Donald T Brash: Inflation targeting 14 years on

Speech by Mr Donald T Brash, Governor of the Reserve Bank of New Zealand, at the American Economics Association conference, Atlanta, 5 January 2002.

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Mr Chairman, Ladies and Gentlemen

It is a great honour to participate in this session on inflation targeting this morning, and to share the platform with such distinguished practitioners of that art.

I was asked to speak first because my name comes first, by a rather narrow margin, when the four speakers are lined up alphabetically. It also happens that New Zealand was the first country in the world to adopt a formal inflation target, in the sense that we understand the term today, in the late eighties. Both of these facts give me some latitude about what to talk about, although when Jacob Frenkel invited me to participate in this panel discussion he stressed that I was not being invited to address the theory of inflation targeting so much as to talk about some of the lessons we have learnt from experience over almost 14 years. And that is what I propose to do.

Bernanke et al have defined inflation targeting as

"a framework for monetary policy characterised by the public announcement of official quantitative targets (or target ranges) for the inflation rate over one or more time horizons, and by explicit acknowledgement that low, stable inflation is monetary policy's primary long-run goal. Among other important features of inflation targeting are vigorous efforts to communicate with the public about the plans and objectives of the monetary authorities, and, in many cases, mechanisms that strengthen the central bank's accountability for attaining those objectives."[1]

I am very comfortable with that definition.

Has inflation targeting met its objectives in New Zealand?

Countries usually adopt inflation targeting for one or more of the following reasons:

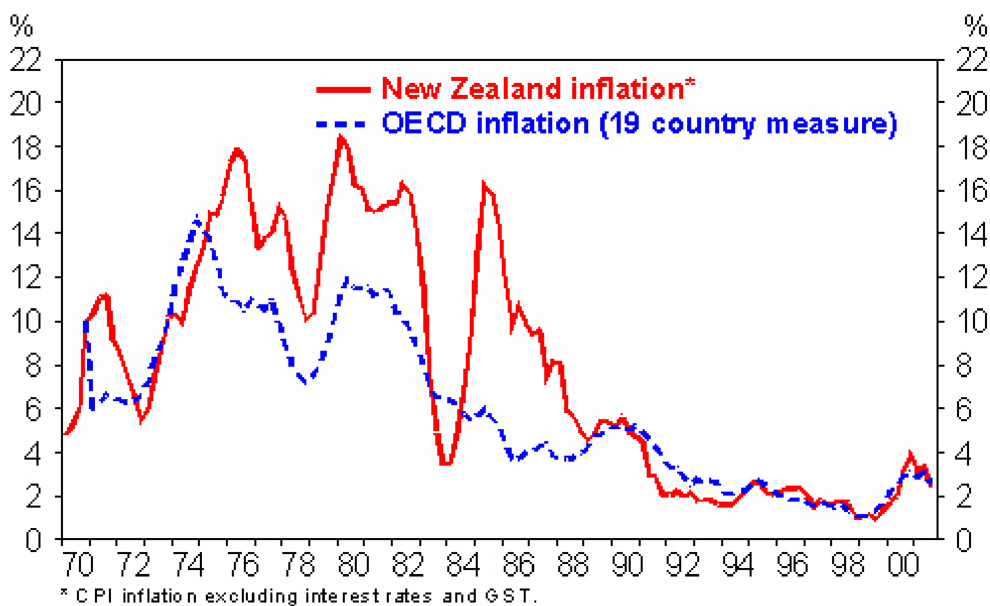
- A desire to find some credible anchor for monetary policy, often after a period of high inflation and/or the loss of a previous anchor (perhaps an exchange rate target which proved impossible to maintain or a money aggregate target which proved both difficult to achieve and less closely connected to the inflation rate than hoped for).
- A desire to give the central bank instrument independence, but to balance that with some clearer specification of what the central bank should seek to achieve with that instrument independence - in other words, to make it possible to balance independence with accountability.
- A desire to reduce the social and economic costs of disinflation by reducing the inflation expectations of both financial markets and agents in the real economy.

In New Zealand's experience, I have little doubt that the adoption of inflation targeting helped to provide an anchor for monetary policy. Certainly, there had been important progress in reducing inflation between the mid-eighties and the time a specific target was first discussed in April 1988, but in the year to March that year CPI inflation was still 9 per cent, and predictions by the Reserve Bank that inflation would fall below 4 per cent within two years were widely ridiculed.

[1] B.S. Bernanke et al., Inflation targeting: Lessons from the International Experience, Princeton University Press, 1999, p.4.

By 1991, inflation was under 2 per cent, and inflation has averaged around 2 per cent over the last 10 years. Of course, lots of other countries have also achieved low rates of inflation over the last decade, so it is impossible to be dogmatic about the extent to which inflation targeting helped in the case of New Zealand. But in my own judgement the single focus which inflation targeting required of the central bank was a material factor in focusing the Bank on that objective. Beyond the first year or two, we did not spend a lot of time debating what the optimal inflation rate might be. In terms of making the decisions about monetary policy, that was irrelevant because the target had been agreed. The only debate was about what degree of monetary policy pressure was needed to achieve that objective.

In the seventies and eighties, during most of which period New Zealand did not have an inflation target, New Zealand's inflation was not only markedly higher than it was in the nineties, it was also higher than inflation in other OECD countries. Inflation targeting helped us to achieve a substantial improvement in our inflation performance in absolute terms; it helped us to reduce inflation relative to inflation in other developed countries; it helped to reduce the volatility of inflation; and it helped us to maintain that improved performance.



Interestingly, and perhaps contrary to some impressions both in New Zealand and abroad, achieving this marked improvement in inflation performance was not bought at the cost of an increase in output volatility. Yes, output volatility was higher in New Zealand during the nineties than in, say, Australia or the United States, but that is hardly surprising: one would expect to see rather more output volatility in a very small, commodity-dependent, economy than in a much larger and more diversified economy.

But the nineties saw both a decline in inflation volatility and a decline in output volatility in New Zealand, as compared with the two previous decades.[2]

Inflation targeting has also come to be seen as an important aspect of the Reserve Bank's accountability. New Zealand had no tradition of central bank independence prior to the late eighties. Although more and more people could see the cynical way in which monetary policy could be manipulated by politicians who gave greater weight to their own re-election than to preserving the purchasing power of the currency, it was always going to be a challenge to get substantial political buy-in to full central bank independence. One of the things which made that political buy-in possible - to the extent that both major political parties voted for the legislation giving the Reserve Bank instrument independence late in 1989 - was the fact that it was Parliament which mandated price stability as the Bank's objective, and what that meant was to be formally and publicly agreed in a Policy Targets Agreement (PTA) between the Governor and the Minister of Finance. In other words, there was to be full instrument independence but not full goal independence. The legislation was drafted in such a way that the PTA could have been based around exchange rate targeting, nominal income targeting, or conceivably even money aggregate targeting, but in the context of the time everybody understood that the PTA would be based around the inflation target which had been announced more than 18 months earlier. The Bank was to be accountable for delivering that agreed inflation target, and the legislation made it clear that the Governor could lose his job for "inadequate performance" in achieving that objective.

There is no doubt that a desire to change inflation expectations was an important part of the motivation in the adoption of an inflation target in New Zealand. Then-Minister of Finance Roger Douglas was very concerned in March 1988 that, with inflation moving into single figures for almost the first time in 15 years (with the exception of a brief period during which all prices, wages, interest rates, dividends and rents were subject to tight administrative control), the public would expect the monetary authorities to ease up, and settle for inflation in the 5 to 7 per cent range. It was in that context that the Minister announced, during the course of a television interview on 1 April 1988, that he was thinking of genuine price stability, "around 0, or 0 to one per cent".

It is less clear that the adoption of an inflation target was in fact successful in reducing the costs of disinflation by reducing the inflation expectations of financial markets and the public - and this despite the fact that my senior colleagues and I devoted an enormous amount of effort to convincing the public of the seriousness of our intent. Guy Debelle has done a study of the sacrifice ratio involved in reducing inflation in Canada, Australia and New Zealand. For New Zealand (which had a specific inflation target) and Australia (which did not, at least until after its disinflation had been completed), that study suggests that the sacrifice ratios were similar.[3]

I would not myself want to put too much store by that result. New Zealand's inflation performance had been rather worse than Australia's for some years by the late eighties, and one would therefore expect to find inflationary expectations more deeply entrenched in New Zealand. Moreover, just two years into the disinflation process in New Zealand the Government introduced a 10 per cent Goods and Services Tax, which increased the CPI by an estimated 8 per cent. Then, in mid-1989, that tax was increased from 10 per cent to 12.5 per cent. Both moves presumably had some effect in maintaining inflationary expectations at a relatively high level.

Although I can not prove it, I believe that the inflation targeting regime did help to change expectations and behaviour at the margin.

I well recall that, in late 1990, not many months after the Policy Targets Agreement had seen the 0 to 2 per cent inflation target formally agreed between Governor and Minister, the head of the New Zealand Council of Trade Unions, Ken Douglas, wrote an article which appeared in one of the major newspapers.[4] The article argued that the Reserve Bank was focused on an undesirably narrow objective (namely, low inflation), but that, as long as that was the case, unions would need to moderate wage demands to avoid increases in unemployment. In the weeks which followed, he actively, and with very considerable courage, campaigned for moderate wage settlements as a way of reducing unemployment. I have little doubt that the inflation target played a part in encouraging

[2] "Output volatility in New Zealand", in Independent Review of the Operation of Monetary Policy: Reserve Bank and Non-Executive Directors' Submissions, Reserve Bank of New Zealand, October 2000.

[3] Guy Debelle, "The Ends of Three Small Inflations: Australia, New Zealand and Canada", Canadian Public Policy, March 1996.

[4] The Dominion, 31 October 1990.

employers and unions to adjust their wage settlements to levels which were quite quickly consistent with the inflation target.

There was also a very large reduction in the spread between the yield on New Zealand government New Zealand dollar long-term bonds and that on US Treasuries. In the mid-eighties, that spread had peaked at around 1000 basis points. By early 1990, that spread had reduced to around 400 basis points, and it has been well under 200 basis points for most of the last decade. Of course, most of that reduction in spreads was presumably simply the result of New Zealand's greatly improved inflation performance, but that improved performance was, as I have argued, in part attributable to the inflation targeting framework, while that framework probably also helped, at the margin, to convince markets that low inflation was likely to endure.

An inflation target agreed by Governor and Minister

In New Zealand's experience, the fact that the inflation target was, and still is, formally agreed between the Governor of the central bank and the Minister of Finance on behalf of the Government has been unambiguously positive. And I make this point because some observers have suggested that this need to agree the inflation target between central bank and executive/legislature is an undesirable restraint on central bank independence.

There is no question that it is, in principle, a restraint. In our framework, the inflation target is formally agreed between Minister and Governor, and can be changed either by mutual agreement or by the Minister unilaterally (if the Governor does not agree to a change) by the use of the so-called override provision in the legislation.

But, in a world of open capital markets, the fact that the legislation requires the Policy Targets Agreement, or any override of that Agreement, to be in the public domain means that no Minister can manipulate the target for cynical political ends. On the contrary, the Minister has every incentive to make it publicly clear that the inflation target he wants the central bank to deliver is consistent with price stability and a stable currency. Indeed, it is this obligation to be transparent about the objectives of policy, and about the *modus operandi* of policy, that is one of the most important aspects of the New Zealand inflation targeting framework, arguably as important as instrument independence itself. If a Minister were, say, to instruct the Bank to ignore the inflation rate and focus instead on increasing the growth rate - as he could do by invoking the override provision - markets would almost certainly deliver an immediate increase in interest rates across almost the entire yield curve (the Bank would still, of course, be able to anchor the overnight rate), together with a sharp fall in the exchange rate. The need to be transparent ties the hands of both government and central bank unless there are good and explainable reasons for change.

The fact that the inflation target is a matter agreed between Minister and Governor has effectively protected the Bank from criticism by the government, and in the almost 14 years during which inflation targeting has been in place, the number of government ministers who have attacked the Bank can be counted on the fingers of one hand. Given that the Minister of Finance is involved in agreeing the inflation target, it is not easy for him or other ministers to attack the Bank for having policy too tight unless inflation is, or looks likely to be, below the target. Of course, we are not fully protected from criticism, even from the government: given the long lags with which monetary policy operates, and the inherent uncertainty, we may still be criticized for the timing or magnitude of policy moves, though in practice that has been a very unusual event in our experience.

Moreover, agreeing the target between the Minister and the Governor has the important indirect effect of improving the consistency of monetary and fiscal policies while still leaving the central bank with instrument independence. By agreeing the inflation target with the Governor, the Minister of Finance is implicitly agreeing that if fiscal policy is changed, monetary policy may need to change also, potentially offsetting any stimulus (or restraint) emanating from fiscal policy.

We saw this most dramatically in mid-1990 when the Minister announced an expansionary Budget just months before the general election scheduled for late that year. Markets were concerned about the loosening in fiscal policy, and became uneasy about the future direction of policy. This was reflected in a rise in long-term interest rates and a fall in the exchange rate, to which we responded by tightening monetary policy. Immediately, an editorial in New Zealand's largest daily paper noted that the Budget had "rekindled inflationary expectations. The (Reserve Bank) was bound to lift interest rates.... Electors are frequently bribed to their ultimate cost. This time the independence of responsible

monetary control quickly exposes a fiscal fraud."[5] The main Opposition party campaigned in the election on a commitment to get interest rates reduced, not by leaning on the central bank but by "giving monetary policy some mates" through tighter fiscal policy and deregulation of the labour market.

Five years later, with several years of fiscal surplus behind it, the Government undertook to reduce income taxes subject to several conditions being met, one of which was that the Reserve Bank was satisfied that such tax cuts would not require a significant tightening of monetary policy.

To me, these are good illustrations of the benefit of having the specification of the objective of monetary policy a matter for formal and public agreement between government and central bank. It forms a kind of pre-commitment strategy.

The pre-conditions for inflation targeting

There is another issue related to inflation targeting on which I would like to comment, and that relates to the pre-conditions which must be met before a country can sensibly embark upon it. It has sometimes been suggested that inflation targeting is such a complicated undertaking that only countries with lots of economists with PhDs from good American schools, several sophisticated econometric models, and a good understanding of how the monetary transmission mechanism works dare to undertake it.

On the basis of New Zealand's experience, I would argue that this is quite incorrect. Of course, operating any monetary policy is easier, and more likely to be successful, if the central bank has access to competent people and has a good understanding of how the transmission mechanism works. But the core elements of inflation targeting are not particularly complex, or rather are no more complex than operating other approaches to monetary policy. When we embarked on inflation targeting, we had our fair share of competent staff, but we had no clear understanding of how the transmission mechanism worked and a rather inadequate economic model. Indeed, the economy had been subject to such dramatic change over the previous few years that no model based on past relationships would have been of much use to us. Notwithstanding those deficiencies, we have little doubt that inflation targeting has been successful in New Zealand. We certainly have no reason to believe that we would have been more successful if we had been trying to target nominal income or a money aggregate.

Evolution has been significant

Perhaps because we began inflation targeting at a time when the New Zealand economy was undergoing so much structural change, it was probably inevitable that our approach to the task would evolve quite significantly over the years after 1988.

In the early years, we assumed from international experience that raising interest rates would tend to reduce inflationary pressures and that reducing interest rates would tend to increase inflationary pressures. But we had no reliable evidence, indeed no evidence at all, which might guide us on the extent to which an interest rate change in New Zealand would change the inflation rate. For this reason, and perhaps because some of us retained deeply monetarist sympathies, we began the process of reducing inflation by adopting a very "quantitative" approach to the task - we determined to hold the liquidity in the banking system stable, something made relatively easy by the clean float of the exchange rate (in place since March 1985) and by a government commitment to fund any fiscal deficit by the sale of bonds. Interest rates across the whole yield curve were completely driven by market pressures, and fluctuated considerably.

In the late eighties, we realised that, while we did not know in any specific sense what effect a change in interest rates had on inflation, we did have a reasonable estimate of the effect of exchange rate movements on the inflation rate. We estimated that a 1 per cent movement in the exchange rate, as measured by a trade-weighted index, produced a change in the Consumers Price Index of about 0.4 per cent over the following year or so. And from this fact we developed an implementation regime which was for a time rather heavily oriented to the exchange rate.

[5] New Zealand Herald, 3 August 1990.

At no time did we have an exchange rate target in the conventional sense. But we did derive a "conditional comfort zone" for the trade-weighted measure of the exchange rate which seemed to us, given all the other factors affecting the inflation rate, to be consistent with progress towards, or later maintenance of, the inflation target. In other words, the comfort zone was moved up (an appreciated New Zealand dollar) when domestic inflation was projected to rise towards the top of the inflation target, and down (a depreciated New Zealand dollar) when domestic inflation was projected to fall towards the bottom of the inflation target.

We still set no interest rate, but rather made small adjustments to the target for the quantity of settlement cash in the banking system, with the aim of tightening or easing monetary conditions. And while we did not announce our comfort zone for the exchange rate, the financial markets usually had a very clear understanding of where that zone was, both because we were open about the exchange rate "pass-through coefficient" (0.4) which we were using in our inflation forecasts and because from time to time we would "clear our throat" to draw attention to the fact that monetary conditions were in danger of becoming inconsistent with the inflation target. We referred to our use of OMOs in the implementation of monetary policy - not so much "open market operations" as "open mouth operations".

We discovered that occasional "open mouth operations" were actually all we needed to implement policy most of the time, and we left the target for settlement cash unchanged for years at a time. In other words, the mere fact that the financial markets understood that we could adjust the quantity of settlement cash in the banking system, thereby tightening or easing monetary conditions, was sufficient to produce a change in monetary conditions consistent with our objective of meeting the inflation target, without the need for any actual change in settlement cash. It was in one sense the ultimate "no hands central banking", where we set no interest rate and no exchange rate, and left the target for settlement cash unchanged for many months on end. In time, what moved monetary conditions was our quarterly, published, inflation forecasts, and the widespread knowledge that, if push came to shove, the central bank was able to inflict financial pain on banks if monetary conditions did not move in a way consistent with the inflation target. This system also imposed an absolutely miniscule "monetary policy tax" on the financial system, since the amount of settlement cash in the system (on which we paid a below-market interest rate to discourage banks from holding excess balances) was never more than 0.1 per cent of banking system deposits, and was normally well below that.

As time went by, we moved away from a focus on the direct price effects of movements in the exchange rate. In part, that was because these price effects became progressively more muted, as several other inflation targeting countries also found in the nineties. In part too, it was because we developed a better understanding of the inflation process in New Zealand. We moved our forecasting horizon out somewhat, beyond the direct price effects of exchange rate movements to the more medium-term effects of the real exchange rate and real interest rates on inflation through their effect on the output gap. But we continued to implement policy through our ability to move the quantity of settlement cash in the banking system, and through making our views about the appropriateness of monetary conditions known through our quarterly inflation forecasts and occasional "open mouth operations ".

This worked effectively as a system for keeping inflation under control, but it had disadvantages from a public relations point of view. Occasionally, monetary conditions would become a bit too easy to be consistent with our inflation target, and we would draw attention to the fact that conditions should be somewhat tighter. And conditions would tighten, usually through an increase in market interest rates and some appreciation in the exchange rate. But we had no quantitative way of informing the market about how far conditions should tighten, with the result that we often had to make a "that's about far enough" statement a week or 10 days later. The financial market understood this system, but to the general public it sometimes led to the perception that the Reserve Bank was having difficulty making up its mind whether conditions were too loose or too tight. We needed some kind of quantitative indicator.

So in June 1997, we started expressing our views on the appropriateness of monetary conditions in terms of a Monetary Conditions Index. We announced that we would use an MCI based on a movement of 100 basis points in 90 day interest rates being equivalent to a movement of 2 per cent in the trade-weighted measure of the exchange rate, with the average conditions prevailing in the December quarter of 1996 being equal to 1000. Had this experience been a total success, I would have been happy to acknowledge our debt to the Bank of Canada for this experiment!

The experience was not a total failure. In particular, it finally persuaded financial market participants, at home and abroad, that we had no exchange rate target in the conventional sense. Prior to that time, and related no doubt in part to the "conditional exchange rate comfort zones" which we had used in the late eighties and early nineties, there had been quite a widespread perception that we were in some sense "putting a floor" under the exchange rate, with the result that investing in New Zealand dollars was a "one way bet".

I well recall a conversation with a fund manager in New York late in 1996, at a time when almost all observers felt that the New Zealand dollar was considerably over-valued. Referring to the action by the Swedish central bank to drive overnight interest rates to 500 per cent to defend the krona some years earlier, he asked me whether we would have "the courage" to do the same, to defend the New Zealand dollar. I assured him that there was absolutely no way that I would push New Zealand interest rates to 500 per cent to defend the New Zealand dollar. "Why not?" he asked. "Because we do not have an exchange rate target; we have an inflation target", I replied. "Clearly, if the New Zealand dollar falls sharply, this may have implications for the future inflation rate, and this might require us to push up interest rates somewhat, but the mere fact that the exchange rate declines does not require us to push rates to 500 per cent." He was appalled, and warned me that if my views became known on Wall Street, the New Zealand dollar "was done". I urged him to spread the message since, as indicated, the currency was almost certainly well over-valued by almost any measure at that time.

Adopting the MCI in June 1997, and expressing our views about monetary conditions in terms of a "desired" level of the MCI, finally ended the view that the Bank had a covert exchange rate target. It also gave us, for the first time, a quantitative way of telling the market by how much we wanted conditions to tighten or loosen. But the MCI was quickly, and to some extent unfairly, discredited, partly because it was introduced at the very outset of the Asian crisis. That crisis hit demand for many of New Zealand's exports very hard, and it was appropriate that the New Zealand exchange rate declined to reflect that external shock. We recognised that, and gradually reduced our "desired" level of the MCI through the second half of 1997 and the first half of 1998. But we failed to recognise the extent to which the external shock had affected the appropriate exchange rate, with the result that we reduced the MCI too slowly through that period. Even though we were still not setting any interest rate directly, the result was a sharp increase in 90 day interest rates to "offset" the sharp decline in the exchange rate, and we have acknowledged elsewhere that that probably exacerbated the short and shallow recession which took place in the second part of 1997 and the first part of 1998.

We relaxed the "bands" around the "desired MCI" in the second half of 1998, and in March 1999 finally moved to a conventional implementation regime, abandoning both the quantity target for settlement cash and, as a signaling device, the MCI, and adopting instead an Official Cash Rate, whereby the interest rate on overnight money in the system is kept within a range of plus or minus 25 basis points from the nominated rate.

Our approach to the inflation target itself evolved somewhat over the 14 years. In 1988, the target was simply expressed as "0 to 2 per cent". When the first formal Policy Targets Agreement was signed early in 1990, the target was still 0 to 2 per cent, and there was explicit provision for renegotiating the target if the inflation rate was affected by what we referred to as "caveats" - large external shocks to the price level (such as a big change in the international oil price), changes to indirect tax rates, and similar. The second Policy Targets Agreement, signed shortly after the general election in late 1990, extended the date by which inflation of 0 to 2 per cent had to be achieved from the end of 1992 to the end of 1993, and removed the need for renegotiation of the Agreement if the inflation rate were affected by "caveatable" items. Instead, the Bank was to ensure that CPI inflation excluding such "caveatable" items was within the target. This led us to calculate and publish what we referred to as "underlying inflation", which was CPI inflation less "caveatable" items. But this had all sorts of problems associated with it, not least a perception problem, with the Bank calculating the underlying inflation rate on which the Governor's performance was to be judged. Now we have a target of keeping the CPI between 0 and 3 per cent (the target was widened after the general election of November 1996) and a need to have a good explanation if inflation diverges from that target. The Policy Targets Agreement makes it clear that external shocks, changes in indirect tax rates, and similar factors constitute valid reasons for the inflation rate to diverge from the target for a time. (The latest PTA, signed on 16 December 1999, is attached.)

We characterise ourselves as "flexible inflation targeters" rather than "strict inflation targeters", in Lars Svensson's terminology. But there is debate even within the Reserve Bank itself whether we have always been flexible inflation targeters or whether perhaps we have evolved to greater flexibility than we had earlier in our inflation targeting history.

There is little doubt that in the early years our rhetoric was rather "strict". We had the challenge of convincing a sceptical public, made cynical by years of broken political promises about keeping inflation under control, that this time there was going to be a serious commitment to keeping inflation under tight control. So we emphasised that monetary policy had been given only a single goal by statute, namely "stability in the general level of prices", and I as Governor was liable to be dismissed for failing to deliver that objective. And we repeated that message, again and again. We recognised that the more quickly we could convince both financial markets and the general public that we were absolutely committed to achieving the inflation target, whatever the cost in terms of unemployment and lost output, the smaller that cost in employment and output would be. Allowing people to think that we were "soft-hearted", and would back off the inflation target as soon as unemployment started to increase, seemed a certain way to increase unemployment. (Having said that, and as indicated earlier, it is not unambiguously clear that demonstrating a strong commitment to a particular inflation target was in fact successful in improving the inflation/unemployment trade-off during the period of disinflation, though my personal view is that it helped.)

In those early years, it is probable that none of my colleagues themselves really believed that we would be able to get inflation within a 0 to 2 per cent target and keep it there.[6] But in 1991, two years ahead of the deadline imposed by the Policy Targets Agreement, inflation fell within the target for the first time, to the considerable surprise of many people both inside and outside the central bank. And in 1992, inflation was again within the target. And in 1993. And in 1994. By this time, many people, again both inside the central bank and outside it, were coming to believe not only that inflation could be kept inside a 0 to 2 per cent target, but also that keeping inflation within the target was not such a difficult job after all. Economic growth was among the fastest in the OECD; inflation was within the target; New Zealand dollar 10 year bond rates were marginally lower than the yields on 10 year Treasuries (in the first part of 1994). It all seemed pretty easy.

In the year to June 1995, underlying inflation increased to 2.2 per cent, outside the target for the first time since 1991. But that result was influenced in part by an adverse weather pattern in May 1995, which had sharply increased the price of fresh fruit and vegetables. We still thought that we would quickly return to within the inflation target. In the event, we were close to the top of the target, or marginally above it, from the June 1995 year to the December 1996 year.[7] We had all learnt that keeping inflation within such a narrow range was a major challenge, and could probably be accomplished only at the cost of undesirably high volatility in the real economy. We began talking about the inflation target as something to which we would be constantly aiming, but not something which we could or should deliver at all times, and that is how we regard the target today. We recognise that there is a trade-off, not between growth and inflation, but rather between the volatility of growth and the volatility of inflation, and we are prepared to accept some degree of inflation volatility to avoid throwing the real economy around too violently.

Of course, we have been immeasurably helped in doing this by the fact that inflation expectations have become more firmly anchored on the target. Were inflation expectations to become dislodged, we would be obliged to return to a stricter and more vigorous pursuit of the inflation target, even at the expense of some short-term output volatility.

Single decision-maker or committee?

In the New Zealand central bank, all important decisions are vested in the Governor, not in the Monetary Policy Committee or in the Board, even though we have both. We are by no means unique in this structure - laws in both Canada and Israel vest similar powers in the Governor. But the pattern is unusual internationally.

There are clearly advantages and disadvantages in all decision-making structures. When Lars Svensson conducted a review of the New Zealand monetary policy framework for the New Zealand government last year, he recommended moving from the present structure to one where monetary policy decisions are made by an internal committee of five, chaired by the Governor.[8] Interestingly, the

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[6] I was sufficiently new in the central bank, and sufficiently naïve, to assume that it could be achieved, and did not hesitate to sign the Policy Targets Agreement.

[7] Underlying inflation peaked at 2.4 per cent in the year to December 1996.

[8] Lars Svensson, Independent Review of the Operation of Monetary Policy in New Zealand: Report to the Minister of Finance, February 2001.

New Zealand Treasury, the non-executive directors of the Reserve Bank, and most of my colleagues argued against changing the structure in this regard. And the Government also decided not to change the decision-making structure, after consultation with other political parties in Parliament.

The arguments in favour of having a single decision-maker related essentially to accountability and communications.

The legislation under which the Bank currently operates was passed into law during the late eighties, when there was a heavy emphasis on improving the quality of public sector administration. Devolving more authority to public sector chief executives, and holding them responsible for their outputs, was central to that approach. So when I expressed surprise to the Minister who was responsible for the Reserve Bank legislation that the Bill envisaged the Policy Targets Agreement being between the Minister and the Governor, not between the Minister and the Bank, he explained nonchalantly that "We can't fire the whole Bank. Realistically, we can't even fire the whole Board. But we sure as hell can fire you!" So leaving the Governor in sole charge of monetary policy decisions makes it very clear who is to blame if inflation falls outside the agreed target.

Having a single decision-maker also makes communicating the Bank's monetary policy message relatively easy also. Several of my colleagues take an active part in helping to take the Reserve Bank's message to the general public, but the message is the Governor's, not their own. And this consistency of message is, I believe, helpful.

Having a single decision-maker is also helpful in the context of the way in which we publish our inflation forecasts. New Zealand is, to the best of my knowledge, the only country where the central bank publishes economic forecasts based on endogenous monetary conditions. In other words, our published forecasts attempt to answer the question: "What monetary conditions will be required to move the inflation rate back towards the middle of our 0 to 3 per cent target range over the one- to two-year horizon?" So the forecasts reveal not only where we think the Official Cash Rate is likely to be in the immediate future, but where, on the basis of present information and clearly specified assumptions about the exchange rate and other variables, it is likely to move over the next couple of years. There are pros and cons of this approach to forecasting - though we are convinced that there are more pros than cons - but I have been told by some of those who have served as members of monetary policy committees in other central banks that such an approach would be virtually impossible where decisions are made by committee. It is often hard enough to reach a decision on what the policy interest rate should be tomorrow without having to work out where it should be over the next year or two.

There are, of course, risks in having monetary policy decisions vested in a single individual. In our case, we believe that these risks are substantially mitigated by the clear specification of the target for monetary policy in both legislation and the Policy Targets Agreement; by the high level of transparency required by the legislation; by the way in which the Governor is appointed (by the Minister of Finance, but only where the individual concerned has been recommended by the Board); by the longstanding tradition of open discussion and debate in the Bank; and by the fact that the Bank's Board is charged with the primary responsibility of monitoring the Governor's performance, with an obligation to recommend the Governor's dismissal if directors are not satisfied with his performance under the Policy Targets Agreement.

Single mandate or dual mandate?

Finally, let me briefly touch on the vexed subject of the central bank's mandate. We clearly have a single mandate: monetary policy was required, by the 1989 legislation, to "achieve and maintain stability in the general level of prices". Period. There is no reference to other objectives, and I am entirely comfortable with that mandate, notwithstanding my healthy regard for New Zealand's most famous economist, the late Bill Phillips. In other words, I am entirely comfortable with the proposition that there is no long-term trade-off between growth and inflation; and that the best contribution of monetary policy to economic growth is the maintenance of low inflation.[9]

But I do want to suggest that those who make a major distinction between central banks with a single price stability mandate and those with a dual mandate, such as the Federal Reserve System, exaggerate the difference. Yes, there will be differences in the policy reaction to some kinds of shock -

[9] I do not propose to get into a discussion at this point about whether bias-adjusted zero inflation is better or worse than some very small amount of positive inflation.

for example, a central bank with a dual mandate might ease policy in response to a sharp increase in oil prices because of the adverse effects of such an event on real income, and therefore on demand, whereas a central bank with a single price stability mandate may well leave policy unchanged, or may even tighten somewhat, depending on circumstances.

But the reality is that both kinds of central bank regard price stability as the best contribution that monetary policy can make to economic growth. And once price stability has been reached, the actions of a single-mandate central bank will often appear identical to those of a dual-mandate central bank. (Of course, the rhetoric will often be different.) This is because most central banks these days focus their monetary policy attention on some concept of core or underlying inflation, and ignore the transitory impact on prices of exchange rate movements, movements in international oil prices, changes in indirect taxes, and so on. And focusing on core or underlying inflation means to a very large extent trying to assess whether there are unused resources in the economy. In other words, keeping core inflation under control once price stability has been achieved is to a very large extent about keeping the estimated output gap as close to zero as possible. Is the central bank output-smoothing, or focused exclusively on maintaining price stability? It may be very difficult to tell unless the central bank explains itself, and I would argue the two approaches are often very similar.

Even where inflation has been pushed away from target, it will often be difficult to tell the difference between the actions of a central bank with a single mandate and the actions of a central bank with a dual mandate. Yes, in theory there may be a difference, but in practice that difference may be very small or irrelevant. We saw that in 1996, when inflation in New Zealand was slightly above the then-target of 0 to 2 per cent. We chose to move back to the target over a number of quarters rather than more quickly, partly because we did in fact make the judgement that the economic costs of moving back to the target very quickly would have been unjustified, but also because we recognised that to have achieved a very early return to target would have required a drastic tightening of policy, with the severe risk that further down the track the inflation rate would have gone below the bottom of the target.

Personally, I am very comfortable with our single mandate, especially in the New Zealand context where we have had a long history of believing that monetary policy can do a whole range of things which we now realise have very little to do with monetary policy.

The end of history?

Is inflation targeting "the end of history" from a monetary policy point of view?[10] Certainly, I believe it has a huge amount to commend it, and the arguments against its adoption seem, in most situations, to be rather weak.

But there remain a number of important unresolved issues, in inflation targeting as in other approaches to monetary policy. How best should central banks communicate the conditionality of their inflation forecasts, while still conveying useful information? Why do movements in the exchange rate now seem to be having such small effects on inflation - does this reflect something about the nature of inflation targeting, or perhaps just some peculiarity of the most recent economic cycle? To what extent can central banks make sufficiently reliable estimates of the output gap, and to what extent do changes in the output gap now affect the inflation rate?

And perhaps the most troubling question for us all, inflation targeters and others: is there more to achieving monetary stability than calibrating the central bank's interest rate to keep the prices of goods and services purchased by the household sector stable? During the last decade or so, consumer price inflation has been exceptionally well behaved in most major economies. But at the same time, we have experienced episodes - indeed some severe episodes - of monetary instability in other guises, including asset price instability, financial system instability, and exchange rate crises. These experiences leave us with plenty of unanswered questions. What might Japan have done differently to avoid the bubble, and subsequent collapse, in asset prices - a collapse which has done so much damage to the Japanese monetary system and the Japanese economy more generally? And what might Japan do now, facing more generalised deflation? Are we entirely confident that, in 10 years

[10] The suggestion that monetary policy might have reached the "end of history" in the sense that Francis Fukuyama had in mind was first raised, and rejected, by Stephen Grenville, then Deputy Governor of the Reserve Bank of Australia, in an address to the 30th Anniversary Conference hosted by the Monetary Authority of Singapore on 20 July 2001.

time, we will be looking back at the recent episode of asset price inflation and deflation in the US with complete satisfaction?

We know that monetary policy can keep consumer price inflation under control, and we believe that inflation targeting has been an effective way of achieving that. But clearly there are plenty of challenging issues for our successors to deal with.