International Monetary Fund

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Monetary Policy Frameworks

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Monetary Policy Frameworks
Prepared by Warren Coats

I. REGIME OPTIONS

There are several fundamentally different ways that countries can pursue a price level objective. One is simply to administer prices in accordance with that objective. This approach requires (ultimately, at least) state-administered investment, production, and distribution, and has historically been associated with central planning, inefficiency, low levels of income, and long lines for poor quality goods. The desire to allocate resources on the basis of the profit incentive and market-determined price signals of consumer demand and the cost of production require the abandonment of administered prices. This note discusses control of the value of money when the prices of goods and services are determined by the market.

When individual prices are market-determined, the aggregate price level (i.e., the value of money) is determined by the market so as to equate the public's demand for money with the banking system's supply of it. The achievement of an inflation target, therefore, requires a quantity of money consistent with the public's demand for it at the targeted price level. The three most common general approaches to determining the quantity of money are: (a) to limit its creation by banks by directly controlling the amount of credit they may extend, (b) to limit its creation by banks by controlling the amount of reserves available to them, and (c) to fix the exchange rate of the currency to another currency or unit whose value behaves in the desired way and to allow the quantity of money to be determined by the public's demand for it at the value that has been fixed by the exchange rate.

The first of these approaches, which generally takes the form of an aggregate target for bank credit that is administratively allocated among individual banks, retains some of the features and disadvantages of central planning. By determining the growth in individual bank assets administratively, the incentive for individual banks to work harder to deliver better service more efficiently (i.e., at lower cost) is greatly diminished. The market is not allowed to determine the relative growth of individual banks on the basis of their success in satisfying their customers. Economic efficiency and growth are, therefore, better served by indirect techniques of monetary control, i.e., approaches b or c above.

1 This version of the framework was prepared for Da Afghanistan Bank, the central bank of Afghanistan and thus reflects the policy instruments prospectively at its disposal.

2 For a more general discussion of these issues see any standard textbook on money and banking or monetary theory.

3 The advantages of indirect techniques of monetary control are discussed in greater detail in Johnston and Per Brekk.
The approach of a fixed exchange rate has considerable advantages (it is easy to administer and does not require knowledge of the public's demand for money, which is particularly difficult to estimate during periods of economic reform), but requires that government borrowing be limited to amounts that can be raised from the public. Fixing the value of money exogenously (e.g., to the dollar, Euro, SDR, gold, or a commodity basket) is not only the easiest monetary policy to administer, assuming that the fiscal deficit can be appropriately limited, but probably provides the quickest way to establish faith in the stability of such money's value. If the rules of a fixed exchange rate are followed, the value of money will be the same as the value of the currency or basket of currencies or goods to which the exchange rate of the currency has been fixed.

A currency board is the simplest monetary regime with an externally fixed value, and the one simplest to administer and has the highest credibility. A currency board simply buys and/or sells its currency in exchange for the currency or commodity(s) in terms of which its value is fixed. The rules of a currency board require the monetary authority to hold the asset to which the domestic money's value is fixed to the full extent of the currency it has issued (i.e., 100 percent backing). The board would accomplish this by issuing its currency only by buying the currency (or other assets) to which its value is fixed. If anyone holding its currency wishes to exchange it for the asset(s) backing it, the board must redeem its currency at the currency's fixed price (only small margins--bid/ask spreads--are allowed). These requirements, that the board must buy or sell its currency at a fixed price, ensures that the public has all, but just all, of the currency that it wants to hold at that price. In short, a fixed exchange rate as administered by a currency board supplies exactly the quantity of domestic currency the public wants to hold (i.e., equates the supply of and demand for money) by an automatic market mechanism, while ensuring aggregate price behavior equal to that of the unit to which the currency's value is fixed. Furthermore, there is no need for the monetary authority to estimate the public's demand for money in order to know how much it needs to supply to hit the desired price target.

A fixed exchange rate regime without the currency board restrictions would work in the same way to produce the quantity of money the public demands but would open the possibility for the central bank to buy and sell domestic assets as an additional instrument for influencing the quantity of money. The central banks monetary liabilities would no longer need to be fully backed by foreign assets. This has the advantage of accommodating various demand and external supply shocks without the need for adjustments in the domestic price level.

A modest amount of borrowing from the central bank might be consistent with the monetary growth desired by the public under a fixed exchange rate.
However, it is subject to abuse or misjudgment that can result in a domestic money supply that is not matched with demand. Such a mismatch would put pressure on the fixed exchange rate and could result in the loss of the ability of the central bank to defend the exchange rate. For this very reason fixed exchange rate regimes that are not fully backed with foreign currency can be subject to speculative exchange rate attacks.

An alternative market approach to equating the supply of and demand for money is to fix the money supply and allow the market to determine its value (i.e., to determine the price level). This approach contrasts with the fixed exchange rate approach in which the value of money is fixed and the market determines its supply, and obviously requires that exchange rates be market-determined. Fixing, or more generally controlling, the quantity of money in an effort to stabilize its value requires a reasonably good estimate of the public's demand for money. This is a challenging task for any central bank, and much more so for one in the circumstance of DAB.

In most economies for which estimates have been made, money demand has been found to have a relatively stable relationship with nominal income and interest rates (or more exactly, with the opportunity cost of holding money—defined as the difference between the average rate of interest on financial market instruments and the average interest return on money). Estimates generally find a stable relationship between real money demand (money deflated by a general price index) and real income (nominal or money income deflated by the same price index) and an interest rate. These empirical findings are in keeping with economic theory. For a given level of real income and interest rates, the demand for money tends to be proportional to the price level, i.e., other things equal, doubling the price level will tend to double the demand for nominal money and vice-versa. A stable price level, therefore, requires that the supply of money grow at about the same rate as real income. There is a large body of literature on the demand for money, and the subject will not be further considered here.5

The next section of this paper presents a framework for control of the money supply by a central bank operating in, or wishing to promote, a market economy and adopting a market-determined exchange rate. This is more or less the policy regime adopted by DAB. For such a central bank, monetary control needs to be based on its control of the total of the quantity of currency held by the public and by banks, plus bank deposits with the central bank (base money), and its influence over the creation of deposits in banks in relation to their reserves.

II. THE GENERAL FRAMEWORK OF MONETARY CONTROL

A common approach to the formulation of monetary policy is for the central bank to set an inflation target, estimate the economy's demand for money given the price level implied by

5 See, for example, the classic article on this subject by Friedman (1969).
the inflation target, and then manipulate the policy instruments at its disposal so as to create the amount of money these estimates suggest will be demanded. Because many different combinations of instrument settings will result in the same money supply, central banks generally attempt to use the combination that will minimize the cost to the financial sector and will maximize the stability of interest rates and exchange rates. For many central banks the determination of the desired increase in the money supply is likely to be made in the context of a stabilization program supported by the IMF.

A. The Money Target

DAB can establish a money or base money target in the traditional way. An inflation target is chosen, real income growth is forecasted (guessed) and any factors that might influence the income elasticity of money demand (or velocity of circulation) are factored in. If inflation and interest rates are moderate and stable, and the economy has adjusted to the new currency, a stable elasticity of one is a reasonable assumption (meaning the velocity, the inverse of k, would be constant). The demand for base money can be stated as follows:

\[ B^d = kPq, \]

Where

- \( B \) = Base money,
- \( k \) = income elasticity of demand for \( B \) (inverse of velocity),
- \( P \) = Price level, and
- \( q \) = real income.

Thus to a first approximation:

\[ \frac{\Delta B^d}{B} = \frac{\Delta k}{k} + \frac{\Delta P}{P} + \frac{\Delta q}{q} \]

This expression says that the rate of growth of base money demanded by the economy depends on the rates of growth of its demand, inflation and real income. By setting an inflation target (say 10 percent) and forecasting (guessing) the growth rate of real income

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6 This is more or less the simplest model possible. As data and CBI experience improve, modestly elaborated models should be developed that include the real sector more explicitly (output gap), financial markets, the external sector and possibly the fiscal sector.

7 For the sake of simplicity, the following formulation is in terms of base money rather than M1 or M2. This assumes a stable multiplier related B to an M. However, the multiplier is almost certain to increase over the next few years from improvements in the payment system, banks, and liquidity management capabilities.
over the next year (say 10 percent)\(^8\) and forecasting (assuming) a rate of change in the demand for base money (say zero), we arrive at a target growth rate for base money (which will be indicated by a superscript *) of 20 percent. This “target” is the rate of growth that will produce the desired inflation rate if the assumptions for \(q\) and \(k\) are correct.

Market equilibrium requires:

\[(3) \quad B^s = B^d\]

When money supply does not equal money demand, market forces are set in motion that bring about equilibrium. If the exchange rate is fixed, equilibrium is achieved by adjustments in the money supply. If the money supply (or its growth rate) is fixed, equilibrium is achieved by adjustments in the price level (or inflation rate). More detailed and sophisticated models of inflation elaborate the transmission channels by which these equilibrating adjustments are made.

In reality, none of these assumptions or forecasts is likely to be correct, but the simple money demand, money supply framework provides a useful structure in which to discuss the factors that might cause the inflation outcome to be different than desired by policy or that might cause the policy settings needed for the inflation target to be different than initially thought. Thus the framework can be a useful way to focus a discussion among Supreme Council members (and among Monetary Policy Committee members) and between them and staff on whether the current stance of policy is appropriate or not in light of the inflation objective.

**B. The Money Supply**

The framework of monetary control presented here builds on the link between the liquidity supplied by the central bank and the deposits and credit created by banks. In particular, it builds on the distinction between the initial creation of money balances—which is reflected in the balance sheet of the central bank (currency in circulation and bank reserve deposits)--and secondary money creation by the second-tier banks in the form of deposits. The introduction of a two-tier banking system and the resulting distinction between the initial increase in base money and the secondary creation of broad money makes it useful to examine separately the balance sheets of the central bank and the other banks.

**Table 1. The Central Bank Balance Sheet**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
</table>

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\(8\) Given the “post” war starting point, this is probably too low if security conditions are significantly improved and too high if they are not. However, these guestimates have not yet benefited from staff analysis of the sort that should be reflected in their Board Briefs.
Gold and foreign currency (net) (NFA)  
Claim on banks (CB)  
Claims on Government  
  Credits to Government (CG)  
  Government securities (GS)  
Currency  
  Outside banks (C)  
  Inside banks (VC)  
Deposits⁹  
  Banks (Rₜ)  
  Banks FX (Rₜₐ)  
  Government (Rₜ₉)  
Capital Notes (CN)  
Other Assets (OA)  
Other Liabilities (OL)  

For purposes of controlling the domestic monetary supply we are interested in those liabilities of the central bank that are a part of domestic money or are the basis of commercial banks “creating” the deposit part of domestic money or what is generally called high-powered money, or base money. Base money (B) comprises two elements: currency held outside banks (C), which is directly a part of the money supply, plus bank reserves (R), which include both cash held as assets by second-tier banks (vault cash=VC) and deposits of the second-tier banks with the central bank. Thus, base money is defined as:

\[ (4) \quad B \equiv C + R \]

where \( R \equiv Rₜ + VC \), and \( Rₜ \) is deposits of the commercial banks with DAB.¹⁰

The initial creation of money balances, defined here as base money, helps finance the subsequent monetary expansion by the second-tier banks. The secondary expansion of the money supply by the second-tier banks is achieved through the "multiplication" of the initial

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⁹ The table does not show any deposits of enterprises with the central bank because accepting deposits from, or extending credits to, the non-bank public is not a proper function of a central bank. Placing deposits and extending loans require the development of the ability of depositors to assess the risk of deposits placed in banks of lenders to assess the risk of credit extended. These are activities in which commercial banks rightly specialize. For commercial banks, taking risk is conditioned by the fact that it puts the owners' capital in the bank at risk. Risk taking by the central bank puts the government (taxpayers) at risk, and is appropriate only for purposes of monetary and exchange rate policies.

¹⁰ In the subsequent discussions of the reserve requirement, it is argued that vault cash should be included along with deposits with the central bank, in the reserves that can be used to meet the reserve requirement.
amount of base money supplied to banks. The additional base money supplied to banks by the DAB creates holdings of reserves by banks in excess of their requirements (of required and voluntarily held precautionary reserves) that are available to finance new loans. The new deposits of the public created along with new loans, when spent by the borrowers, are transferred to other second-tier banks as new deposits. The part of these new deposits corresponding to excess reserves at these other banks can again be loaned out. The end result of this round-by-round process is that the amount of deposits created exceeds the original amount of resources placed with the second-tier banks. The multiplication of bank deposits is limited by the amount of base money supplied by the central bank to the public (B), the amount of that base money deposited with banks (R), and the amount of such reserves banks wish to hold in relation to their deposits—which must be at least as much as needed to meet their reserve requirements. These points are discussed in more detail in the following pages. These relationships and the banks’ contribution to the public’s money supply (i.e., D) are seen in the consolidated balance sheet of the second tier banks. This balance sheet is shown in Table 2.

### Table 2. Consolidated Balance Sheet of the Banks

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Assets (net) (NFAₙ)</td>
<td>Deposits</td>
</tr>
<tr>
<td>Loans (L)</td>
<td>of non-bank public (D)</td>
</tr>
<tr>
<td>Securities (S)</td>
<td>of the Government (D₉)</td>
</tr>
<tr>
<td>Deposits</td>
<td>of other banks (Dₖ)</td>
</tr>
<tr>
<td>with other banks (Dₖ)</td>
<td>of foreign currencies (D₇)</td>
</tr>
<tr>
<td>with DAB (Rₙ)</td>
<td>Credits</td>
</tr>
<tr>
<td>Currency (VC)</td>
<td>from the central bank (CB)</td>
</tr>
<tr>
<td>Other items net—including capital (OIN)</td>
<td></td>
</tr>
</tbody>
</table>

Several observations about Table 2 will deepen the understanding of this monetary framework. The most important observation is that only the deposits of the non-bank public (households, private enterprises, state enterprises) are included in the money supply (see the next paragraph for an explanation). Net interbank deposits for all banks, which are not generally shown in the consolidated balance sheet, are, of course, zero. The foreign assets less deposits of foreign currencies and any other liabilities in foreign currencies (for example, outstanding foreign debts) are the net foreign assets of the banking sector (NFAₙ = FAₙ - D₇ - C₇). Loans and securities held by banks less deposits of the Government are the net domestic credit of the banking sector (NDCₙ = L + S - D₉). This might also be broken into net domestic credit to the private sector plus net domestic credit to the Government. As a
simplification, the text assumes that reserves that can be used to meet the reserve requirement consist of all deposits of banks with the central bank plus VC. With these observations in mind, and ignoring OIN, the following balance sheet identity can be written:

\[ D + CB + D_g = NFA_b + L + S + Rb + VC, \]

or

(5) \[ D = NFA_b + NDC_b + R - CB \]

again where

\[ R = R_b + VC \]

The definition of money used here (M) is very broad, encompassing all categories of bank deposits (D) and currency held outside banks (C) and is commonly referred to as broad money,

(6) \[ M \equiv C + D, \]

where D is the demand, savings, and time deposits of private enterprises, state enterprises and households. For both theoretical and empirical reasons, the money supply is generally defined as the currency and deposits of the non-bank public. Empirically, the definition of money that should be adopted for policy purposes is that monetary aggregate with the most stable demand in relation to real income, the price level, and interest rates. In order to distinguish between the initial creation of money balances by the central bank and the secondary expansion of the money supply by the second-tier banks, it is customary to represent the money supply as the product of base money and a variable that is called the "money multiplier,"

(7) \[ M \equiv m*B \]

where m is the money multiplier. If there is a stable relationship between base money and the money supply, that is, if the money multiplier is constant or can be predicted, the money supply can be controlled by controlling base money. The first difference of equation (7) can be used to explain the changes in the money supply caused by changes in base money and the money multiplier. These changes can be approximated by the expression,

(8) \[ \Delta M = \Delta m*B_{-1} + m_{-1}\Delta B + \Delta m\Delta B, \]

where \( \Delta \) is the difference operator, i.e., \( \Delta M \equiv M - M_{-1} \), and the indicator -1, as in \( M_{-1} \), denotes the value of M in the previous period. The first term in equation (8) represents the contribution of the money multiplier to the increase in the money supply, the second term represents the contribution of base money, and the last term results from the interaction of these two factors.
The introduction of an assumption about the behavior of the multiplier converts the above identity into an equation that will be only as accurate as is the predicted behavior of \( m \), i.e., \( \hat{m} \), so that the predicted value of \( M \) is

\[
M = \hat{m}B
\]

The behavior of \( \hat{m} \) may be estimated econometrically on the basis of past behavior, which is not likely to be very reliable when changing from direct to indirect means of control (this is discussed in greater detail in the next section). It is more usual, however, to exploit knowledge of the structural factors embedded in the multiplier in order to refine estimates of its behavior. The structural components of \( m \) may be derived in a variety of ways. A straightforward approach is to substitute the definition of broad money from equation (6) and of base money from equation (4) into equation (7), which gives,

\[
(C + D) = m*(C + R).
\]

Dividing both sides of equation (10) by \( D \) gives,

\[
(C/D + 1) = m*(C/D + R/D),
\]

\[
m = (c + l)/(c + r),
\]

where \( c \) is the ratio of currency outside banks to deposits held at banks by the public and \( r \) is the ratio of bank reserves to deposits. This formulation is interesting because it highlights the main factors that play a role in the money supply process. The money multiplier is described in equation (12) as being affected by two factors: the ratio of currency outside banks to deposits, which is assumed to depend predominantly on the behavior of the public, and the ratio of bank reserves to deposits, which is a function of the behavior of the second-tier banks. Finally, base money is created, and thus is controlled, by the monetary authorities. As indicated above, the strategy of monetary control based on this framework is to calculate what level of base money would be consistent with the target for monetary expansion under the financial program:

\[
B = M^*/\hat{m}
\]

where \( M^* \) is the target level for broad money, and \( \hat{m} \) is the central bank’s prediction of the multiplier. Armed with the resulting estimate of the base money target, and taking into account those factors affecting base money that are outside the central bank's control, the central bank can estimate the increase or decrease in the sources of base money that it does control that is required to hit the target. A strategy for controlling base money is developed in subsection D.
C. Managing the Money Multiplier

The above strategy assumes that the central bank can project the value of the multiplier with reasonable accuracy. The management of the money multiplier can be best understood by examining the factors that affect each of the determinants of the money multiplier. As may be seen in equation (9), the money multiplier is a function of the ratio of currency to deposits and of the ratio of bank reserves to deposits. An increase in the ratio of currency to deposits reduces the money multiplier, as it reduces the reserve component of a given B (= C + R) and hence curtails the opportunities for the banking system to engage in secondary money creation. Similarly, an increase in the ratio of bank reserves to deposits means that some of the monetary creation potential of the banking system is being “sterilized.” This again reduces the money multiplier.

The currency-to-deposits ratio reflects the public's preferences for one form of payment medium over the other, which will be influenced by the relative convenience and return (interest rate) from holding liquidity and making payments one way or the other. This choice, hence the C/D ratio, will depend primarily on the quality of bank deposit services (location of office, deposit interest rates, cost of funds transfers--i.e., non-cash payments--etc.) and seasonal factors and is little influenced by central bank monetary policy. For the purpose of determining the appropriate setting of monetary policy instruments, the central bank's task is to estimate the likely behavior of the ratio, in order to take its impact on the multiplier into account.

The central bank enjoys considerable influence over the ratio of bank reserves to deposits. The nature of this influence is clarified by dividing bank reserves into that part banks are required by central bank regulations to hold (RR), and the rest, known as "excess reserves" (ER), or,

\[ R = RR + ER. \]

Dividing both sides by D gives,

\[ r \equiv \frac{RR}{D} + \frac{ER}{D}, \]

where \( r \) is the ratio of RR to D and \( e \) is the ratio of ER to D. The money multiplier can, therefore, be written as,

\[ (14) \quad m = \frac{(c + l)}{(c + rr + e)}. \]

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11 Central bank policies more broadly may, however, influence the relative attractiveness of deposits (and non-cash means of payment) and hence the currency/deposit ratio.

12 This relatively simple formulation is because DAB imposes a uniform reserve requirement on all deposits. A differentiated requirement would make the calculation and estimation of required reserves much more difficult. The ratio of each deposit type subject to a different reserve requirement to total (continued)
The minimum reserve requirement is fixed by the central bank, and hence rr is under the central bank’s direct control. In the absence of credit ceilings, the ratio of excess reserves to deposits will reflect banks’ preference for liquidity and will be influenced by such things as the nature of the payment system, the exact nature of the reserve requirement (e.g., the use of the daily average reserve holdings versus the end-of-period level), the severity of the penalty for violating the requirement, and the interest rate on the best alternative to holding excess reserves that is forgone. An increase in lending interest rates, for example, that results from an increased demand for credit will make it more costly (in terms of opportunity cost) to hold excess reserves, which will, therefore, be reduced. An increase in the interest rate the central bank charges on its advances will make such borrowing a more costly source of liquidity and will thus tend to increase banks’ desired level of excess reserves (an alternative source of liquidity). Therefore, an increase in reserve requirements or the interest rate on advances from the central bank will increase the demand for bank reserves by the second-tier banks, thus increasing the bank reserves-to-deposits ratio and reducing the money multiplier. It is important to note that, in the absence of effective ceilings on bank lending, reducing the rate on advances will have its primary effect on the demand for advances and hence for total reserves rather than for excess reserves, i.e., base money and \( M \) would increase rather than the multiplier decreasing. With effective ceilings on bank lending, reducing the rate on advances will have its primary effect on the demand for excess reserves—a fall in the multiplier will tend to offset the increase in base money.

There are thus a number of instruments that the central bank can use to influence the money multiplier. It determines \( r_r \), has some influence over \( \varepsilon \), and can generally estimate \( c \) with some degree of accuracy. Combining these, the central bank should be able to project the value of \( m \) with relative accuracy, but as mentioned above, this requires up-to-date information on the banking sector.

### D. Controlling Base Money

Given the target for \( M \) and the predicted value of \( m \), the central bank can derive the desired behavior of \( B \). The factors that affect the behavior of base money can be analyzed by examining the balance sheet of DAB (see Table 1 above). A very important assumption of deposits would need to be estimated, taking account of the possible effect of interest rates and other economic factors on shifts between deposit types. A uniform requirement, in addition to simplifying and improving monetary management, also is more efficient in the economic sense of not discriminating between types of deposits (bearing in mind that a reserve requirement that does not pay a market interest rate on the reserves held is a tax on the bank liabilities to which it applies).
this framework is that currency is freely provided on demand.\textsuperscript{13} The central bank is assumed to control the monetary base, i.e., the total of $C + R$, but not the amounts of its individual components.

Netting Government deposits with both direct and indirect credit to the Government ($NCG \equiv CG + GS - R$), and Other Liabilities against its Other Assets ($NOA \equiv OA - OL$),\textsuperscript{14} and equating DAB’s assets and liabilities give,

\begin{equation}
B \equiv C + R \equiv NFA + CB + NCG - CN - R_{bf} + NOA
\end{equation}

Market-based instruments of monetary control are those policies or actions of the central bank that affect one or more of the right-hand terms in equation (15). These instruments, and the effects they have on particular right-hand terms, are used, along with estimates of the right-hand items the central bank does not control, in order to hit the base money target previously calculated. Each of these components of base money will be considered in turn, while the instruments by which they can be influenced or determined are discussed in the next section.

**Net Foreign Assets—NFA**

The net foreign assets of DAB reflect its purchases of foreign exchange or conversion of foreign loans into its domestic currency. As Afghanistan has a market determined exchange rate and thus DAB has no obligation to buy or sell foreign exchange, changes in its net foreign assets (the difference between the foreign exchange it buys—$FXP$—and sells—$FXS$) result from its desire to add to or reduce its foreign exchange reserves (or temporary interventions to smooth exchange rate fluctuations) and the effect that has on base money.\textsuperscript{15}

\begin{equation}
\Delta NFA \equiv FXP - FXS
\end{equation}

DAB primary (and until recently only) policy instrument was determining the behavior of its net foreign assets by forecasting (or closely monitoring) sale of foreign exchange to it by the MOF, military and donors, and then determining the amount of this foreign exchange it would sell to the market. If DAB buys foreign exchange, NFA is increased. If nothing else

\textsuperscript{13} Providing currency freely does not mean providing it free of charge. Currency should be provided by the central bank only in exchange for some other asset (i.e., a credit, reductions in reserve balances) one for one.

\textsuperscript{14} These two items are shown separately in gross form in Table 1 because of the importance of each one for the control of base money.

\textsuperscript{15} The exchange rate is basically determined by domestic interest rates relative to international rates, inflationary expectations, and competitiveness. Hence, in the long-run, the exchange rate cannot be determined by intervention in the foreign exchange market by the central bank.
changes (i.e., if the initial increase in government deposits of afghani are spent so that NCG remains unchanged) on the right hand side, base money will be increased. DAB determines that amount it will increase by deciding the size of its foreign exchange auctions.

**Credit to banks—CB**

DAB’s advances to banks are a source of base money largely under the control of the central bank. DAB does not now lend to banks. But if it adopts the standing credit facility recommended by the mission, it can influence the amount of credit provided under this facility by setting the interest rate charged. An increase in credit to banks will generally directly increase base money.

**Net Credit to Government—NCG**

DAB is not allowed to lend directly to the government. It could do so indirectly by buying government securities (GS) in the secondary market if there were any. Changes in the level of government deposits with DAB (Dg) also change NCG and base money by a like amount but in the opposite direction, and careful projections of these amounts also should be prepared by the Government and communicated to DAB. Anticipating the development of a market in government securities, the amount of government securities held by DAB (GS) would be under its direct control. Purchases of such securities from the public (including banks) by DAB would increase the amount of base money, while sales from its existing holdings would reduce B. In most developed economies, these so-called open market operations are the primary instrument by which central banks control base money. Coalition military accounts with DAB and those of some NGOs are not shown separately here and may be treated annalistically like government deposits.

Because DAB does not lend directly to the government,

\[ \Delta \text{NCG} \equiv - \Delta \text{R}_g. \]

**Capital Notes—CN**

Until the government begins to issue its own debt instruments, DAB is conducting open market operations in its own security (capital notes). Increases in capital notes outstanding will reduce base money and visa versa. Decisions about the amount of capital notes are now the second active instrument of monetary policy for DAB.

**Foreign currency deposits—R_{bf}**

Central banks do not generally offer deposits in foreign currencies. Changes in such balances may be reflected in an offsetting change in NFA with no change in base money. However, if they are used to pay for domestic currency purchased from DAB, or if sales of Afghani to DAB are credited to such an account rather than to an account abroad (as would be more
usual), such changes will be immediately reflected in base money (increases or decreases in bank reserves).

**Net Other Assets—NOA**

Other Assets less Other Liabilities, i.e., other assets (net), should be negligible, or at least changes in NOA should be negligible. The value and behavior of NOA should be determined from historical data and its behavior in the future closely monitored. If this behavior becomes a significant cause of changes in base money, the components of NOA should be identified and examined in order to understand the factors giving rise to their behavior.

Thus, DAB can control the growth in base money by forecasting the behavior of those sources of base money growth that it does not control (FXP, NCG, Rbf, and NOA) and setting accordingly the sources it does control (FXS, CN). CB falls a bit in between as DAB controls it indirectly via the interest rates (and other conditions) it sets on standing facilities.

\[(16) \quad \Delta CN - \Delta FXS = \Delta B^* - \Delta FXP - \Delta CB + \Delta R_g - \Delta R_{bf} - \Delta NOA\]

where \(\Delta B^*\) is the base money target growth and \(\Delta FXP, \Delta CB, \Delta R_g, \Delta R_{bf}\) and \(\Delta NOA\) are the *projected values* of those variables that DAB does not directly control. Thus DAB controls the growth in base money by determining the size of its foreign exchange auctions and of its sales of capital notes plus the influences it exerts on the money multiplier outlined earlier. These constitute its instruments of monetary policy. These instruments are examined in greater detail in the next section.

**III. INSTRUMENTS OF CONTROL**

The indirect instruments with which central banks control the money supply can be divided into statutory (or regulatory) ones, such as reserve requirements (which are, in fact, rather direct) and those that are market based. Market-based instruments may operate more slowly and uncertainly, but they are the most compatible with market allocation and efficiency. The ultimate aim of market-based instruments is the control of base money via control of the amounts of NFA, CB and NCG. How such control over NCG is achieved, for example, (whether through shifts of government deposits from DAB to commercial banks—\(R_g\) to \(D_g\)— and back again, or through purchases and sales of government securities) is of secondary importance. The importance of the particular manner in which the quantity of base money is controlled resides in the efficiency of the instrument and other secondary consequences of its use. These are discussed in this section.

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16 This terminology is taken from Lindgren, which provides an excellent discussion of the transition to market-based instruments of monetary control.
A. Foreign exchange operations

The net purchase or sale of foreign currency by the central bank for domestic currency directly increases or decreases base money. This activity is a form of open-market operation and has the same effect on the monetary base as do open-market operations (OMO) in domestic securities, which are discussed below. With a floating exchange rate the central bank generally acquires foreign exchange as required by its foreign exchange reserves objectives and as a result of temporary intervention to smooth exchange rates leaving OMO in domestic securities to control base money. However, until recently net foreign exchange purchases were the only instrument available to DAB and thus the only means of regulating base money (or currency in circulation).

B. Reserve requirements

Reserve requirements can have a very significant effect on the money multiplier. In addition, however, if the central bank does not pay market rates of interest on required reserve balances it holds, they reduce the earnings banks receive on their assets. If they are not remunerated, required reserves constitute a tax on the deposit liabilities of banks to which they apply. These considerations suggest several general principles for the design and use of reserve requirements. Reserve requirements should be low or pay interest at market rates; a heavy tax will discourage the development of the banking sector. Reserve requirements should be uniform; this is a canon of good (neutral) taxation and simplifies forecasting the multiplier, hence simplifying monetary control. Reserve requirements should be defined so as to be enforceable and to provide some flexibility to banks in the management of their reserves (e.g., they should be met by daily average, rather than absolute minimum, amounts). Reserve requirements should not be used actively. In general, as with most taxes, they should be set at a predictable and stable level.

C. Open-market operations—Capital notes

Open-market operations (OMOs)—the sale or purchase of securities by the central bank to withdraw or inject base money—have become a favored instrument of monetary policy not only in developed countries but increasingly also in developing countries. This preference includes the use of OMOs both for temporary adjustments to the monetary base or to offset changes in other sources of the monetary base and to provide for long-run growth in the monetary base.

Several reasons explain this preference. First, open-market operations are a very flexible instrument: in developed financial markets, the central bank can buy and sell securities for whatever amounts it wants. Second, in such markets, OMOs can be carried out continuously, even several times within a single day. Third, with OMOs it is the central bank that has the

17 See Coats (1980)
initiative, whereas in the case of lending to banks, for example, it is the financial institutions that decide whether and how much to borrow. Fourth, OMOs are voluntary transactions and do not have the taxation effect that reserve requirements have. Open-market operations can be carried out in either primary markets (i.e., through new issues and redemptions) or in secondary markets (purchases and sales of pre-existing securities). Sales are generally by auction. In countries with secondary markets having many potential transactors, central banks generally prefer to operate in these markets. But operations in primary markets, though not quite as flexible, have the same sorts of effects, and are the dominant form in countries with less developed financial markets.  

Most commonly, OMOs are undertaken in government securities because of their homogeneity and negligible default risk. In the case of primary market operations, this could involve under-funding or over-funding of the Government's own borrowing requirements in particular periods, depending on monetary policy considerations. Since net new issues of government debt would be serving a dual purpose in this situation, the need for close coordination between monetary policy and public debt management is particularly important. Alternatively, OMOs are sometimes carried out using the central bank's own securities: this may be because of the unavailability or unsuitability of government paper. In addition, OMOs in secondary markets can also be undertaken in private sector securities, although the central bank needs to ensure that the paper involved is of good quality.

OMOs in government securities have the further advantage that they can help stimulate the development and growth of secondary markets in government debt. The existence of a money market is to some extent a precondition for the use of OMOs; the public (including banks) must be prepared to buy and sell government securities. But OMOs increase the demand for such transactions, familiarize market participants with their mechanics, and stimulate the development of lower-cost arrangements for conducting them.

The benefits of an efficient money market extend far beyond its contribution to the central bank's ability to use market-based instruments of monetary control. Financial resources, like an economy's other scarce resources, must be used efficiently if the economy is to function effectively and to yield the standard of living of which it is capable. In addition to directing the economy's savings to their most productive uses at the lowest possible cost, an efficient financial system minimizes the amount of savings that are needed for the smooth operation of the economy (i.e., working capital of banks, firms, households and government). Smoothing spending in the face of uneven revenues, and financing inventories at the least possible cost, requires the ability of a firm (e.g., a bank) to adjust its liquid asset holdings quickly, easily, at low cost, and with minimal risk. A well-functioning money market contributes to that ability.  

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18 Sometimes, the term "OMO" is used to refer exclusively to operations in secondary markets. To distinguish them from operations in the secondary market, operations in the primary market are sometimes called "open-market type" operations.
D. Standing Facilities

Whereas Open Market Operations (OMO) – such as the foreign exchange auction and the capital notes auction - are conducted at the initiative of the central bank, on a multilateral basis and at specific times, Standing Facilities (SF) are available at the initiative of the commercial banks, on a bilateral basis, and are normally available at any time.

“When…financial markets, and more broadly financial systems, are not well developed, central banks have to place greater reliance on standing facilities than on open market operations. In that regard, standing facilities can act as a safety valve in response to unexpected liquidity developments or to various obstacles or inefficiencies that prevent a smooth redistribution of reserves via the interbank market. The safety valve function is also important when the liquidity forecasting framework is weak…”

The new central bank law provides for DAB to establish standing lending and deposit facilities. The mission has recommended that DAB replace the existing options for early redemption of capital notes and off market trading of foreign exchange with a more traditional collateralized standing lending and deposit facilities and a lender of last resort facility. The purpose of standing credit and deposit facilities is to provide assurance to banks that they can manage their excess liquidity within a modest range of interest rates that straddle prevailing market rates. The standing lending and deposit facilities will provide an interest rate spread between placing and receiving funds from the central bank overnight. This spread is important because it should encourage banks to develop an interbank market and manage their liquidity with each other in the first instance, rather than always dealing with the central bank. Once interbank markets are better developed, DAB’s open market operations will aim, in part, to keep short-term interbank interest rates well within the tunnel of the rates of the two standing facilities.

E. Management of government deposits

Base money can also be controlled by shifting government deposits back and forth between commercial banks and the central bank. This instrument has the advantage of being under the full control of the central bank (assuming that the MOF delegates to it the responsibility for the distribution of government deposits between itself and commercial banks). Government deposits can be shifted quickly and easily between the central bank and commercial banks, which makes this instrument quite flexible and useful for offsetting short-term swings in the amount of other sources of base money. To use this instrument, the government must determine the banks in which it will place or from which it will withdraw funds and the interest rates paid on them. A market-oriented approach to placing deposits with commercial

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banks is for the government to hold regular deposit auctions. As this deposit management instrument is an alternative to buying and selling securities (open market operations), its use has the disadvantage of discouraging the development of a secondary securities market, if one does not already exist.
Bibliography


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