must be very sensitive in managing monetary policy, especially interest rates, to ensure that a rise in rates does not choke off these sharp increases in investment. On the other hand, if we do not raise them enough, capital outflows may become so significant that reserves are seriously drained.

The export orientation of the economy creates additional dilemmas. This year exports will account for close to 45 percent of total output. Only five or six years ago, they were just 22 percent of total output, and the share will rise to 65 percent in another three years. To ensure that exports continue to grow, this export-driven economy requires policy to be relatively easy. Interest rates cannot be too high, or they will choke off the strong inflow of foreign investment. We must also ensure that the strong balance of payments position that has developed over the last four to five years does not raise the exchange rate to the point that exports become noncompetitive.

Wherever we turn, these conflicts and dilemmas arise. At present, we are trying to develop a capital market and a money market that give us sufficient flexibility and adequate instruments to succeed in this balancing game. Even so, it is practically impossible to maintain a balance.

Over the past few years, we have been sterilizing those large inflows of capital, both portfolio and direct investment capital, by prepayment of public debt. In consequence our debt has declined enormously; as I said, total external debt service by the end of this year will be only 9 percent of exports. But the capital inflows are still coming.
At the same time, Malaysia has had huge outflows of capital to take advantage of high interest rates abroad. To give you an idea, Malaysia today probably has the lowest interest rates in the world; our money market rates for 3-month or 6-month money are around 5.5 or 6 percent. We have a base lending rate of 6.75 percent, but businesses can finance themselves through bankers' acceptances and export refinancing facilities at 4.5 percent. The current rate for 12-month deposits is 5 percent.

So here again we have a delicate situation. We have managed so far because the inflows of capital have been so strong that the outflow from low interest rates was a blessing. The outflows worked to sterilize a lot of the inflow. Still, our markets are not as developed as in the West. There are not enough instruments to sterilize the inflows, so we need to create new ones. At first when a lot of capital came in, we just deflected it through prepayments of debt, but there is a limit to that. Not all debt can be prepaid. And your creditors begin to complain when you repay too much; they prefer to hold your paper. Nevertheless, our government long-term inflows have been negative for four years. So we have to create other means of dealing with the capital inflow. For example, we may have to persuade our foreign direct investors to bring in only M$20 million, rather than M$100 million, and to borrow money locally so that the banks can restructure their balance sheets. We have to think of things like that.

Nevertheless, there is still a lot of liquidity in the market. So we do the same things that everyone does. We raise required reserves or the liquidity ratios, and the banks complain because they have to raise interest rates. But do not forget that all the time the balance must be maintained.

Since the government was in surplus—the government had money flowing out of its ears—on occasion the treasury wanted to stop issuing bills. They asked why we were pressing them to issue more bills to mop up the liquidity; that is the central bank's problem. So instead of issuing bills, the next best thing we could think of was to accept deposits. We began to mop up the liquidity by accepting deposits from the banks. That is an easy way of doing it, although it costs a lot. Our job is not to make money.

Yet a simple idea like this seems terrible in the eyes of a developing country. It is important that people have confidence in the central bank. If they see your profits fall, they do not understand that your motivation is not to make a profit; they think something is going wrong with the central bank. Outflows of money will start because of that opinion. Therefore, such actions must be carefully managed to ensure that your profits do not fall too heavily when you are mopping up reserves.

We think of many things to do; we do swaps. But do not forget that swaps are not easy for our country. Malaysia is a small country that has been in the shadow of Singapore for many years. We try to be independent of them and create our own swap market.

These things we can manage; we can balance some way or other. But the most difficult part occurs when the market gets itchy. The exchange market begins to feel that it is time to speculate against the ringgit and does so. We have not had this problem recently, but over the last ten years it happened many times. Suppose the fundamentals and the exchange rate are not moving in the same directions for obvious reasons: capital flows and so on. The bitter lesson we have learned is that you must be very agile, which the textbooks do not teach. You have to do it in such a way that, if necessary, you have to accept expensive trade-offs.

Let me give an example. At a time when we were going through that difficult structural adjustment, the speculators thought it was time to take positions against the Malaysian ringgit. Because we were in a recession, interest rates were low, monetary policy was easy, and ringgit were easily available. So the speculators started—and they always start in New York, while you are sleeping.

To put the situation in perspective, we have reserves today of roughly US$8 billion. That is equivalent to about four and a half months of imports. In one day of speculation against the currency we can lose a billion of that. Within a week, we can lose as much as US$3 billion. For a country like Malaysia, with just US$8 billion in reserves, losing a billion of it is no joke. The only way to handle a speculative situation like that is to hit the speculators hard, very hard. What we do is make it extremely difficult for them to get ringgit. We squeeze the money market, though obviously at the expense of domestic monetary policy. At that time our monetary policy was easy, for we had to revive confidence. But in speculative bouts like that—and over the last ten years we have had three or four such occasions—our experience has been that unless you act very firmly against them, the speculators will never leave you alone. And you will never be able to conduct monetary policy.

So even at the expense of trade-offs against our monetary policy, today we would not hesitate to squeeze the money market to a 100 percent per day rate of interest. Our past four experiences have been that if you do that, if you make life extremely painful for the speculators, then they will never touch you again. In fact the best outcome would be to make them default and come to you begging on their knees for ringgit. We have not gone that far. The furthest we have gone is to raise the money market rate to 100 percent and make presidents of spec-
ulative companies come to me begging for ringgit. They will never go after the ringgit again.

These are drastic measures, but you have to improvise like that. Being a small economy with not enough instruments, with openness in your economy, and dilemmas like that, you have to act very firmly. And so, trade-offs must be taken; you must be decisive. One result is that we now operate 24 hours a day. I run my foreign exchange shop around the clock in three shifts, to make sure nobody takes advantage of us. In that way, we do not lose hard-earned reserves simply because someone tries to make a quick buck on us.

The point of this example is that in a small and open economy it is very difficult to conduct monetary policy, exchange rate policy, or interest rate policy by the methods the textbooks teach. Most of the time, the textbook approaches do not work. You have to think of whatever way you can to work toward whatever objectives you have. You have to innovate all the time. We do that, and I can give more examples that show it can work.

Always, the key is to foster in the market, whether in the local or foreign markets, a respect for your policies. If something is working against you that you do not like, if it is working against the effective attainment of your policies, you must act firmly, even to the extent of accepting severe trade-offs like those I mentioned.

We also have found that while you may have to accept these trade-offs, there are ways to ameliorate their impact. For example, when we had to squeeze the market and raise interest rates very high to kill off the speculation, we set up new funds for what we call priority investments. To bring down the interest rate for investments that will increase capacity, the central bank stands ready to lend to them, either directly or through the rediscount window, at rates that are more in line with normal times. In our case, these priority investments included manufacturing, plantations, and so on. In many instances, we have set up funds like that. To ensure that our extreme tightening did not have an adverse impact on investment, we thought of new ideas on how to help.

During the period when you have to handle an exchange rate problem, you have to find ways to make sure life at home can go on as normally as possible. At the right time, when the speculators are off for the day, you just go back to normal. Fortunately, this approach is not difficult to manage in a small economy.

**Conclusion**

Although we have done many things in Malaysia that some of you have probably never heard of being done before, we do them because they work. With that general point, ladies and gentlemen, I shall stop. My message to you who operate in a small economy is that you do not have the luxury to do many things my friend Mr. Freedman can do in Canada, things that any central bank in the developed world can do. To reach our objectives, we must make do with what we have.

**Notes**

1. The author is Deputy Governor, Bank Negara Malaysia.
2. The currency of Malaysia is the ringgit, which is abbreviated M$.

**Discussion**

**Question:** Why doesn’t Malaysia let the currency appreciate more to deal with the inflationary consequences of the favorable current account and the large capital inflows?

**Mr. Lin:** Don’t forget there are no inflationary consequences at this point in time. We are sensitive to the exchange rate because for many years we had an overvalued exchange rate. Also, it is very difficult to explain to investors who have come to you on the expectation that your exchange rate will be stable when suddenly they are faced with a 20 percent or 30 percent appreciation of your currency. I think that would be an act of bad faith. Foreign investment, which was crucial in turning our economy around, accounted in 1987 for about two-thirds of total investment, so the exchange rate is very important.

We don’t think our current exchange rate is inappropriate. We moved back to this point when we went through the structural adjustment. We went through a period of overvaluation, mainly because of Singapore. We were on a one-to-one peg to them for many years. Because of Singapore’s strong economy as a financial center, the political, and more importantly, the general feeling was always to maintain this one-to-one relationship. It took us five years to convince politicians and the general public that it was all right to have a weaker exchange rate. So it is fundamental for private sector confidence, in our context certainly, that we manage the exchange rate in such a way as to avoid sharp gyrations.

Dr. Freedman earlier referred to it as maintaining orderly markets.
Question: In your exchange rate policy, am I correct that you are assigning a real exchange rate on the basis of a basket of currencies? And do you assign it weekly, monthly or how often?

Mr. Lin: Yes [to the first question]. Daily [to the second question]. We have a software program to handle it. It is not difficult to develop it. The problem is always how to get your economics people, who turn out all these baskets and effective exchange rates, together with your operators. Although we are pegged to a basket, our intervention currency is the U.S. dollar. If, for example, the basket moves up too much [against the U.S. dollar], moves up by a certain number of points; the operator must know, by pressing a button, what he needs to do on the U.S. dollar side to keep the rate stable. It is not too difficult to develop that software. It allows the economics people, the research people, the monetary policy people, to talk on the same wavelength as the operator. That's very important.

Question: My question is on the instrument you use to affect interest rates. Is it through rediscounting?

Mr. Lin: We affect interest rates through management of liquidity, for which we use the normal range of instruments. For example, when we see the first signs of interest rate changes, we will raise required reserves to manage liquidity. However, with the capital inflows we have had, not just in direct investment but also in portfolio investment, these traditional instruments are far too inflexible. For example, to move required reserves, we must wait for the middle of the month and deal with other complications. But in an open economy, actions should be taken today or tomorrow. New instruments that we have created are more convenient. For example, we just go into the market and mop up [liquidity] by borrowing. Nothing is faster than that, and it is very convenient. We just move in and take out liquidity.

For many years, [our open market operations] have faced difficulties because the government is flush with funds. Yet contractionary steps taken by the central bank tended to be offset by Treasury action. It was very difficult to convince the government that the central bank should also manage the government's so-called excess reserves. But now the central bank has much better control of liquidity. To be able to marshal all the excess reserves of the public sector into the central bank is a powerful instrument. It is an extremely useful instrument to have.

Question: When speculators take positions against your currency, you have increased the interest rate sharply. On those occasions, you give subsidized credits to priority investments. How can you ensure that these subsidized credits are not also used for speculation?

Mr. Lin: Oh, those funds are for actual projects. You can only borrow from the special funds for actual projects.

Question: But how can you keep them from joining in the speculation against the currency?

Mr. Lin: I do not release my money until the investor needs to pay a bill. For example, if the investor is building a factory, I release the money when the machinery comes.

Question: Suppose they have their own resources to apply to their activities, and they use the subsidized money you give them and speculate against you? What will you do?

Mr. Lin: I will come down very hard on them. But these people know that.

Mr. Honohan: Have you ever considered this alternative. Instead of increasing interest rates dramatically to hit the speculator, have you ever allowed the ringgit to fall 3 or 4 percent, then suddenly raise it 5 percent? That approach would feed back less severely on your priority projects.

Mr. Lin: Yes, we have tried that. The problem is that when you operate an exchange, you are never sure how far you can go, because the market will move you. If you are not careful, the speculators will make money from you. And that is the worst situation to ever get into. Once they have tasted blood, they never let go. So what you do is to hit them really hard. We have tried other ways, but as I said, the moment they make money out of you, they know they can do it again.

Mr. Queiroz: Malaysia is small, so you can know these things. In large countries it is not as easy.

Mr. Lin: Yes, I think our experience would not be applicable to everyone. Still, we don't make these decisions ourselves, we do it through the banks. For the banks, it is part of standard procedure. In our banking system, when the banks lend out for projects, we require through our inspection system that the money goes where it is supposed to go. Of course the system is not perfect, but it is a system implemented within the banks.
Mr. Queiroz: How can a central bank at the same time act as a development bank? Those two functions are well separated. If you introduce a special window for project finance, but fund speculation only at a different interest rate, over time it all becomes one. So the strategy is very risky.

We used to do this in Brazil. In December 1979, the government had a maxi-devaluation, following which they reduced interest rates. The objective was to boost exports because the devaluation would make exports cheaper. The problem was that people started to speculate, expecting another devaluation because the government lowered interest rates. That is just what you were doing on those occasions you described. So I don’t think you have much chance of maintaining that strategy over time. Interest rates cannot be high for somebody and low for someone else. Either interest rates are low for everybody or high for everybody.

Mr. Lin: We maintain that distinction only for the short term, the very short term [during which speculation against the ringgit is active]. We are an unusual central bank. For many years, we were a standard central bank. We did everything that central bankers in the West do. I remember, when Eugene Black was president of the World Bank, my first governor went to him for advice. Eugene Black said, “For heaven’s sake, you are a central bank, never get into development finance and planning.” That is exactly what we did, and for several reasons.

In a developing economy, where there is little or no infrastructure, where everything must be developed from scratch, the central bank cannot behave like a Western central bank. That is reason number one. The second reason may sound very hard, but I have been in this game for twenty-eight years. I have learned that if you don’t take care of yourself, nobody will.

Let me pose the following classic example, which is certainly controversial. The Group of Seven (G-7) can make policy pronouncements any way they want. They get together one weekend and decide that the yen should appreciate by 20 or 30 percent. People like us, sitting miles away, hear about it on the television; suddenly our debt has increased by 20 percent. And yet the central banks say you must behave like a normal central bank. Don’t rock the boat.

What does one do? I learned from the game. If I know that rates are going up, I take a position. That is not behaving like a “normal” Western central bank, obviously. But for heaven’s sake, you tell me what I should do. Everybody knew that the yen was going to appreciate at that time; what should the central bank do? Should we sit back and, since a large part of our assets are denominated in U.S. dollars, see that portion of it lose 20 percent of its value?

That is an interesting question. The “normal” central banks ride it out over the long term. Things will be all right. But the point is that things are not all right tomorrow or the day after tomorrow. You must face the Minister of Finance who says that as a result of my decision his debt goes up 30 percent; why didn’t I do something about it?

Ever since the world went off Bretton Woods, the whole game of central banking has changed. It is well and good for people, including the World Bank and the IMF, to give advice. We appreciate the advice, but much of that advice comes without responsibility. I, on the other hand, have to live with the responsibility if I take your advice. If it goes wrong, I live with it. And I have to turn around a situation that has not worked or be transferred to another department. For us, this is the school of hard knocks.

Central banks today are not different from other institutions. They have to be development-oriented. To the extent that some action achieves the national objectives, we will do it, just as we have done it in the past. As I said, we are very controversial today. The IMF does not like us because we try to protect ourselves from G-7 decisions. We have explained our position to them and I think they understand. We are sorry, but we believe it is important for a central banker to be able to say, “We want to control our destiny.”

Mr. Freedman: Except for the 1985 case, where some argue it was the market and not the G-5 that drove the dollar down, I don’t think there is a single case where the G-7 decisions had a major effect on the market. And even in the 1985 case the dollar was clearly overvalued; everyone knew it was. Martin Feldstein argues that it did not have anything to do with the G-7.

Usually the G-7 pronouncements are things like, “We would like...” or “It is just about right, but if it goes too far we are going to move.” It is always much more vague than [a decision on how much an exchange rate should change.] In fact, it is the market that has been driving the rate changes.

Mr. Lin: What you say is quite true, but there is more to it than that. We don’t know what goes on in G-7 meetings; we can only speculate. They might not have done it to date, but they could do it tomorrow or the day after. My point is that within that group—and now the latest writings talk of a group of just three, the G-3 now—they can gang together and do whatever they want with respect to interest rates and exchange rates. Whatever they do has a direct impact on us. We have to defend ourselves.
in the market. I am saying we have become a streetwise
central bank, so to speak, over the years.

* Mr. Freedman: My only point is that you are overstating the power of the central banks and their governments to affect these things. They are usually not prepared to take the fundamental actions that it would in fact take to have those effects.

Also, I suppose that if you are in that business, you are part of the market. You are going to win some and lose some. And you are going to have to take that responsibility.

* Mr. Lin: Exactly; my point is that the traditional central bank just sits it out.