The effectiveness of monetary policy in New Zealand

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A paper prepared for the Conference on Effective Monetary Policy organised by Macquarie University at the H C Coombs Centre for Financial Studies, Sydney, Australia, 29 and 30 October 1995. In their paper Dr Mayes and Mr Riches review the implementation and effectiveness of monetary policy under the monetary policy framework established in the Reserve Bank Act 1989. This includes discussion of some of the issues which have emerged from recent experience.

I Introduction

One of the key objectives of monetary policy in many countries is to keep the general price level stable in the long run. In New Zealand this is the sole objective. The Reserve Bank Act 1989 not only designates price level stability as the primary function of monetary policy but provides an unusual degree of operational independence and motivation to achieve that objective through the personal accountability of the Governor. But, no matter how clearly the Bank’s objective may be defined, it is still faced with the same control problem as any other monetary authority. How should it implement monetary policy to achieve the goal of price stability? What are the intermediate or operational targets, instruments and policy reaction rules that it should use?

Price stability in New Zealand is interpreted strictly as maintaining the twelve monthly increase in the consumer price index in the range of 0 to 2 percent, subject to some caveats described below. Since this definition involves both an average and variance, it might seem adequate to view effectiveness as merely achieving the target. However, it is arguable that additional criteria should be applied. The first is simply that remaining within the target range should be the result of the appropriate application of policy and not just luck or offsetting errors. Formulating monetary policy involves being able to forecast inflation over at least the coming two years as monetary policy has its impact with a lag. This involves not just a forecast of the likely behaviour of the economy but also of the impact of monetary policy upon inflation. Thus effective implementation of monetary policy requires that one should be right for the right reasons.

Secondly, the criteria for assessment of effectiveness should be based not merely on some concept of adequacy but more one of optimality. Thus, one should take the "cost" into account. In this instance cost can probably be measured in two ways. The first measurement assesses the impact on output and employment. Although it is widely thought that achieving low inflation will not harm long run growth and will probably enhance it (see Mayes and Chappell, 1994, for a summary), there is clearly a short-run trade off between the variance in output and employment from their trends and the variance of prices. Thus, the given level of price stability is achieved more effectively if the variances in output and employment are lower. Similarly, there will tend to be costs from substantial fluctuations in the instruments of monetary policy. Thus, achieving the same level of price stability with lower fluctuations in interest rates would represent more effective monetary policy implementation. At the very least, instrument instability should be avoided.

This paper considers the effectiveness of monetary policy as currently operated in New Zealand in delivering these outcomes. This issue has gained increased prominence in debates about monetary policy following a period of strong growth and a recent breach of the inflation target. With the benefit of hindsight we argue that this breach of the target range might have been avoided with a better understanding of the risks involved in our approach to inflation targeting. Furthermore, we conclude that although the breach was highly undesirable, the experience has been beneficial in helping us identify shortcomings in our approach and in identifying other factors which may subsequently threaten the goal of price stability.

The paper is organised as follows. First, a brief overview of the institutional framework within which the Bank operates is provided. The operating procedures, the instruments of monetary policy, and the indicators used to assess monetary conditions are outlined in section III. Section IV evaluates the recent performance of monetary policy and discusses the policy issues which have arisen. Section V shows how the lessons of the past have helped shape current Reserve Bank policy. Finally, section VI provides a brief summary of the paper’s conclusions.

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1 We are grateful to Enzo Cassino, Peter Redward and Bruce White for comments. An earlier version of this paper has appeared as a Macquarie University discussion paper.

Reserve Bank Bulletin, Vol 59 No. 1, 1996
II Policy Targets Agreement

The Reserve Bank Act 1989 formalises price stability as the primary objective of monetary policy and establishes the degree of autonomy and accountability with which the Bank can pursue this objective. The Act requires that operational policy targets, reflecting the objective of “maintaining stability in the general level of prices”, be adopted through negotiation between the Minister of Finance and the Governor of the Reserve Bank. The outcome of these negotiations is recorded in a public “Policy Targets Agreement” (PTA). The Governor of the Reserve Bank is made accountable for the outcome of monetary policy in relation to the quantified inflation targets in the PTA, and may be dismissed by the Minister of Finance if performance “in ensuring that the Bank achieves the policy targets ... has been inadequate”. A new agreement is reached whenever a Governor is appointed (or reappointed) and may be revised or replaced by mutual consent of the two parties. There have been three such agreements so far. The current PTA defines price stability as 12-monthly increases in the Consumers Price Index between 0 and 2 percent.

The PTA recognises that not all price movements come under the direct influence of monetary policy and exempts certain types of price shocks from inclusion in the formal price stability agreement. This can be simply characterised as saying that the PTA includes demand shocks in the target but excludes (or caveats) “significant” supply shocks. Furthermore, in the case of demand shocks there is relatively little conflict between the goal of price stability and the desire to minimise output variability.

If monetary policy sought to offset the effects on the price level in the case of a “supply” shock, or direct shocks to the price level arising from indirect tax or administered price changes by the Government, this would cause real costs out of all proportion to the benefits from short-run price stability. In such circumstances, it is generally more appropriate for monetary policy to accommodate the first round price level effect of the shock while ensuring that ongoing, generalised, inflation is not allowed to develop. Provision is made for inflation outcomes outside the 0 to 2 percent band in such cases. Collectively these circumstances are described as “caveats” to the central target. The most straightforward caveat relates to interest rates, which in New Zealand are included within the CPI. Clearly if they were in the target, tightening policy would itself increase inflation and hence require a further tightening and so on in an upward spiral, albeit a diminishing one. Consequently the CPI inflation rate can move outside the 0 to 2 percent range without it being concluded that the Bank has failed to comply with the PTA. Four types of influences on inflation are specifically excluded: the direct impact of interest cost components of the CPI; the direct impact of significant changes in government charges, indirect taxes, and subsidies; the direct impact of significant price level effects arising from natural disasters; and the direct impact of significant changes in import or export prices.

In determining whether the 0 to 2 percent target is being met the Reserve Bank makes adjustments to the CPI to incorporate the above caveats. The adjusted CPI is the “underlying” rate of inflation. This underlying inflation rate is the ultimate target of monetary policy. Unfortunately, both for the accountability and the credibility of the Bank, the underlying inflation measure is constructed by the Bank itself. Because the caveats involve judgment about the impact of shocks this measure is not easily replicated using the official price index produced and published by Statistics New Zealand. Some of the adjustments rely on significant elements of judgement in identifying the timing and size of relative price shocks. Moreover, because caveats require price shocks to be “significant”, not only does the word significant have to be defined but there may be retrospective adjustments to the index of underlying inflation when the impact on

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2 Much of the discussion in this section draws on Dawe (1993) and Nicholl and Archer (1992).
3 The government does have the right to override the PTA but it must do so with a specific Order in Council, which can have effect for a maximum of one year. Thus while democratic supremacy is assured any political intervention has to be open and can be debated. The right to override has never been used.
4 The Consumer Price Index is chosen as the formal price stability target of the PTA because it is the most visible and widely understood price index monitored by the public. Mathematical and measurement bias inherent in the construction of the CPI imply that a low positive rate of measured price inflation is considered consistent with price stability.
5 In a conventional macro model a positive demand shock pushes output above its long run “natural” (ie, non-inflationary) growth path, creating an output gap, leading to pressure on prices (usually with a lag) and raising the equilibrium interest rate. A framework which proceeds by adjusting interest rates according to movements in the output gap will also assist in stabilising prices, provided the regime has sufficient credibility to ensure demand shocks do not significantly destabilise price expectations. In this world inflation targets seem ideally suited.
6 For many countries such as the US this would not be a problem as interest rates are not included in the CPI. The Bank is firmly of the view that interest costs are not a consumer price. If consumers choose to use credit to finance purchases this is a separate issue.
7 Although some market analysts do so reasonably accurately.
8 For each applicable caveat, “significant” has been defined by the Bank as having a cumulative impact of at least 0.25 percent on the price level over a twelve month period.

Reserve Bank Bulletin, Vol 59 No. 1, 1996
inflation has built up to a significant level. Consequently the series will not contain exactly the same components over time as smaller shocks will be included while larger (significant) shocks of an identical kind are excluded (Roger, 1995 discusses several alternative measures of underlying inflation).

III Operational framework

The current operational framework employed by the Reserve Bank is based directly on forecasts of inflation. No intermediate targets are set. To determine if monetary conditions should be tighter or looser than at present, the current inflation forecast is compared with the specified objective. If inflation is forecast to be outside the target band within the forecast horizon (the next two to eight quarters) then some change of policy settings is required.9

The Bank's forecasts are conventional in that assumptions are made about policy in deriving the published projection. The government's fiscal policy is assumed to follow the announced programmes10 (we do not attempt to forecast either the result of elections or the policies of a new government). Similarly for monetary policy, we assume as a starting point that our interest rates follow those of our trading partners with an allowance made for decreasing the risk premium as credibility improves. Lastly, we assume that the real value of the exchange rate will not change in equilibrium, and hence assume that on each occasion the exchange rate will appreciate by the difference between inflation of our trading partners and 1 percent (the middle of the target range for inflation) over the forecast period. (Schöofsusch, 1993).

Forecasts for inflation (generally produced quarterly) then proceed by assessing the risks in each sector and by it making clear how monetary policy will react if there is a deviation between actual outcome and the forecast value.11 In particular, the Bank cannot influence the specific combination of interest and exchange rates, so it needs to give an idea of the range of monetary conditions which would be consistent with inflation remaining within the target range.

Monetary policy influences inflation indirectly, working through a variety of channels. The most significant impact is through its effect on interest rates and exchange rates. The Bank has paid particular attention to the direct impact of the exchange rate on import prices and hence on consumer prices, as this relationship has proved relatively stable and takes effect over six to 18 months.12 The impact of real interest rates on wealth, investment, and consumption, and hence through to demand and prices, is both longer acting and less well defined. While we have used a "comfort zone" for the exchange rate as an indicator of the scope for allowable variation in the policy variables, we have not used the exchange rate or any other indicator as an intermediate target.

The Bank also considers a variety of other indicators including the shape of the yield curve and money and credit aggregates. Money aggregates have not been found to have sufficiently reliable links to inflation to be used as operational targets.

Given forecasts on the above assumptions, a range of paths for the exchange rate, and for interest rates can be derived that are consistent with price stability. Because interest rates and exchange rates both affect the level of activity (but may be subject to different influences, and may move in different directions over time), it can be useful to combine them to form a composite indicator of monetary conditions. The operational target would then be some weighted average of the exchange rate and interest rates which takes into account the different time horizons over which each is effective. This approach, used to some degree in other countries,13 has not been implemented in New Zealand although we have been exploring its properties in our research programme.

IV Operating procedure14

As banker to the banking system the Reserve Bank is able to influence short-term interest rates and thereby conduct monetary policy. Inter-bank settlement of each day's trans-

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9 The Reserve Bank inflation forecasts cover a period ten quarters ahead, although the major impact of a monetary policy action is thought to occur within two to eight quarters (Brooks and Gibbs, 1991).

10 Thus, in our latest September Forecasts we have incorporated some tax cuts, even though their exact shape is unknown, as the government has indicated that such cuts are likely if a set of conditions are met. Since we forecast that these conditions will be met we include the tax cuts within the forecast. However, as the exact size of the cuts is not known, our forecast may have to be revised.

11 The forecasting process is described more fully in Grimes and Wang (1994).

12 Over the last year the pass through seems to have fallen, although it is not yet clear whether this is a cyclical phenomenon or a shift in the coefficient.

13 Freedman (1994) discusses the use of a monetary conditions index, a combination of the short-term interest rate and the exchange rate, as the operational target of policy in Canada.

14 For a fuller discussion see Tait and Reddell (1992).
actions through the banking system is effected across registered banks’ exchange settlement accounts at the Reserve Bank. This includes settlements between the private sector and the Government, which holds its account at the Reserve Bank. As exchange settlement account balances are not permitted to be in debit at the end of the trading day any bank finding itself in a negative position at the end of the day is forced to borrow cash from banks with credit balances, or sell some of its Reserve Bank Bills back to the Reserve Bank. The only securities eligible for discounting are Reserve Bank Bills with 28 or fewer days to maturity, which are discounted to the Bank at a penalty rate.

Each day the Reserve Bank conducts open market operations designed to result in a specified target level of aggregate settlement cash being left in the banking system (currently $5 million). These targets are not achieved precisely, of course, due to the unpredictable component of the government’s transactions. Thus, by setting the settlement cash target higher or lower the Reserve Bank reduces or raises the probability that banks will be forced to obtain cash by discounting. In addition, the Reserve Bank may vary the size of the discount margin. Changes to these instruments force the interbank rate of interest upward or downward, as desired. Since expected future short-term rates influence the yield on longer maturity instruments, the ability to alter the very short-term money market rates of interest secures an indirect, but very significant, influence on most interest rates and the exchange rate.

An unusual feature of the New Zealand practice is the Reserve Bank’s method of adjusting money market instrument settings to obtain the desired exchange rate path. The instruments described above are used infrequently. There have been only three occasions over the 1991-1995 period on which the Bank altered any of these four settings. These infrequent adjustments, combined with more frequent public statements, have been sufficient to engineer a period of monetary relaxation from September 1991 to January 1993 and one of increasing stringency from January 1993 to the present. Short-term interest rates, represented by the 90 day interbank funding rate (the 90 day bank bill rate), fell from 12 to 4.5 percent, and later rose to 9.5 percent during this period.

Public statements, by communicating the Bank’s position on monetary conditions, indicate to the market the direction of movement required in operational targets. The transparency and clarity of our policy framework enables financial markets to understand how the Reserve Bank analyses conditions and predict how they will react to revised forecasts. At most times therefore, financial markets anticipate the Bank’s potential action and alter monetary conditions in a way that is consistent with price stability without the Reserve Bank having to act. Clearly a high degree of credibility is essential if the desired adjustment is to be forthcoming. By conditioning expectations in this way the need to adjust instruments directly is obviated. Even the settlement cash target has itself become more indicative of the policy intention rather than being the direct determinant of interest rates. The banking system, assisted by the current Reserve Bank liquidity arrangements, has become quite adept at operating with a minimal cash target. Thus recent changes in the settlement cash target, from $20 million to $15 million and then $5 million do not represent exact tuning but rather more they play the role of signals to the market.

V Performance

The success of the structure cannot be measured solely in terms of market acceptance, so having considered the institutional framework and operational procedures of the Reserve Bank, this section considers how effective monetary policy has been in practice. We concentrate our attention on the period from late 1993 until the present, this being the most challenging time for monetary policy. However, we begin our analysis rather earlier by considering factors that contributed to the unexpectedly rapid disinflation in 1991-92, before turning to the later period.

(a) The achievement of price stability

The first two PTAs signed under the Reserve Bank Act 1989 committed the Bank to achieving price stability within a specified time frame. The first agreement, signed in March 1990, set the date at December 1992. This was revised in December 1990 (after a change of governing party in Parliament) and the deadline extended to December 1993. However, the Bank was able to achieve its target of price stability by September 1991. Subsequently a new PTA, requiring that price stability be maintained, was signed in December 1992.

The success of monetary policy is shown in figure 1, which graphs the annual inflation rate since the introduction of the first PTA in March 1990. It documents the steady decline in inflation towards the 0 to 2 percent target, achieved in September 1991, and its subsequent stabilisation within this range over the next two years. Movement of the headline CPI inflation rate outside this range after December 1994 reflects the direct impact of the increases in interest rates on the CPI as monetary policy was progressively tightened from mid-1994. The direct impact of these interest rate rises on inflation through their inclusion in the CPI regimen was subject to caveat under the PTA. (The target for which the Bank is accountable, underlying inflation, was only breached in the June 1995 quarter and then by 0.2 percent.)

Reserve Bank Bulletin, Vol 59 No. 1, 1996
The period prior to 1991 was characterised by tight monetary conditions, as the Bank attempted to reduce inflation from the high levels of the 1980s. However, the fall in inflation which was achieved cannot be attributed solely to monetary policy. Fiscal policy, which has an impact on wages, profit margins and consumption through demand channels, was also tightened over this period, with the operating surplus diminishing from a deficit of around three percent of GDP in 1991 to a three percent surplus in 1995. In addition, the programme of liberalisation in the economy commenced in 1984 continued with further reductions in tariffs and other trade barriers, and ongoing microeconomic reforms. These reforms contributed directly to the downward pressure on prices by reducing the price of imported goods, and indirectly by increasing competition. Labour laws were also changed substantially with the Employment Contracts Act, which took effect in May 1991. This Act significantly reduced the degree of centralised wage bargaining and contributed to a substantial fall in inflationary pressures from the labour market.

As the effects of both monetary and fiscal policies fed through to demand, the Bank was able to allow a significant easing of monetary policy from September 1991 to January 1993. 90 day Bank Bill rates fell from around 9 percent to around 4.5 percent, and the TWI fell from 58.0 to 53.0. The explicit easing in 1991 came in response to concerns of an undershooting of the target to achieve inflation in the 0 - 2 percent range by December 1993.

The adjustment in real and structural policy will undoubtedly have aided the transition to price stability, but ultimately the task of maintaining stable prices rests with monetary policy. The next two sections therefore examine some of the challenges involved and shows how experiences to date have been incorporated into the Bank’s policy making process.

The early achievement of price stability was welcome but not explicitly planned. Policy was set to bring inflation down as fast as was thought reasonably possible. In practice the new framework, of which the Reserve Bank Act and monetary policy was a part, had a much more striking effect on inflation expectations than had been anticipated. Clearly this should be chalked up as a considerable success but it also shows the problems of forecasting in times of rapid structural change.

(b) Maintaining price stability

Although underlying inflation remained within the 0 to 2 percent range from the last quarter of 1991 to the first quarter of 1995 (indeed, its fluctuations were only in the range of 1 to 2 percent) this period covers some strikingly different economic conditions.

Following the easing in monetary policy above, the economy eventually began to show signs of a strong recovery. Real GDP rose by 3 percent in the year to
December 1992 and continued to grow vigorously thereafter. The strong growth of demand and a brief period of quite strong downward pressure on the exchange rate led the Bank to tighten policy in January 1993. Interest rates rose sharply over a short period of time and the exchange rate recovered. The increased interest rates were, however, short-lived. They served to attract large capital inflows and, aided by changes to tax laws and increased confidence in the Bank’s commitment to low inflation, short term rates fell from around 8.5 percent in January to under 5 percent by December 1993. In the year to December 1993 the TWI appreciated by about 4.5 percent.

The effects of a higher exchange rate did not begin to feed through to lower inflation until the December quarter 1994, much longer than had been expected. The 1993 September quarter CPI rose by 0.5 percent, although it grew by only 0.2 and 0.0 percent in the December 1993 and March 1994 quarters respectively.

The strong increase in the TWI through December 1993 and January 1994 gave rise to fears that as the effects fed through to activity and prices, inflation would fall outside the lower bound in the short run. Complicating the position were fears that falling interest rates would tend to exacerbate inflationary pressures over the medium term. This prompted a call from the Bank that an easing of upward pressure on the exchange rate was appropriate (Monetary Policy Statement, June 1994). The easing was assisted by a series of upward movements in US interest rates, beginning in February 1994, as the Federal Reserve Board sought to dampen emerging inflationary pressure in the United States. This led to a welcome easing in the exchange rate and a firming of interest rates in New Zealand. However, as US interest rates stabilised, the previous trend of a rising TWI and falling interest rates reasserted itself. Conditions did not begin to tighten appreciably until release of the June 1994 Monetary Policy Statement after which interest rates began increasing steadily. Some uncertainties in the political scene and the forecast by the Bank in September that headline inflation was expected to exceed 2 percent gave further impetus to the rise in interest rates.

Both the December 1994 Monetary Policy Statement and the March 1995 Forecasts by the Bank recognised that both economic growth and future inflationary pressures had been underestimated. The December Statement helped drive monetary conditions to their highest levels, which were then maintained through to the middle of October this year.

(c) Exceeding the target

It was not until the June 1995 Monetary Policy Statement that the Bank forecast that underlying inflation would exceed 2 percent, i.e. it was not until the quarter in which the overshoot occurred was largely complete that the Bank knew that it would be outside the target band. This was because the final straw which drove inflation over the edge was a large and short-lived surge in the price of fresh vegetables. (Although the Bank thought this excursion outside the target might last two quarters in fact it proved to be only one.) Since it is appropriate to ignore such a short seasonal variation when setting monetary policy, it could be argued that the Bank was technically behaving appropriately as the shock was significant, i.e. more than 0.25 percent on the CPI, even though this particular circumstance was not covered by the caveats in the PTA.15

The Bank did not choose to follow this interpretation and classed this small excursion as a breach of the PTA. The Minister of Finance immediately called for an official report on the performance of the Governor from the non-executive Directors on the Bank’s Board. In its reply, while regretting the breach, the Board argued that on the basis of the evidence available at the time the Bank took prudent decisions and could not reasonably have been expected to have anticipated events better. As it was, the Bank had acted earlier and more vigorously against inflationary pressures in 1994 than anticipated by much of the market and outside commentators.

The Bank’s judgement is that it ran policy too close to the edge of the range so that a shock pushed it through the band (Monetary Policy Statement, June 1995). Such shocks are to be expected and although this particular one could readily be regarded as bad luck, it illustrated the need not to push too close to the edge in future. In retrospect this episode has been good for credibility as the Bank has responded by altering how it sets policy to make a repeat less likely, and the Minister of Finance and the Board of the Bank have demonstrated how seriously they view the importance of price stability by treating a deviation, which would not cause any comment in most countries, as a matter of serious concern.

By mid-October it became clear that inflation was firmly on its way back down towards the middle of the range 6 to 18 months ahead and that the outlook for the real economy was weaker than suggested even in the September 1995 Forecast. When the September 1995 quarter CPI was published revealing that underlying inflation was back in the target range the Bank released a statement indicating that in the light of the weaker outlook for the

15 Unless one were to take an extremely mild view of what constituted a natural disaster.
real economy and hence inflationary pressures a limited easing of monetary conditions was appropriate. This has brought forward much of the easing that the Bank was expecting to allow towards the end of the year.

It thus appears that it has been possible to complete a growth cycle within the framework of the Reserve Bank Act with only a single quarter excursion outside the 0 to 2 percent band, despite recording 15 percent cumulative growth in real GDP during the four year period. Of course, inflationary pressures have not yet fallen away. Similarly, the shape of the current cycle in its downturn and recovery is by no means established and surprises both upwards and downwards are to be expected.

VI Lessons from recent experience

There are several lessons that the Bank has learnt from recent experience in operating monetary policy. In what follows we explore six of them.

(a) The difficulty posed by forecast uncertainty

The period leading up to the breach of the target described above illustrates some of the most important challenges involved in maintaining price stability. During early 1994 the Bank had to balance the risk of undershooting its inflation target in the short term with the risk of increased inflationary pressures further out. An explicit easing, while alleviating the short term concerns would increase the longer term inflation risks. Based on forecasts of inflation below 1 percent, and expected GDP growth of less than 4 percent, in the year to March 1995 (see Monetary Policy Statement, December 1993, and Economic Forecasts, March 1993), the Bank chose to accept the risks inherent in the conditions then current and took no action. That inflation never fell below 1 percent, and growth was substantially greater than expected, is now a matter of record.

Because there is a substantial lag between making adjustments to the stance of monetary policy and their ultimate impact on inflation, policy needs to be set on the basis of economic projections. But, by its nature, the forecasting process is inherently uncertain. The price-generating process typically contains a stochastic element and the structure of the economy is not known with certainty (Beaumont, Cassino and Mayes, 1994; Schoefisch, 1993). Further, forecasts for inflation depend on forecasts for a range of other variables, themselves subject to error. This suggests that the confidence interval surrounding the Bank’s inflation forecast could be relatively large.

An essential element involved in translating a set of economic forecasts into policy decisions is an assessment of the risks or uncertainties surrounding the forecasts. One way of doing this is to compare past forecasts with actual outcomes. It is particularly important that the Bank has a good indication of its forecast accuracy when inflation is close to its target limits.

By examining the forecast errors (the difference between predicted and actual outcomes) we can estimate the probability with which observed inflation will fall within the target zone. Brook and Connolly (1995) show that the Reserve Bank's four-quarter-ahead underlying inflation forecast has a 95 percent confidence interval of 0.8 percentage points either side of the central forecast - a total interval of 1.6 percentage points. That is, there is only a small chance that actual inflation will be more than 0.8 percent away from its predicted value. Conversely, as underlying inflation approaches the limits of the target band, the probability that inflation outcomes will exceed the target increases. For example, if the four-quarter-ahead forecast for underlying inflation is for 1.0 percent, the probability that underlying inflation will actually exceed two percent is near zero, but if the forecast is 1.75 percent the probability that underlying inflation will exceed two percent is 30 percent.

It is important to note that the forecasting record will probably give an overestimate of the relevant confidence interval, since the forecasts are based on the technical assumptions regarding the exchange rate and interest rates that we have outlined. (In the period prior to March 1994 the Bank’s projections were based on unchanged exchange rates.) Nor are expected shifts in economic policy settings always made explicit. For example, although tax cuts were widely expected prior to the June 1995 forecasts, they were not explicitly accounted for. The appropriate comparator would therefore be the forecast after the application of policy. This suggests that the ex-post errors probably overestimate the true, or best guess, errors.

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16 The Bank is principally concerned with the inflation outlook 6 to 18 months ahead as this is the period over which policy action has its most immediate effect. Beyond that, although the lagged effects of policy will feed through, there is still an adequate opportunity to respond to new shocks or changes in the behaviour of the economy. Forecasting errors further ahead will tend to be larger, but given that policy has the opportunity to respond during the longer period, forecast errors looking eight quarters ahead are not much larger on average than the four quarter errors. It is in the shorter period that there is a problem with lack of time for policy response.

17 De Belle and Stevens (1995) compare the inflation forecasting performance of the G7 OECD countries with that of the Reserve Bank of Australia. New Zealand compares favourably with the OECD countries, having the lowest forecast error of any country in their sample of G7 countries. By comparison the 95 percent confidence interval for Australia is in the order of +/-2.5 percentage points.
A further reason for large ex-post errors in some years will have been genuine shocks of the kind with which no policy can cope easily. Even with good forecasts, shocks will occur which push inflation out of the band ex-post, even though the unbiased expectation was that inflation would be in the centre of the band. The main factor behind the rise in inflation, and subsequent breach of the inflation target in the June quarter of 1995, was the unexpectedly high rate of expansion in the economy over the previous two years, compounded by large relative price movements in some sectors. The breach of the target appears to have been a combination of excessive demand pressures, especially in the more volatile sectors, such as construction, which alone contributed 0.8 percent to inflation, and a rise in fresh vegetable prices of 25 percent, about 0.4 percent of the total increase in underlying inflation (Monetary Policy Statement, June 1995). This latter followed mainly from climatic conditions with a drought in late summer followed by an unusually harsh winter.

The obvious policy implication to arise from this discussion is that, because the probability of breaching the band limits increases as the upper and lower bounds are approached, a policy aimed at maintaining inflation in the vicinity of the centre of the band will minimise the risk of exiting the band. This was made clear in the June 1995 Monetary Policy Statement where policy was to be aimed at the middle of the target range 6 to 18 months ahead. This does not represent targeting 1 percent, as the target is still 0 to 2 percent, but it does enhance the chances of the outcome lying in that range compared with the interpretation that the Bank had used earlier.

(b) Instrument instability

The size of the changes in short-term interest rates observed over the years raises the issue of instrument instability, namely, whether maintaining the inflation target induces large cyclical movements of interest rates and exchange rates. Large fluctuations will tend to exacerbate any trade-off between output and inflation. Instrument instability is a product of the interaction between various types of shocks, the power of policy instruments, the lags in decision-making, the time for the impact to come through and the width of the target band.

The question that arises in this context is whether the need to constrain inflation within a narrow band induces greater interest rate volatility than is desirable. The extent of the recent inflationary pressures that have emerged within a rapidly growing economy may have been generated from just such a cycle. It could be concluded that to prevent an undershooting of the target in 1994, monetary conditions were allowed to become loose in late 1993, yet within a year tight monetary conditions were required in an effort to prevent an overshooting of the target. An alternative conclusion that does not feature instrument instability remains the prime candidate, however. First, with the benefit of hindsight, conditions were allowed to ease too much in late 1993/early 1994 and the lower bound of the inflation target was not actually under any serious threat. Secondly, the Bank, along with most other forecasters, significantly underestimated the strength of growth in the economy, and consequently the degree of firming that took place in 1994 should have been greater and implemented earlier. With these changes the fluctuations in interest and exchange rates could have been smaller. However, it is not appropriate to take hindsight into account. One needs to be able to argue that it should have been obvious that policy was inappropriate at the time. Only then can the Bank avoid repeating the experience. Some improvement in forecasting ability is always possible, particularly as a longer period of experience develops after the main period of structural reform. (We also argue below that there may be asymmetry between the threats of lower and higher inflation.) The next, and most important, test of instrument instability will be how the firmer monetary conditions over 1994/95 affect output in 1996. Achieving a "soft landing" would indicate that our instruments are effective and stable.

(c) Operating at the end of the target range

The framework for setting monetary policy is designed on the basis that the Bank has reasonable scope to manoeuvre both upwards and downwards round the central forecast track. Thus the substantial short-run fluctuations which can characterise financial markets may occur without the Bank needing to take any compensating action. When the edge of the target range is reached this freedom only exists in one direction. As a result the Bank can become much more sensitive to shocks.

The Bank runs monetary policy by setting out every six months its view of how monetary conditions will need to develop to ensure price stability over the forthcoming period. This report (called a Monetary Policy Statement), which is required under the Reserve Bank Act, also explains the actions of the Bank over the previous six months so that it can be held properly accountable. These reports are published every June and December. In addition, as most New Zealand economic data are published quarterly, the Bank also publishes a forecast19 every March and September to show whether its views have changed in the

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18 The Bank is developing a new econometric model now that there is a reasonable run of data since the main reforms.

19 Under the title Economic Forecast

Reserve Bank Bulletin, Vol 59 No. 1, 1996
light of new information. During the intervening periods the Bank will also want to comment if there are unexpected developments which affect monetary policy, such as a rise in foreign interest rates.

Under normal circumstances the Monetary Policy Statements, the intervening Forecasts and occasional statements in response to shocks will be sufficient to keep monetary policy operating within the band required by the Bank for the successful maintenance of price stability. If monetary conditions show signs of deviating from desired paths then the Bank will also issue a statement as a signal to the market. Market participants respond to statements because the Bank’s threat of intervention is credible and therefore traders alter positions to safeguard their assets.

In a sense, therefore, having to take an action might appear to reflect some weakness in the Bank’s credibility. Alternatively, one might argue that actions will be necessary from time to time to demonstrate, particularly when a very hard decision has to be taken, that the Bank does indeed have the resolve to carry its policy through. This would therefore add to credibility, make it easier to implement monetary policy in the future and contribute to reducing the interest rate risk premium.

Statements are usually enough to bring about the desired adjustments, and are generally made infrequently. However, in the first half of 1995 the Bank found it necessary to reiterate its position on monetary conditions on at least six occasions. Eventually direct intervention was required to avoid an easing of monetary conditions. (See Appendix 1, Summary of Recent Public Statements by the Bank of Monetary Conditions.)

It is not possible to infer from this that the Bank’s ability to achieve any particular result was weaker in this period. Even if there is very limited reaction to a statement this may be because the market is expecting a statement and already pricing it in. In those circumstances there would only be a market reaction if no statement appeared or if its content were different from that expected.

The Bank had made it very clear in the December 1994 Monetary Policy Statement that it was very concerned to make sure that there was no easing in monetary policy given how close inflation was to the edge of the band. The market therefore needed more information about what would and would not be viewed as an easing in those circumstances.

The market came to expect an easing of short-term interest rates from February 1995 when indicators began to reflect clearly a downturn in the level of activity, and abating inflationary pressure. Signs that the US economy had also begun to slow reinforced this belief. Consequently 90 day bills gradually fell from 9.5 percent in December 1994 to just over 9 percent by June 1995 as indicators continued to show demand pressures were easing.

However, the Bank’s outlook was somewhat more cautious. It did not wish to act prematurely and endanger the inflation target, risking a more severe tightening later on. Although some indicators of activity had begun to show signs that the rapid pace of expansion and the strains on productive capacity had begun to abate, the Bank was focusing on the outlook further ahead. With underlying inflation expected to be very close to the upper limit of the target range in the June and September quarters, the Bank was concerned to return inflation to the middle of its target band by June 1996 and to run any risk of exceeding the target for longer. Given the lags with which monetary policy operates, this required interest rates to remain at their prevailing levels for some time. Any early easing would have been likely to result in inflationary pressures starting to build again soon after inflation had hit the middle of the band. There were also tax cuts planned for 1996 to be taken into account. Thus three effects were compounded, (i) the Bank was unusually concerned that policy should not ease because it was so close to or above the edge of the band, (ii) it wished not to repeat the experience of moving outside the band and so wanted inflation to fall to the middle of the band, not merely just under the upper limit, and (iii) there were additional inflationary uncertainties with the likelihood inter alia of tax cuts raising aggregate demand again in the not too distant future.

(d) The mix versus the level of monetary conditions

The Bank has always been aware that it cannot control the mix of the exchange rate and interest rates. In the first part of the 1990s up to the beginning of 1995 it had tended to emphasise the level of the exchange rate when describing the desired level of monetary conditions for the market, as this had been the more variable element in conditions and that which had the more direct impact on inflation. In early 1995 the market appeared to place a lot of stock by the level of short-run interest rates, both the 90 day rate and the floating mortgage interest rate, as an indicator of the Bank’s attitude to policy. An implicit floor of 9 percent for the 90 day rate was perceived to exist by the market, although in fact no such absolute floor, irrelevant of the exchange rate, existed.

The Bank wanted to get away from this erroneous, and indeed rather misleading, perception. Thus the June 1995 Monetary Policy Statement (MPS) drew attention to the mix of interest rates and exchange rates that could be compatible with the forecast inflation profile over the next

*Reserve Bank Bulletin, Vol 59 No. 1, 1996*
few quarters. The Bank suggested that an easing in interest rates would be acceptable if the exchange rate were to appreciate.

"...a somewhat higher level of interest rates could be coupled with a slightly lower average level of the exchange rate, or vice versa, without altering the overall degree of monetary policy pressure." (p37 June 1995 MPS)

A change in the mix did occur shortly after the June MPS as the exchange rate firmed to around 62.3 in mid July and interest rates fell below the 9 percent floor. Thereafter, however, the exchange rate began to fall, without an offsetting increase in interest rates. The problem for both the Bank and market was to distinguish which changes represented a shift in mix and which a change in overall conditions. In fact, in the Bank's view, the earlier fall in interest rates had not been sufficient to keep conditions the same and some tightening had taken place. Hence, when the pressure for a further fall came, the Bank felt it should say then there was some scope for it. However, that statement on July 10,

"...the Reserve Bank can accept some small market-driven fall in interest rates relative to those prevailing at the time of the Monetary Policy Statement",

served to reinforce the market's perception that a much more substantial easing was warranted rather than merely a return to the conditions at the time of the June MPS. Further statements were required to avoid such an easing, but conditions continued to challenge the floor which the Bank was prepared to tolerate. It therefore actually reduced the cash settlement target on August 11 and again on August 25 when the first response was insufficient.

It seems that the need to make many more statements than usual stemmed from a degree of confusion within the market. First, the Reserve Bank's views on the strength of the economy differed slightly from those of other forecasters, and second, it was no longer content to maintain an inflation rate close to the top of the range, so that the preferred degree of monetary stringency considered appropriate also differed. Emphasis on the overall level of monetary conditions as the appropriate indicator allowed some change in the interest rate/exchange rate mix, but the Bank's July 10 statement did not make the difference between easing and altering the mix sufficiently clear. Further statements went a long way towards establishing the size of the trade-off the Bank viewed as appropriate, but direct action was eventually necessary to restore firm monetary conditions to their desired level.

(e) Asymmetries in the process

Experience over recent years has provided some valuable lessons for the conduct of monetary policy.

A quick look at figure 3 shows that, despite the fact that the inflation target is 0 to 2 percent, actual inflation has been in the range 1 to 2 percent since 1991. This has not been the intention of policy which, until recently, has been largely indifferent about where in the range inflation was headed, provided it was clearly in the target range. The result could be just luck as this is only a four year period, or it could reflect characteristics of the economy or the policy reaction function. It does not appear that positive shocks are more common than negative shocks, but as inflation has fallen the distribution of price changes has become markedly more positively skewed and peaked (Roger, 1995).

Secondly, it appears that not only is the short-run trade-off between inflation and output non-linear but it is asymmetric - i.e., it is much easier to increase inflation than it is to bring it down (Hansen and Razzak, 1995).20 This gives a clear message for policy. It is extremely important to avoid inflation getting away in the first place. (Clark, Laxton, and Rose (1994) argue that even if the non-linearity and asymmetry are not proven we should act as if they were true, as the costs of being wrong are so much greater.) Thus, in setting policy we should take a much firmer line against the risks of higher inflation than against those of lower inflation. For, if we are wrong, the costs of adjustment upward are much less than those of adjustment downward.

This provides additional support for the Bank's decision to target the middle of the range 6 to 18 months ahead. It will lower the probability of ending up in the upper part of the range and also reduce the need to make costly adjustments (in terms of output foregone) when inflation threatens to breach the upper limit of the target range.21

However, it also emphasises the importance of acting early. Because of the lags in the operation of monetary policy, acting when the problem is obvious will tend to mean that the action is too late. We have to act when the fore-

20 Of course our observation of asymmetry in the past has to allow for the fact that policy reacted. In recent work the Bank has been using GMM estimates to eliminate this source of asymmetry from the assessment. Policy makers themselves tend to be asymmetric in their attitude to unemployment, which could help explain why with hindsight the costs of getting inflation down seem asymmetrically high.

21 The target is not 1 percent +/- 1 percent so it has not been found necessary to target a value in the lower half of the range. It is merely necessary to avoid a serious challenge to the upper bound by aiming low enough and the middle is likely to suffice.

Reserve Bank Bulletin, Vol 59 No. 1, 1996
cast is still relatively tentative. This increases the chance of jumping at shadows and changing monetary conditions unnecessarily. Thus there is a trade-off between incurring costs from greater variability in monetary policy and the greater costs from having to pull accelerating inflation down once it becomes established.

We have not seen any evidence as yet which would allow us to calibrate the trade-off. Examining the path of policy over recent years (Bowden, 1995) shows that the variance in both interest rates and the exchange rate has fallen markedly. Indeed, a feature of the New Zealand TWI has been its relatively low fluctuation compared with say the yen, the US Dollar and even the Australian dollar. The bilateral rates have been far more volatile than the TWI itself.

It could be argued that we face additional challenges from having a narrow target range for inflation. A primary consideration in choosing a target range is the variance that inflation can reasonably be expected to achieve, given what we know about the nature of shocks to which the economy is typically subjected. Caveats in the PTA allow suspension of the target for major, identifiable supply side shocks, but other smaller or non-quantifiable shocks must be accommodated, without frequent addition to the list of caveats, if credibility is to be maintained.22

Debelle and Stevens (1995) argue that there is an irreducible variance in inflation stemming from the unpredictable nature of shocks and from uncertainty about the structure of the economy. They show that as the variance of prices is forced to its minimum the variance of output increases. That is, as we approach the minimum, small increases in the degree of price stability come at the cost of substantially increased output volatility. The ambitious nature of a price stability goal directed towards achieving the minimum expected inflation variance requires a high degree of policy activism. Shocks to inflation must be countered quite quickly if inflation expectations are to remain constant, otherwise the output cost of returning inflation to its target is much higher and more prolonged. Accepting substantially higher variance in output may only bring a small reduction in price fluctuations. Therefore achieving this minimum may not be optimal if the policy maker also gives some consideration to stabilising output. This suggests a degree of modesty is warranted in claims about what monetary policy can do over short periods.

Applying Debelle and Stevens’ analysis to the New Zealand case suggests that, although our target range is narrow, it is sufficiently wide that the trade-off between inflation and output variance has little importance. Indeed, a policy which concentrates entirely on minimising the variance of output around its long-run sustainable trend, would not lead to any great increase in the variability in rate of inflation (scarcely surprising as this involves minimising output gaps).

(f) Monetary conditions

The use of one or other of the exchange and interest rates as indicators of the stance of policy can be misleading if the other then changes markedly. Although markets often focus their attention on the value of a particular variable for periods of time, there are strong incentives for a central bank to use a single index as an indicator of overall monetary conditions (as does the Bank of Canada, for example).

However, the construction of such an indicator is no mean task as one must be able to trace out the effect of each of the components (the 90 day interest rate and the trade-weighted exchange rate, for example) on inflation and decide upon the number of periods over which the effect has to be assessed (Bank of Norway, 1995). This poses very considerable econometric problems. The sectoral impact of the two is different and hence their impact will vary depending upon the sectoral source of inflationary pressure on each occasion.

Producing and using such an index would pose considerable problems except simply for assessing the trade-off between the components over a short period of time like the three months between forecasts. Giving markets a general idea of how the Bank views that trade-off might increase the ability to run policy without such frequent intervention as has been observed this year.

VII Concluding remarks

A key implication of the foregoing discussion is that timely monetary policy action to reduce demand pressure should reduce the variability of both output and inflation: there is no necessary trade off between the two. A delayed response, on the other hand, will lead to increased variability of output: but, more importantly, any initial gains will be more than offset by the resultant economic slow down. In this case price and output stability should be viewed as complements, not substitutes.

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22 Recent attempts to identify the sources of shocks to the New Zealand economy using structural VAR models have been inconclusive. Razak (1994) finds supply shocks to be far more important than demand shocks in explaining the variance of output, especially in the long-run. By contrast, Featherstone (1994) finds demand shocks to be the dominant source of shocks.
Achieving a timely response requires explicit recognition that lags in the transmission process necessitate forward looking policy choices. Policy must respond to excess demand pressures directly rather than to observed changes in inflation, i.e. it is the causes of inflation, rather than its manifestation, that is the appropriate policy indicator.

The New Zealand experience of targeting inflation has produced a period of strong growth and low inflation, an unusual combination in our recent history. Monetary policy has been able to contain inflation in a period of strong growth. The single quarter excursion outside 0 to 2 percent included a substantial effect outside the direct influence of monetary policy (adverse climatic conditions), and not accommodating it would have imposed output costs on the rest of the economy. Exceeding the target has, however, provided several valuable lessons, which has shifted the focus of monetary policy. First, it exposed the potential for breaches when policy is operated close to the band limits. Shocks to demand or supply may influence prices very quickly - inside the time frame in which monetary policy is effective. Providing a buffer, therefore, reduces the risk that these shocks will push inflation outside the target range. In the case of supply shocks which are not covered by the caveats, as occurred in the March quarter 1995, and which may be costly to offset, a buffer is especially important.

Secondly, it reinforced the relevance of both the interest rates and exchange rate components of monetary conditions. Consideration of both elements heightens our awareness of the different speeds with which each affects inflation and ensures our attention is clearly focused on the interaction between the two over the appropriate time horizon. It allows forward looking policy actions to reduce the average variance of both output and inflation, raising average output and providing a more stable environment for firms to operate and invest in.

Third, because money markets are extremely sensitive to news, with players always looking for any opportunity to make profits, the stability of the system requires the Reserve Bank to be very clear in its intentions, and its decision making framework.

Part of the success of monetary policy, both in reducing inflation and in maintaining low inflation, must come, in part, from a complementary fiscal policy. In the time that monetary policy has operated under the current framework, fiscal policy has also been contractionary. Spending cuts have helped dampen demand, while the fiscal surplus and repayment of external government debt has helped avoid any current account pressures that may arise in a rapidly expanding economy. Other measures to increase competitiveness in the economy, and labour market reforms in particular, have all served to stifle the inflation consequences of high growth, relative to New Zealand’s recent experience. It remains to be seen if monetary policy can be so effective when fiscal policy is more expansionary. While expected increases in government spending can be accounted for, unannounced spending increases, or ones that are unexpectedly large, may seriously threaten price stability in the short term. Increased government spending may also worsen the current account balance, leading to destabilising exchange rate movements. Real exchange rate shocks also present a very clear threat to price stability in a small open economy.

These possibilities aside, the New Zealand experience with an explicit inflation target has been positive. Along with the micro-economic and fiscal reforms, it has helped enable a sustainable higher rate of economic growth. The increased credibility and lower risk premium represents a clear welfare gain.
References


Reserve Bank of New Zealand, Economic Forecasts, March, Wellington.


Appendix 1

Summary of recent public statements by the Bank on monetary conditions

<table>
<thead>
<tr>
<th>Date</th>
<th>Comment/Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/06/94</td>
<td>News release at time of June MPS</td>
</tr>
<tr>
<td></td>
<td>&quot;...forecasts pressures that would push inflation to around 1.7-1.8 percent in late</td>
</tr>
<tr>
<td></td>
<td>1995 and 1996,...&quot;</td>
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<td></td>
<td>&quot;...Bank is comfortable with the slightly firmer interest rates seen recently, and</td>
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<tr>
<td></td>
<td>some additional modest firming in monetary conditions would reduce the risk of</td>
</tr>
<tr>
<td></td>
<td>inflation going above 2 percent...&quot;</td>
</tr>
<tr>
<td>01/09/94</td>
<td>Response to Reuters story</td>
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<tr>
<td></td>
<td>&quot;...Our approach has not changed. What is different now is that the prospect, fore-</td>
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<tr>
<td></td>
<td>shadowed in the quotation from our August 1991 Statement, of measured (headline)</td>
</tr>
<tr>
<td></td>
<td>inflation going outside the 0-2 percent range now looks likely for the first time...&quot;</td>
</tr>
<tr>
<td>08/09/94</td>
<td>News release at time of September forecasts</td>
</tr>
<tr>
<td></td>
<td>&quot;Given ... the firming in interest and exchange rates which has occurred since the</td>
</tr>
<tr>
<td></td>
<td>June MPS,... comfortable with monetary conditions at present&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;RBNZ projects underlying inflation to remain in 1-1.5 percent band over the next</td>
</tr>
<tr>
<td></td>
<td>three years ... but most risks to the inflation outlook remained on the upside ...</td>
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<tr>
<td></td>
<td>push headline inflation above 2 percent over the next year, ... but fall below</td>
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<tr>
<td></td>
<td>again by March 1996.&quot;</td>
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<tr>
<td>14/10/94</td>
<td>News release commenting on September inflation figures</td>
</tr>
<tr>
<td></td>
<td>&quot;...The recent firming in monetary conditions is therefore entirely appropriate</td>
</tr>
<tr>
<td></td>
<td>and should help to moderate those pressures over the period ahead&quot;</td>
</tr>
<tr>
<td>13/12/94</td>
<td>News release at time of December MPS</td>
</tr>
<tr>
<td></td>
<td>&quot;...recent firming in monetary conditions had been warranted and timely given the</td>
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<tr>
<td></td>
<td>signs that inflationary pressures had begun to emerge because of the economy’s</td>
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<tr>
<td></td>
<td>very strong growth...&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;...monetary conditions need to remain broadly in line with the current situation</td>
</tr>
<tr>
<td></td>
<td>if price stability is to be maintained...&quot;</td>
</tr>
<tr>
<td>31/01/95</td>
<td>Screen statement to financial markets</td>
</tr>
<tr>
<td></td>
<td>&quot;...the RBNZ’s current assessment of monetary conditions is that they are broadly</td>
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<tr>
<td></td>
<td>consistent with the price stability objective, though any fall in the 90 day bank</td>
</tr>
<tr>
<td></td>
<td>bill rate from current levels would be unhelpful at this stage&quot;</td>
</tr>
<tr>
<td>16/03/95</td>
<td>News release at release of March forecasts</td>
</tr>
<tr>
<td></td>
<td>&quot;...With underlying inflation projected to be close to the top of the Bank’s 0-2</td>
</tr>
<tr>
<td></td>
<td>percent target range for much of 1995, there is absolutely no scope for an easing</td>
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<tr>
<td></td>
<td>of monetary conditions at present...&quot;</td>
</tr>
<tr>
<td>18/04/95</td>
<td>News release at release of March quarter CPI result</td>
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<tr>
<td></td>
<td>&quot;This outcome is broadly in line with the Reserve Bank’s March Economic Forecasts&quot;</td>
</tr>
<tr>
<td></td>
<td>Commenting on these figures Dr Don Brash said &quot;...These results confirm the Bank’s</td>
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<tr>
<td></td>
<td>view that there is absolutely no scope for an easing of monetary conditions at</td>
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<tr>
<td></td>
<td>present&quot;</td>
</tr>
<tr>
<td>21/04/95</td>
<td>News release</td>
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<tr>
<td></td>
<td>Dr Brash reiterated the Bank’s position that there is absolutely no scope of an</td>
</tr>
<tr>
<td></td>
<td>easing of monetary conditions at present, adding that any further decline in 90 day</td>
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<tr>
<td></td>
<td>bank bill rates would risk undermining the price stability objective.....</td>
</tr>
<tr>
<td>16/05/95</td>
<td>Governor warns on interest rates</td>
</tr>
<tr>
<td></td>
<td>&quot;...any further decline in bank interest rates at this stage would risk refuelling</td>
</tr>
<tr>
<td></td>
<td>domestic demand and inflationary pressures...&quot;</td>
</tr>
<tr>
<td>29/06/95</td>
<td>June Monetary Policy Statement release</td>
</tr>
<tr>
<td></td>
<td>&quot;Monetary conditions must remain firm.&quot;</td>
</tr>
<tr>
<td>10/07/95</td>
<td>Monetary conditions to remain consistent with price stability</td>
</tr>
<tr>
<td></td>
<td>&quot;...the Reserve Bank can accept some small market-driven fall in short-term interest</td>
</tr>
<tr>
<td></td>
<td>rates relative to those prevailing at the time of the Monetary Policy Statement.&quot;</td>
</tr>
<tr>
<td>18/07/95</td>
<td>Change in monetary conditions unwarranted</td>
</tr>
<tr>
<td></td>
<td>&quot;...the June quarter CPI results released this morning did not provide any justifi-</td>
</tr>
<tr>
<td></td>
<td>cation for an easing in overall monetary conditions.&quot;</td>
</tr>
<tr>
<td>11/08/95</td>
<td>Cash target cut to keep monetary conditions firm</td>
</tr>
<tr>
<td></td>
<td>(Overnight TW1 low of 60.8)</td>
</tr>
<tr>
<td>25/08/95</td>
<td>Cash target cut from $20m to $15m</td>
</tr>
<tr>
<td></td>
<td>Reserve Bank acts to keep monetary conditions firm</td>
</tr>
</tbody>
</table>

Reserve Bank Bulletin, Vol 59 No. 1, 1996
(Overnight TWI low of 60.55)
Cash target cut from $15m to $5m
14/09/95 September Economic Forecasts release
Inflation pressures moderating
17/10/95 News release at release of September
quarter CPI result
"Inflation outlook more encouraging"
"...economic growth is slowing" and the
inflation risk has fallen, so "...there may
be room for conditions to ease a little
sooner than we had previously expected."

Reserve Bank Bulletin, Vol 59 No. 1, 1996