THE OPERATION OF MONETARY POLICY

In this article John Tait and Michael Reddell explain how the Bank’s monetary policy is implemented.

Executive Summary
Monetary control in New Zealand is achieved using a transparent set of arrangements. The system does not impose direct restrictions on the activities of any institution or group of institutions. Rather, the Reserve Bank maintains control by adjusting the supply of, and influencing the demand for, deposits held with it by the banks. These deposits are held voluntarily as part of the interbank settlement process.

On a day-to-day basis the system is quantity-based. The Bank targets a fixed amount of these ‘settlement cash’ deposits (known as the ‘cash target’) through daily transactions in the financial markets, known as open market operations (OMOs). The Bank prepares forecasts of daily influences on settlement cash (mainly flows between the Government and the private sector) and uses these forecasts to determine how much cash to inject or withdraw through the OMO so as to hit the cash target.

The cash target is rarely hit precisely, as many of the flows cannot be forecast with great precision. The cash target is set so that the divergences between actual and forecast flows are sometimes large enough that settlement cash holdings are insufficient to cover the net flows. If the system as a whole falls short of settlement cash, one or more bank will have to sell (discount) Reserve Bank bills with less than 29 days to maturity back to the Reserve Bank in exchange for settlement cash. The Bank directly limits the supply of discountable bills and the discounting is undertaken at a penal cost. The risk of incurring this penalty cost encourages the banks to compete to maintain holdings of settlement cash (and discountable bills). The greater the expected cost of discounting, other things being equal, the more the pressure on monetary conditions.

The levers the Bank can adjust to influence conditions include the cash target, the supply of discountable bills, and the penal cost of discounting. The precise settings of these levers are of no intrinsic significance, and the Bank adjusts them as necessary to hit its inflation targets. The Bank can also influence conditions less fundamentally by changing the type or maturity of securities offered in OMOs, or through public statements of its views.
Introduction

Monetary policy - which is aimed at stabilising the price level - is the Reserve Bank’s prime function. Earlier Bulletin articles have looked at some of the big-picture issues of monetary policy. Grimes (1990) reviewed the conceptual and practical background to monetary policy and the existence of central banks. Beaumont and Reddell (1990) outlined the various channels in the real economy and the financial markets through which the Bank’s monetary policy actions influence inflation.

This article slots in between the previous two. Given the price stability goal, and an overall monetary policy strategy directed towards that goal, the article attempts to explain the levers the Bank now uses to implement the strategy, and just how monetary policy operations are conducted in practice. To adopt a nautical analogy, once the direction is set on the bridge, it is put into effect in the engine room. This article is, in a sense, a guided tour of the engine room.

The Bank’s roles as banker to the Government and to the banks are briefly outlined. This material provides the background to an examination of the control framework the Bank has adopted. The various operations that are undertaken to implement monetary policy and to influence monetary conditions are detailed, and in a final brief section the Bank’s recent moves to reduce the incidence and impact of interbank frictions are explained.

The Settlement System and Monetary Policy

Vast numbers of financial transactions are undertaken every day by banks and their customers. These transactions have to be settled at the end of each day. Customers and banks who lose funds need to arrange for transfers to customers and banks which gained funds in the course of the day’s transactions. The Reserve Bank takes part in this process, in respect of its own transactions and of those of its customers (primarily the Government). As this process is a critical component of the monetary policy control system the Reserve Bank has chosen to adopt, it is worth describing in more detail.

One of the chief services banks provide is the transfer of money to other banks, allowing their customers to make payments to one another without the use of bank notes and coins. Retail banks provide cheque account facilities, credit cards and other methods by which customers can instruct their bankers to make payments. Once customers have given banks these instructions, the transfers of funds needs to be effected. For example, a supermarket, having received a customer’s cheque, deposits that cheque at its bank. It is then up to the bank to arrange for the collection of the funds from the bank of the customer who wrote the cheque. And, of course, there are vast numbers of such transactions taking place every day.

In principle, banks could choose to settle each customer instruction individually by physically transferring bank notes or coin between themselves. In practice, transactions are not settled individually, and nor do the interbank transfers take place in notes and coins. Instead, banks have agreed for practical purposes to arrange transfers among

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themselves only for net flows at the end of each banking day (i.e. after totting up all the transactions in each direction for the day), and that transfers will take place in the form of book entries - deposits held at the Reserve Bank.

The process of determining and agreeing banks' net positions for each day's banking business takes place overnight and concludes on the morning of the next business day. Banks, Databank2, computer bureaux and others submit to Databank the details of each cheque, deposit, lodgement, or other payment instruction made between two banks by around midnight. These instructions are then totalled for each member bank by Databank. In the morning Databank lets each bank know its aggregated net position relative to all other banks, i.e. how much each bank owes to each of the other banks.

Banks are generally not willing simply to accumulate claims on one another, but rather wish to settle each day's business finally by transfers of quantities of some secure asset on which there is no default risk. Possible alternatives include gold (used widely at times in the past), notes and coin, or credit balances at the Reserve Bank. By agreement, in New Zealand the net end-of-day positions among banks are paid (settled) by transfers of deposits held at the Reserve Bank. These deposits are known as 'settlement cash'.3

By itself, this process of private sector interbank settlement would not provide a particularly robust basis for monetary policy. After all, the Reserve Bank has existed only since 1934, and the banks could, and did, settle transactions among themselves and their customers before the Reserve Bank was founded, and private settlement systems were well known in the United States last century. As Grimes (1990) pointed out, effective monetary control requires the Reserve Bank to be able to control the supply of some quantity of money for which there are no easy substitutes. Based on private sector transactions alone, settling at the Reserve Bank would probably remain a convenient option, but might conceivably be abandoned once the Bank attempted to influence the behaviour of banks and other financial institutions - which is what monetary policy is about. The banks’ agreement to use deposits at the Reserve Bank as the basic means of settlement creates demands for settlement cash. However, these demands could be kept very low - in principle as low as zero - as banks could agree to facilitate settlement easily by lending and borrowing freely among themselves.

There are, however, daily transactions with the Reserve Bank which cannot be avoided and which make it impossible for banks to facilitate settlement in a way that would render the Reserve Bank's control framework ineffectual. These transactions guarantee a continuing demand for settlement cash. The transactions relate to the Reserve Bank's roles as sole supplier of banknotes and as commercial banker for the Government (and a number of other minor customers). Our current monetary control operating framework gives little day-to-day significance to currency transactions (and for the remainder of this article they are abstracted from, unless explicitly mentioned). In an operational sense, the framework works primarily using the facts that the Government’s current bank balances are ultimately held at the Reserve Bank and that the Government ultimately insists on being paid in Reserve Bank credit balances.

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2 Databank is owned by the leading banks and provides, inter alia, computerised processing services to enable the banks to determine their net positions with one another at the end of each banking day.

3 Not all banks maintain settlement accounts with the Reserve Bank, but each of these non-settlement banks clear transactions involving themselves and their customers through an account held at a settlement bank.
If customers of commercial banks make a payment to the Government (e.g. a tax payment) then this instruction must be settled by their bank, either by offsetting a receipt from the Government (e.g. a benefit payment) or by paying settlement cash. If the Government (and the other customers of the Reserve Bank) in aggregate receive more than they spend during a banking day then settlement banks will have to pay settlement cash to the Reserve Bank. As neither the Government nor the Reserve Bank are willing to extend overdraft facilities to the banks (or their customers), and as all transactions must be settled daily, the banks must have credit balances at the Reserve Bank to allow the daily net flows to be settled. Monetary policy is exercised, at present, by the Reserve Bank controlling the supply of these balances, and the cost of obtaining additional settlement cash.

The nature of the Government’s banking relationship with the Reserve Bank and with the private banks has evolved over the years. Before the Reserve Bank was founded, most government banking was conducted through the Bank of New Zealand. And it was not until 1988 that most government revenue was no longer passed through a Bank of New Zealand account before being transferred to the Public Account at the Reserve Bank. More recently, advances in technology, and the Reserve Bank’s limited customer base and branch network, have prompted a significant further evolution. Westpac is now providing transaction banking services for most government departments. However, the Crown Account is still held at the Reserve Bank and at the end of each banking day the net impact of government transactions still leads to flows between the banks and the Reserve Bank.

Criteria For a Control Framework

Using this raw material - the fact that interbank settlement and government financial flows take place through the books of the Reserve Bank - the Reserve Bank has arrived at a control framework. The operating framework is certainly not set in concrete, and has evolved considerably even over the seven years since it was initially developed.

In developing and refining the control system, the Bank has had in mind several desirable features. These include, _inter alia_: 

- market participants should be regularly reminded of the potency of monetary policy, to keep monetary conditions relatively stable;

- the Bank should not _directly_ control the activities of any institution(s), so as not to artificially impinge on, or favour any institution or group of institutions. By contrast, previous ratio-based systems tended to disadvantage controlled institutions and favour uncontrolled institutions, in turn undermining the control system itself;

- the Bank’s operations to influence monetary conditions and its policy intentions should be transparent, so as to promote quick and effective responses to policy signals by providing a reasonable degree of certainty about the Bank’s intentions to market participants;

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there should be a gradation of possible policy instruments and signals, to promote stability in monetary conditions;

- the system should have self-stabilising tendencies, to reduce the reliance on discrete Reserve Bank policy actions. For example, if bank lending increases more rapidly than is consistent with the monetary settings there should be inherent features in the system which will help curtail this growth; and

- the system should be efficient, in the sense of imposing the minimum possible costs and distortions consistent with achieving the ultimate goals of monetary policy.

All of these characteristics are present, to a greater or lesser extent, in the current control framework.

The Control Framework

As discussed already, government flows play a major part in the control system the Bank has adopted. These flows must, in the end, be settled from credit balances of Reserve Bank settlement cash. However, day-to-day net government spending, revenue, and debt raising and servicing flows fluctuate substantially. The full impact of these flows is not allowed to pass straight into changes in the stock of settlement cash. Were it to do so, the banks would have to hold very large and variable balances, and there would only be a threat of running out of settlement cash on the days when there were very large outflows to the government account at the Reserve Bank. Such a regime might - in an ultimate sense - be effective, but would not meet most of the criteria outlined above. It would impose relatively large deadweight costs, would not be transparent, and would be most unlikely to promote stable monetary conditions.

Instead, the Bank’s Financial Markets Department manages the supply of settlement cash daily by offsetting much of the impact of government (and other Reserve Bank) transactions on settlement cash. These operations, and management of the issue of seasonal Treasury bills, also amount to a short-term cash-management operation for the Government, and have the impact of stabilising the balances in the Crown’s own account.

As part of promoting a transparent and relatively certain regime, the Bank has since 1986 announced a daily target for settlement cash balances which it aims to achieve through its operations in the financial markets. The Bank aims for the target by entering into money market deals each day, known as open market operations, to either inject or withdraw settlement cash.

To determine whether to inject or withdraw cash, and the extent of the injection or withdrawal, the Bank prepares detailed daily forecasts of government receipts and payments using data received from government departments. These forecasts are prepared for several months in advance, are regularly updated, and the daily forecasts for the subsequent two weeks are released to the financial markets each week. Many
A Day in the Bank’s Financial Market Operations

Two money market dealers and two liquidity forecasters arrive at work around 7:00 am. The float tender is the first operation of the day. The money market dealers monitor market developments while the forecasters prepare a forecast of those government receipts subject to this arrangement for the previous working day. They do this by collecting data from government departments and Westpac (the Government’s transaction banker). An amount equivalent to the total of these receipts is offered to the settlement banks through the Reuters and Telereate systems at around 7:45 am. All bids must be in by 8:00 am. The money market personnel consider the bids and notify successful bidders at around 8:15 am. The Bank accepts all bids (up to a maximum of the funds on offer) that are at or above the previous day’s call rate.

As the morning progresses, more information concerning the likely settlement cash balances from the previous banking day is received, and further information on government and Bank flows for that day is gathered. Liquidity forecasters absorb this information into the previous forecast and prepare a final forecast for the current banking day by 9:00 am.

A meeting is then held at around 9:00 am, chaired by the Chief Manager, Financial Markets and attended by liquidity management section forecasters and money market dealers. Liquidity management forecasters present the final forecast for the current banking day and latest forecasts of cash influences for the next three months. The meeting will then consider the forecasts. If the Government is forecast to receive net flows of settlement cash during the current day, the meeting will normally decide to inject settlement cash to the full amount expected to reach the cash target. On the otherhand, if the forecasters expect the Crown account to lose settlement cash to the banks then the meeting will normally decide to withdraw sufficient settlement cash to maintain the cash target.

The meeting will then discuss how best to inject or withdraw settlement cash. Injections can be made by either lending for a short period by sellback, or by buying government securities outright. When net injections are expected the decision will normally be to sell Treasury bills, withdrawing settlement cash to meet the cash target.

The maturity of the sellback and/or outright, or sale of Treasury bills is also decided in the meeting. The maturity of an OMO is important as an OMO influences the level of settlement cash not only on the day the OMO is undertaken but also on the day the sellback, outright purchase, or

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Treasury bill matures. The liquidity management forecasters will generally present a profile of possible maturities which will then be debated and the final form of the OMO will be agreed to by the Chief Manager, Financial Markets. The decision may be subject to consultation elsewhere in the Bank if consideration is being given to using the OMO to send a policy signal.

For example, see the forecast below in Table 1 for a typical day. On this day, the department expected the commercial banks to receive $91 million from the Government and the Reserve Bank, but to have to pay $121 million to settle the maturing one-day loan and debts to the Bank giving a net loss of settlement cash to the government and Reserve Bank of $30 million. As a result, the OMOs meeting decided to offer to inject the forecast net withdrawal of settlement cash of $30 million plus an extra $5 million to make up the previous day’s shortfall in the cash target of $5 million. The Bank did not wish to indicate a desire to see conditions tighten so offered sellbacks to the market. These sellbacks were chosen to mature in five days because its maturity would then offset an expected government stock interest payment on that day.

### Table 1

<table>
<thead>
<tr>
<th>Commercial Bank Settlement Cash</th>
<th>$ million</th>
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<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>Forecast</td>
</tr>
<tr>
<td><strong>Receipts</strong></td>
<td></td>
</tr>
<tr>
<td>Payments by Government</td>
<td>90</td>
</tr>
<tr>
<td>Payments by Reserve Bank</td>
<td>1</td>
</tr>
<tr>
<td><strong>Payments</strong></td>
<td></td>
</tr>
<tr>
<td>Maturity of 1 day loan (float)</td>
<td>-120</td>
</tr>
<tr>
<td>Other</td>
<td>-1</td>
</tr>
<tr>
<td><strong>Change in Banking</strong></td>
<td>-30</td>
</tr>
<tr>
<td>System Cash</td>
<td></td>
</tr>
<tr>
<td>Cash at start of day</td>
<td>10</td>
</tr>
<tr>
<td>Open Market Operation: Sellback loan</td>
<td>35</td>
</tr>
<tr>
<td><strong>Settlement Cash at end of Day</strong></td>
<td>15</td>
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</tbody>
</table>

*Continued*
The following morning the Databank run of inter-bank payments will indicate how successful the previous day’s forecasts and OMOs were. In the example in Table 1 the payments by the Government to the banking system were not $90 million as forecast, but instead totalled $110 million, $20 million above forecast. Because the OMO was set to maintain a cash target of $15 million the error resulted in the system holding cash $20 million above the target, a total of $35 million (assuming no underbidding in the float tender). During the next day’s OMO the $35 million cash position will be offset by setting the OMO to inject $20 million less than forecast in order to return the cash holdings to the cash target of $15 million.

In the morning, just after the OMO, information is received from the settlement banks concerning the previous day’s settlement. A money market dealer maintains a running account of each bank’s holdings of settlement cash, agrees that balance with the bank concerned, and arranges to buy Reserve Bank bills if discounted to the Bank to cover a bank’s settlement cash shortfall. At about 11:00 am, if all goes well, the Bank will normally declare successful settlement and the previous day’s banking books at the Bank will be closed off.

In the afternoon the money market dealers prepare reports for the rest of the Bank and monitor the financial markets. The liquidity forecasters update and prepare forecasts for future dates and consider issues such as liquidity management strategies.

government transactions follow a broadly predictable pattern and/or can be scheduled clearly in advance, e.g. benefit payments and debt-servicing transactions. But the timing of other transactions is much less certain. In particular, even if it is known when a government cheque has been written it is not known precisely which day the cheque will be presented for payment.

Each day, the Reserve Bank uses the sum of the forecast government receipts and payments, and forecasts of other Reserve Bank influences (particularly note and coin transactions) to determine whether the Reserve Bank and its customers are likely to be receiving or paying funds on the day, and thus to determine the direction of the OMO. If the Reserve Bank expects net government receipts for the banking day, the Bank will generally inject the settlement cash by offering to lend the amount the Bank wishes to inject, for a fixed term set by the Bank, secured against a pledge on government securities. This sort of transaction is referred to as a ‘sellback’. The alternative means of injecting cash is by buying government securities outright from private institutions (an ‘outright’). To withdraw settlement cash to cover net government payments to the
private sector, the Reserve Bank generally sells Treasury bills outright to financial institutions. These OMO transactions are not conducted exclusively with settlement banks, but when the transactions are settled they all ultimately alter the supply of settlement cash.\(^4\)

Government tax receipts are treated a little differently from most expenditure and revenue flows. As already noted, until 1988 these receipts first came through an account at the Bank of New Zealand. This system gave the Reserve Bank two days' notice of the size of the flows that would be leaving the banking system. Tax flows have highly seasonal peaks, but the precise timing of the flows can be particularly difficult to forecast, unnecessarily complicating the conduct of monetary policy. Accordingly, the Bank adopted a special policy of tendering these receipts back to the banks for one day. These loans are made in the morning immediately prior to final settlement, once the size of the government revenue flows are known, and apply for the banking day for which settlement is about to take place. This 'float tender' effectively delays the timing of the inter-bank settlement of these tax receipts for one day, ensuring that there are no forecast errors impacting on liquidity conditions from this source.

The gap between actual and forecast flows is of considerable importance to the current operating system. Having eliminated tax receipts as a source of forecast error, the Bank's forecasts of liquidity flows are generally good. The forecasts are without consistent bias and the errors are generally clustered within small ranges (relative to the size of the gross flows). However, the daily forecasts of government net receipts or payments used to set the OMOs are seldom totally accurate. Net flows for the day are influenced by unforecastable events. In particular, the timing of government payments is inevitably difficult to forecast - even if only because of such mundane factors as whether someone remembers to write a particular cheque on a particular day, or when the recipient chooses to bank the cheque. Consequently, the Bank's OMOs will normally not accurately offset the actual net government payments, so that in aggregate banks will end up holding more or less settlement cash than targeted. (Although if the forecast error meant that net injections were stronger than forecast, the banks would generally not take up all the money offered in the float tender.)

If the daily forecast error is negative (i.e. if net flows to the Government and the Reserve Bank after the OMO are less than expected) and exceeds the cash target (currently $15 million) then the cash in the hands of the banking system will be insufficient to settle inter-bank transactions involving the Reserve Bank and its customers. However, as already mentioned, banks are not permitted to go into overdraft on their Reserve Bank accounts, and so they need to obtain additional settlement cash. There is only one supplier, the Reserve Bank. The cash target is set with the aim of ensuring that the banks need to obtain additional settlement cash reasonably regularly. Indeed, the mechanism for supplying additional settlement cash is an integral part of the control framework.

In New Zealand, the way of obtaining additional cash on the day has long involved a system for selling ('discounting') specified securities back to the Reserve Bank on demand. Until 1988 certain classes of government securities were discountable\(^5\), although the seasonal, and other, variability of the stock of discountable securities meant

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\(^4\) The Bank has no preferred classes of financial institutions with which it deals in these operations. As with private sector institutions, the Reserve Bank will deal with any institution which meets normal counterparty creditworthiness standards.

that this arrangement was not ideal. Since 1988, however, the Bank has created its own stock of discountable instruments, by issuing its own securities, known as Reserve Bank bills.6 These are now 63-day instruments, and are issued twice-weekly in tenders of $70 million each. Like Treasury or bank bills, Reserve Bank bills are tradeable. The key distinguishing feature is that once a Reserve Bank bill has 28 or fewer days remaining to maturity it can be sold back to the Reserve Bank (‘discounted’) by the holder on demand. This feature provides settlement bank holders with immediate access to settlement cash at the Reserve Bank. Because this access is valuable to the banks, Reserve Bank bills are generally issued at a lower yield than Treasury bills even though there is no default risk on either instrument. (In fact, the Bank issues bills only if the yields bid maintain a reasonable margin below yields on other market instruments, so that from time to time the full amount of bills offered at a tender is not issued. When the under-issued maturities become discountable the supply of discountable bills is less than normal.)

Faced with a large negative forecast error, one or more banks will have to obtain settlement cash by discounting.7 However, discounting is not without cost. Although the Bank will discount on demand, it charges a penalty margin above market rates for doing so. This margin is now 0.9 percentage points above market rate. Thus if the market rate were 11 per cent, the Bank would discount a bill to give itself an annual yield of 11.9 per cent.8 Because a discounting bank needs to obtain the extra settlement cash for one day only (because it can obtain funds at lower market rates by bidding in the money markets the next day) it is eager to discount bills with only a very few days remaining to maturity. Discounting longer-term bills very rapidly becomes an extremely expensive form of one-day loan. The penalty cost of discounting and the fixed quantity of discountable securities discourages banks from discounting. In so doing it encourages each bank to compete sufficiently vigorously in the money markets to minimise the risk that, in the event that a large negative forecast error strikes the system, it will be the bank forced to discount.

When deciding how much to borrow on the money markets during the day, banks estimate likely losses in deposits as a result of customers’ cheque writing and other instructions. However, banks are no more able to forecast customer transactions with complete accuracy than the Reserve Bank is able to forecast with complete accuracy the system’s flows, and they do not wish to end up with significant balances of settlement cash. These balances earn only 65 per cent of a comparative money market yield. Banks must trade-off the expected costs of incurring losses on excess settlement cash against the expectation of lower discounting costs in settlement the following morning, if a large forecast error were to force the system into discounting. This particular trade-off is now less important than it once was, because the direct impact on settlement cash balances, and hence on profitability, of large positive forecast errors has been minimised by the ability of banks to underbid the float tender.

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6 For a full description see L. Harrison (1988): ‘Reserve Bank Bills’, Reserve Bank of New Zealand Bulletin, Vol. 51 December 1988, pp 173-176. The bills were originally issued for terms of 91 days, but following the recent recalibration of the operating system (see below) the term has been reduced to 63 days.

7 Discounting has also occurred at times on a more ‘voluntary’ basis, during the periods of interbank friction over the last two to three years even when the system itself has not been short of settlement cash.

8 Generally the rates at which the Reserve Bank will discount are set once a day, following the open market operation. This policy avoids ‘nuretting’ effects if market rates rise during the days as banks seek to avoid discounting. If discount rates were set more frequently, then as market rates rose the discount rates would rise, tending to raise market rates further, and so on.
To avoid the costs of discounting, a bank can obtain additional claims over settlement cash by attracting retail or wholesale money market deposits during the banking day. Winning these deposits will boost its holdings of settlement cash when interbank settlement occurs the next morning. A bank may also restrict its lending, or sell in the secondary market securities it has been holding, which would tend to result in the bank losing less settlement cash than otherwise.

At a system-wide level, increases in the costs of discounting could be avoided if the volume of lending stabilised, and with it the price level, and the rate of growth of nominal activity. The size of the gross flows and of the forecast errors, and thus the expected incidence of discounting, can be expected to show some relationship to these broader aggregates. This mechanism is one of the automatic stabilisers in the system, although it has tended not to prove reliable over relatively short time horizons, and the Bank has needed to be able to adjust policy instruments to ensure that monetary conditions remain consistently in line with the price stability goal.

The Instruments of Policy

Given the framework outlined in the previous section, the Bank has a number of ways of influencing monetary conditions and exerting monetary control. The various levers are adjusted, as appropriate, in response to developments in the various monetary indicators (interest rates, exchange rates, etc) to keep on track for the price stability target. The precise settings of each of the instruments are given little or no intrinsic significance. Because market behaviour patterns change over time, particularly regarding the desired quantities of settlement cash and Reserve Bank bills, it is sometimes necessary to make what are essentially technical changes. At other times, if inflation forecasts are evolving in a direction inconsistent with the price stability goal or the intermediate inflation ranges, more substantive adjustments need to be made.

The most immediately obvious instrument available, given the framework that has been set up, is the supply of settlement cash itself. If the Bank increases the supply of settlement cash, the expected incidence of discounting will fall (for a given pattern of forecast errors) because a larger buffer will be available. In response, the banks will have less need to compete as aggressively to safeguard their access to settlement cash. Interest rates, and monetary conditions more generally, will tend to ease in response. Banks will also tend to be more willing to lend. In aggregate, these actions will depress interest rates until banks are again content to hold the level of settlement cash supplied by the Bank. The opposite happens if the cash target is lowered so that banks overall hold less cash than they require. In response, they will tend to compete more aggressively for funds tightening monetary conditions.

The Bank may also change monetary conditions by changing the demand for settlement cash by adjusting the penalty incurred when discounting, adjusting the supply of Reserve Bank bills, or adjusting the interest rate paid on settlement cash balances.

If the discount margin were to be raised, the expected incidence of discounting would not have changed, because, the costs of that discounting would have increased, the costs
of doing the current volume of banking business would have risen, encouraging the banks to alter their behaviour. Each settlement bank would tend to bid more aggressively for wholesale deposits, discourage lending, and hence attempt to increase its access to settlement cash in OMOs to avoid discounting costs (though, of course, the supply of settlement cash is fixed and so equilibrium cannot immediately be restored). On the other hand, if the discount penalty was lowered, then monetary conditions and interest rates would ease, as banks would move to minimise holdings of settlement cash by lending and competing less aggressively for funds - the banks could now undertake more business for the same expected cost of discounting.

The Bank can also increase (decrease) the cost of discounting and the pressure on monetary conditions by raising (lowering) the supply of discountable Reserve Bank bills - either more gradually by reducing (raising) the size of the bill tenders, or by attempting to buy back (sell) bills from (to) the markets. If the supply is cut, then, for a given pattern of forecast errors, bills further from maturity are more likely to need to be discounted. As noted above, the longer the maturity of the discounted bill, the higher the cost of discounting. In order to avoid discounting, demand for settlement cash would rise, and Reserve Bank bill tenders would be contested more aggressively, putting upward pressure on interest rates and tightening monetary conditions. As already noted, at times when conditions are relatively easy not all Reserve Bank bills offered at tender are issued. This under-issue will temporarily reduce the supply of discountable bills, which will tend to tighten conditions. This is another self-stabilising feature of the control system.

The Bank could also influence monetary conditions by changing the interest rate on settlement cash balances held at the Bank overnight. At present, and since 1985, the Bank has paid a rate of 65 per cent of the seven day bank bill yield, and has not used this rate as a policy lever. If the Bank wished to increase the demand for these settlement balances the rate could be raised. Such an action would reduce the cost of holding settlement cash, increasing competition for deposits on the money markets and tightening monetary conditions.

How the Bank Uses the Policy Levers

The cash target, discount margin, size of the Reserve Bank bill issue, and the interest rate on settlement cash are the more obvious structural levers available to the Bank. These levers have been changed only rarely in the last couple of years (although as discussed below a recent recalibration of the framework has led to technical changes in several of them).

The Bank is reluctant to use these levers frequently, especially in response to temporary developments in the money markets, and so has developed a number of other means of signalling its intentions. One of these is its treatment of discounted Reserve Bank bills. The Bank will normally sell any significant quantities of such bills back to the market. A decision not to resell may however be taken if monetary conditions are erring on the easy side, and to this extent the decision could represent a mild firming, objectively by reducing the quantity of discountable securities over the following few days, but also by giving the markets information on the Bank’s view of short-term conditions.
The structure and conduct of the Bank’s open market operations can also be used to transmit signals and tighten (or loosen) conditions modestly. Two general strategies are available. First, the Bank may choose to purchase government stock outright rather than lend secured by sellback, or secondly the Bank may take a more aggressive approach to bids in OMOs. By choosing to purchase a security rather than lend, the Bank limits the possible bidders to those institutions with the government security of the required maturity, and permanently alters the portfolio of the institution that gives up the stock. (By contrast, in the sellback the borrower only loses the use of the stock temporarily.) Consequently, the OMO may not receive many competitive bids, and the OMO may not be successful at injecting the cash required to meet the cash target. As a result, an OMO offer to purchase government securities is generally perceived by the banks as increasing the chances of costly discounting, and so increasing individual bank demands for settlement cash and tightening monetary conditions.

An offer to purchase a government security, even if successful, tends to tighten monetary conditions as banks interpret the offer as indicating further offers of outright and other actions to tighten monetary conditions. Thus, an OMO so-structured may signal the threat of future Bank actions and the structure of OMOs is thus closely watched by the financial markets.

One option open to the Bank is to take a more aggressive stance in rejecting bids in the OMOs. The Bank offers fixed quantities in the OMOs, but monitors the bids received to ensure that they are consistent with contemporaneous market rates. If the Bank decided to take a firmer stance to rejecting bids then the OMO could fail to inject or withdraw settlement cash as intended. This in turn would reduce the likelihood of the cash target being met on that day, either increasing the chances of discounting or raising the expected holdings of low-yielding settlement cash. Both outcomes are costly to banks and so tend to constrain their behaviour in the direction intended by the Reserve Bank. This mechanism is not widely used, partly because of the lack of transparency, but also because the Bank’s daily operations are primarily cash management operations for the Government, not monetary policy instruments in themselves.

The other avenue open to the Bank to influence monetary conditions, either in conjunction with other actions or on its own, is a public statement from the Reserve Bank. Such a statement can explain a recent action. Or it may comment on the Bank’s view of appropriate monetary conditions and so raise the prospect - either implicitly or explicitly - of further actions if conditions do not adjust. The Bank generally tries to explain carefully the background to its action, in the interests of promoting transparency, and so promoting a quick and efficient reaction to policy signals.

The markets have become increasingly responsive to these types of signals in recent years. This responsiveness reflects in part the more forward-looking nature of financial markets and the strong incentives which exist to anticipate any changes in the Reserve Bank’s policy stance. However, it also reflects the much greater credibility that the Bank’s operating procedures have gained since the mid-1980s, and the greater belief in the Bank’s willingness to take actions to meet the price stability target.
Recent Developments

On 1 February 1991, the Reserve Bank announced some technical adjustments to the monetary policy levers, consistent with the criteria outlined earlier in the article. Interbank friction and so-called ‘cash-play’ activity have been constant sources of tension and disruption in the financial markets over the last couple of years. Such tension has kept pressure on interest rates, for a given set of monetary policy settings. With a relatively low incidence of forced discounting, however, the banks were not being reminded frequently of the potency of monetary policy and individual banks had the ability to move interest rates temporarily by manipulating the cash market.

The recent recalibration was designed to reduce the future incidence of serious bouts of interbank friction. The measures taken were:

- a reduction in the term of Reserve Bank bills from 91 days to 63 days, and an increase in the size of each tender from $50 million to $70 million, thus increasing the volume of discountable securities from $400 million to $560 million;

- a reduction in the penalty discount margin from an effective 1.2 percentage points above market rates, to an effective 0.9 percentage points above, thus reducing the cost of discounting;

- a reduction in the daily settlement cash target from $30 million to $15 million, hence increasing the expected frequency of forced discounting.

In addition, the Bank formalised the arrangement - accepted earlier by the banks - that disruptive behaviour in the interbank settlement market should be avoided. To this end, the Bank also restated that it retained the right to lend at the point of settlement to foil any attempted disruptive tactics. The intention of this series of measures was to reduce the short-term vulnerability of the system, by lowering the cost to banks of undertaking voluntary discounting to counteract disruptive behaviour, while increasing the frequency of forced discounting. The measures should ensure that institutions are reminded more frequently of the constraining power of monetary policy, and re-emphasising the quantity-oriented nature of the control system.

Conclusion

The monetary policy framework, as it has evolved over the last six years, has proved capable of ensuring an effective degree of monetary control, without reliance on any direct restrictions on the market activities of individual institutions or groups of institutions. Significant reductions in the inflation rate have been secured, and the Reserve Bank is able to exert a reasonably reliable degree of control over monetary conditions. These are the first and most important criteria for a control framework.

Recent adjustments, designed to reduce the incidence and impact of interbank friction, should serve to enhance the effectiveness, the transparency, and the consistency of the implementation of the degree of monetary pressure which will be needed to achieve the ultimate goals of monetary policy.