Six Years of Inflation Targeting

Address by Mr G.R. Stevens, Assistant Governor (Economic), to the Economic Society of Australia, Sydney, 20 April 1999.

In March 1993, Bernie Fraser, the Governor of the Reserve Bank, gave a speech to a group of Sydney economists. Included in the text was the following:

> The appropriate degree of price stability to aim for is a matter of judgement. My own view is that if inflation could be held to an average of 2–3 per cent over a period of years, that would be a good outcome.[1]

An increasing focus on achieving, and then maintaining, low inflation had been a feature of the Reserve Bank's rhetoric and actions since about 1989.[2] But this quotation is one of the earliest references that combines a general policy intention to maintain low inflation with specific numbers, which is the essential characteristic of an inflation target. In subsequent speeches the objective implicit in the above sentence was progressively made more explicit. This record is why I think it is reasonable to date mid 1993 as the time when Australian monetary policy-makers began to articulate a medium-term target for inflation. Such a dating has come to be reasonably widely accepted, even if not universally so.[3]

As we come towards mid 1999, then, we have six years of this regime now behind us. It is therefore of some interest to review our experience with it.[4] Has the target been achieved? How well? More importantly, has the conduct of policy within the inflation-targeting framework contributed to good macroeconomic outcomes? That is, has it produced low inflation, but also co-existed with, and promoted, good rates of economic growth? Has it prompted timely adjustments of policy from the point of view of coping with the business cycle? And has it promoted a reputation for economic stability and consistency in policy – that is, that most prized possession, 'credibility' – which has allowed a certain flexibility in response to shocks to the economy?

It will not surprise you to hear that I want to answer that the regime has served us well. Inflation performance relative to the target has

1. Fraser (1993), p. 2.
2. See Macfarlane (1998), and Grenville (1997) for a detailed historical treatment of this period.
3. International institutions, such as the BIS, OECD and IMF, have accepted the above dating. Bernanke *et. al.* (1999), by contrast, date the start of inflation targeting as 1994. References to inflation rates deemed to be acceptable or to a general desire to achieve and maintain low inflation could be found much earlier. But it is the combination of policy intent with particular numbers which constitutes an inflation target, which in my view pushes the dating to 1993.
4. Reviews of the experience of other countries with inflation targets are found in King (1997), Allen (1999), Thiessen (1998), and Heikensten and Vredin (1998).

been good, and Australia has enjoyed a growth performance which has been equalled by few countries. And I think that the credibility that this regime has brought to Australian monetary policy has given us much more flexibility than we have known before in the presence of shocks. Most particularly, policy has had considerable flexibility in assisting the economy to absorb the effects of first the Asian economic and financial crisis and then eventually the global financial instability which characterised the second half of 1997 and 1998.

The Introduction of Inflation Targeting

I have dated the adoption of the target as mid 1993, but a few more words are in order about this period. We were, of course, somewhat later to come to this regime than some other countries. New Zealand had pioneered the inflation-targeting regime from early 1990, as part of a fundamental change to their whole approach to economic management, which included quite substantial changes to central bank legislation. Canada had followed soon after. The United Kingdom, who have become perhaps the most articulate exponents of inflation targeting, took up the regime shortly after Sterling left the ERM in September 1992. Early in 1993, Sweden and Finland followed a similar route.

It is notable that these countries had in common a relatively poor inflation history, as is shown clearly in Table 1. Hence there was an acceptance that the discipline of some sort of announced objective was needed. Several had tried monetary targets; others had relied on exchange rate anchors; some had tried both. Even though those approaches had been tried and found not to be feasible for various reasons, each of these countries came to the conclusion that a 'just do it' approach to monetary policy, without explicit goals, was not likely to be regarded as credible. Hence the idea of conveying a quantitative objective for inflation as the key medium-term goal for monetary policy was a natural step.

This poor longer-term performance on inflation also, of course, characterised Australia. The average for the decade leading up to the target's adoption in 1993 was 6 per cent, which included two years or so of quite low inflation in 1991 and 1992. The average for the 1980s was 8 per cent. Hence the same logic for pursuing some sort of publicly articulated goal was at work in Australia as elsewhere. This force in favour of inflation targets was not at work in countries which had already developed a strong reputation for maintaining low inflation – such as Germany over a very long period and the

Table 1: Inflation in Inflation-targeting Countries[(a)]
Average annual rate; per cent

	Decade up to adoption of target	Since adoption of target	Since 1993
Australia	6.0	2.1	2.1
Canada	5.7	1.7	1.3
Finland	5.2	0.6	0.6
New Zealand	11.4	2.2	1.9
Spain	6.3	2.9	3.3
Sweden	6.5	1.5	1.1
United Kingdom	5.2	2.7	2.7

(a) Measure used for target purposes where available, CPI otherwise.

United States since the early 1980s. This probably goes some way to explaining the ambivalence which has usually prevailed towards suggestions for explicit inflation targeting in those countries.

For some time after mid 1993, we in Australia struggled to convince sceptics that we actually had a meaningful target. I can recall being invited in early 1995 to participate in a conference on inflation targets at the Bank of England.[5] The organiser told me that he wasn't sure whether we really had a target or not, but that he felt we should be given the benefit of the doubt! This anecdote I think captures the sentiments held by reasonably sympathetic observers at that time. Work on inflation targeting by academics[6] and international organisations at that time tended to ignore Australia, and financial markets were by and large sceptical.

There were reasons for such scepticism. One was that it is easy to say you will keep inflation low when it has come down in circumstances of a recessed economy, but another to keep it there under conditions of stronger growth. The Bank had been 'beating the drum' on inflation for several years, but Australia's inflation history tended to lead many people to view the fall in inflation which had occurred in the early 1990s as an accident, and to discount promises and require further good performance before being convinced that it was permanent.

Scepticism was heightened by the fact that the emphasis on inflation targets in Australia was not as single-minded as it might have seemed elsewhere. The same speech of Governor Fraser's quoted above also indicated some wariness about the formal and rather strict inflation targets which had been discussed in some circles at the time, arguing that simply announcing an inflation target would not, in itself, create a low-inflation environment. The words used by the then Governor put this nicely, when he said, 'to my knowledge, no country has reduced its inflation by incantation'.[7] It is worth recording in passing that nothing in the experience of inflation targeting, here or elsewhere, has changed this conclusion.[8]

The RBA was, from the start, honest enough to say that it cared about inflation but *not only* inflation. We were always conscious of avoiding being what Mervyn King has called 'inflation nutters'. We had reservations about very strict targets, because we didn't think policy could fine-tune inflation very well over short periods, and because it simply wasn't sensible to pretend that there were not short-term effects on the real economy of attempting to do so. There is a trade-off between inflation variability and output variability.[9] It was important, we believed, to take a medium-term view – hence the shorthand expression 'on average, over the course of the cycle' used in describing the target.

These views are now very mainstream ones, but there was a time in the early and mid 1990s when they tended to be seen as a sign of weakness. Even now, I would have to admit that the 'averaging' wording of our target is sometimes a source of confusion; I hope to do something to help clear that up later in this address.

A final problem we had in convincing people that we really were targeting inflation was that there was very little theatre associated with our regime. Not only was the target fairly general and flexible but there were no substantial changes in institutional arrangements. The Reserve Bank Act was not rewritten. There was no formal arrangement

5. The participation was in the form of Stevens and Debelle (1995).
6. See, for example, Leiderman and Svensson (1995), Ammer and Freeman (1994). This has changed to some extent over recent years. For example, Almeida and Goodhart (1998), Bernanke *et. al.* (1999).
7. See Fraser (1993), p. 3.
8. See, for example, Debelle (1996).
9. See Stevens and Debelle (1995), de Brouwer and O'Regan (1997) for Australia. Such trade-offs seem to emerge in the data in many countries. Achieving a place on the 'efficient frontier' of such trade-offs is the evaluation criterion for policy 'rules' of various kinds. There is a voluminous literature on this, for example, Henderson and McKibbin (1993), among many others.

by which the Government instructed the Bank to achieve a particular target, no threats of sanction on the Bank or the Governor if the target was missed, and little formal review process. In fact, there was no involvement of, or endorsement by, the Government of the day until much later. Unlike targets in the UK, Canada and New Zealand, the Australian target was articulated and introduced unilaterally by the central bank.[10] We just started to say we wanted to keep inflation at around 2–3 per cent, and went about doing it, in a necessarily gradual fashion. I think many observers were looking for more radical redesign.

One important presentational change we did make was a progressive upgrading of the quality and quantity of our published material on the economy. Financial markets and the media began to take much more notice of the quarterly pieces we put out. The extent of this change has been quite substantial. In early 1992, these documents were typically 4 or 5 pages in length. By the middle of 1994, they had grown to 15–16 pages. In more recent years, *Semi-Annual Statements* have on occasion approached 50 pages, and exceeded 20 000 words. (There has been a corresponding additional workload in the Economic and Financial Markets areas of the Reserve Bank!)

In 1996, the Governor and the Treasurer released the *Statement on the Conduct of Monetary Policy*, which stated the Government's support for the inflation target and its recognition of the independence of the Reserve Bank as stated in the Reserve Bank Act. At the same time, the Governor began to appear more frequently in front of a Parliamentary Committee to answer questions on monetary policy and, as it has turned out, a wide range of other issues. So these institutional arrangements have played an important role in enhancing the credibility of the policy regime. The change was evolutionary, rather than revolutionary, however, and in the early days this meant we had to work hard to convince people we really were serious about controlling inflation.

Performance in Achieving the Target

There are several dimensions along which we might measure the success or otherwise of an inflation-targeting regime. The simplest one is to examine the rate of inflation over the relevant period, and compare outcomes with the stated target. Table 2 gives some relevant information, and Graph 1 shows the time series for the year-ended rate of inflation in Australia over a long period.

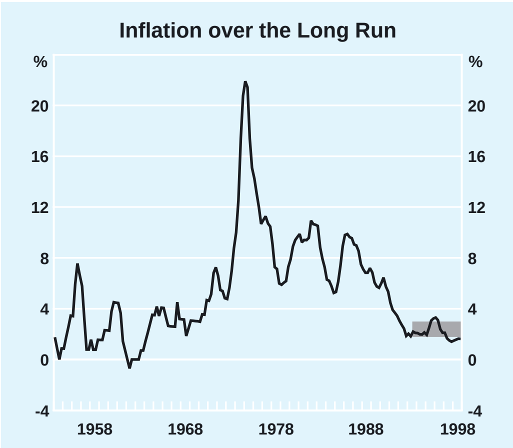
It is apparent that if by '2–3 per cent over the course of the cycle' we mean that inflation fluctuates around a stable mean somewhere between 2 and 3 per cent – and that is the most sensible understanding of the stated goal – then the target has been achieved. Since

Table 2: Inflation in Australia
Average annual rate; per cent

	1970s	1980s	1990–98	1993–98
CPI	10.1	8.3	2.0	2.0
Treasury underlying CPI	10.1	8.1	2.4	2.1
Median price change	..	7.9	2.3	2.0
Trimmed mean price change	..	7.9	2.4	2.1
Private-sector goods and services	..	7.5	2.5	2.3

10. We were not alone in this of course. The central banks of Finland, Spain and Sweden did the same, although a difference was that the fall from the ERM itself constituted a rather dramatic shift to a new regime in the case of both Finland and Sweden.

Graph 1



1993, the average rate of inflation has been 2 to 2¼ per cent, both for the CPI and a range of measures of underlying price trends. Until late in 1998, the usual metric was the Treasury underlying series, which averaged 2.1 per cent.[11]

The average inflation performance, then, was consistent with the stated target over a period of five and a half years. In fact it has been consistent with this target over the 1990s as a whole. In addition, fluctuations in inflation were considerably smaller than seen in other periods. From the perspective of post-War II history, as Graph 1 shows, inflation has been remarkably steady over recent years.

The peak inflation rate reached in the targeting period was 3.3 per cent, and the lowest was 1.4 per cent. For those who want to read the 2–3 per cent as a range, with 2.5 as a midpoint, the highs and lows were of nearly equal distance from that midpoint. (As has been stressed before, however, it has never been the intention that the numbers 2 and 3 should denote a range with a precise midpoint in the same way as, say, the somewhat wider bands specified in some other countries. The Bank has always thought of 2–3 per cent as a wide central objective.)

It is also by now clear that when we come to examine deviations from target, inflation has been a little below the target for longer than it was above. I cannot recall anyone predicting this outcome when we set out on the track of having an inflation target; in fact, I cannot recall anyone even contemplating it as a serious possibility. The scepticism we faced for quite some time over whether we would be able to prevent a return to high inflation seems like another world now.

More General Performance

But it is not enough simply to conclude that because the inflation rate averaged something consistent with the target, that everything was necessarily satisfactory. Additional criteria can and should be applied.

Specifically, three questions can be posed. First, has this outcome co-existed with good outcomes in the macro economy generally? If there were costs for maintaining (as opposed to achieving) low inflation (which I doubt), we wouldn't want them to exceed the benefits. Second, has the inflation-targeting framework prompted policy adjustments which were helpful in ameliorating business cycle fluctuations, heading off the developments of unsustainable booms or prolonged slumps? And third, how has that general performance compared with those of other countries? I propose to examine each of these in turn.

Output growth

Table 3 shows average rates of GDP growth for Australia for several periods. As a general benchmark, it offers a comparison with the OECD group of mostly developed,

11. Note that the *Statement on the Conduct of Monetary Policy* specified underlying inflation, though not the Treasury measure *per se*. As a matter of simplifying exposition, the Treasury measure, as the best known of the various alternatives, has routinely been used by the Bank in public comments about inflation, but a more extensive range of measures has also been available to interested parties and has always been monitored carefully by the Bank. Late in 1998, the Bank, with the Treasurer's agreement, announced that the target was to be in terms of the CPI in future.

Table 3: GDP Growth
Annual rates; per cent

	Australia	OECD
1973 – 1993	3.0	2.4
1993:Q2 – 1998:Q4	4.3	2.7
1970s upswing[(a)]	3.0	3.0
1980s upswing[(a)]	4.5	3.2
1990s upswing[(a)]	4.0	2.2

(a) Average annual GDP increase over the cycle as a whole. See Appendix for details.

high-income economies – the most relevant group with which to compare Australia. It is quite apparent that the recent growth performance of GDP has been very satisfactory compared with the outcomes of the preceding two decades. For the period from 1973 to 1993, GDP growth averaged 3.0 per cent. Since mid 1993, it has averaged 4.3 per cent. Of course, any starting point for such comparisons might be considered arbitrary: perhaps we should take the whole 1990s upswing as representative of the performance under low inflation policies, even though a formal target was not announced for the first part of that period. If we do so, we find growth averaging 4.0 per cent, compared with 4.5 per cent in the 1980s upswing and 3.0 per cent in the 1970s upswing. In this comparison, it is important to note that the current upswing, at 7½ years old at the end of 1998, is now longer than the 1980s one. In addition, the late 1970s expansion was, in fact, punctuated by at least two periods of very weak growth. So a simple comparison of average rates of growth does not do justice to the comparative longevity and stability of the present episode.

To be sure, 1990s growth is not of the same order as seen in the 1960s. But that is true elsewhere in the world as well, and the fact that average growth in Australia in the 1990s is well above 1970s experience compares well in world terms, and stands in contrast to the OECD average. And since by the end of the 1960s inflation had clearly risen, the growth of the latter part of that decade cannot necessarily be regarded as having been sustainable.

Having held inflation low, then, has not been associated with any apparent cost in growth. On the contrary, the sustainability of growth has been, if anything, superior in the low inflation environment. Since the benefits of price stability/low inflation are thought to be longer term, moreover, it may be that some incremental addition to long-run growth is yet to be seen.

Now of course it cannot be claimed that a monetary policy framework of pursuing an inflation target has been solely responsible for this improvement. Faster growth without inflation is another way of saying that productivity growth has improved, which is evident from the data on both labour and total factor productivity. Many policy reforms, and several non-policy forces, have been at work in bringing this about. Changes in the degree of competition in product and labour markets, reductions in important input costs as a result of the privatisation or corporatisation of utilities, the advent of improved technology, globalisation, changed work practices and so on – all these have been contributors to improved growth (and inflation) performance. Nonetheless, there is sufficient improvement that there is room for better macroeconomic policy regimes (including also fiscal policy) to be judged as having contributed. If nothing else, the commitment to keep inflation low has itself been exerting subtle but real pressure on businesses to work harder at containing costs and improving productivity.

Monetary policy and the business cycle

No-one can claim to be able to eliminate the business cycle. I would argue, however, that at three important junctures in the economy's development since 1993, the framework for monetary policy has prompted policy action which has been appropriate for the day.

The first of these episodes was in the second half of 1994. By August that year, it was clear that growth had accelerated strongly in 1993, and the labour market had tightened appreciably. At that stage, confidence that low inflation would be maintained was rather weak, and there was a risk that the rapid gains in employment would result in heightened pressure on wages, and through that prices. Financial markets were clearly concerned about that possibility. Although they were heavily influenced by international factors as well, long-term interest rates had risen sharply (and by more than in other comparable countries). Importantly, there had been no pick-up at all in actual inflation at that time, and nor would there be for about another year. Nonetheless, the inflation-targeting framework was suggesting that the time had come to begin a process of tightening policy, in anticipation of higher inflation in future, and with a view to containing that increase. By the end of 1994, short-term interest rates had risen by 275 basis points. The material in each of the three public statements announcing the interest rate increases was explicitly forward looking, emphasising control of inflation so as to sustain growth over the longer term.

As of early 1995, there was considerable uncertainty about whether policy had been tightened enough to control inflation. Markets anticipated further rises in short-term interest rates, and I for one felt at that time that some further tightening would probably be needed. This sort of uncertainty is always going to be present in monetary policy: have the adjustments been sufficient enough to deliver the desired results? But the main point is that the framework of inflation targeting – forward looking, with due allowance for the inherent uncertainty and the balance of risks – had helped to bring about early changes in policy settings in the required direction and of roughly the right magnitude.

It turned out, as we all know, that further tightening was not needed in 1995. Inflation did indeed rise during 1995, and reached 3.3 per cent in the year to March 1996. But growth in the economy slowed, partly in response to tighter policy in Australia and partly reflecting a worldwide growth slowdown. Inflationary pressures would likely not continue to increase in such a world, and so policy was kept steady. By the middle of 1996, it was clear that the increase in inflation had been effectively capped, at a little above the 2–3 per cent level. Monetary policy then moved into a new phase, and began to reverse some of the tightening of 1994 during the second half of 1996. The first of these moves surprised many (though not all) in financial markets, partly because it occurred at a time when recorded inflation was 3.1 per cent (although our forecasts, on which the decision was based, suggested lower inflation in the year ahead). The process of easing continued through the latter part of 1996, paused during early 1997, then resumed in the middle of 1997 when it became clear that even though output growth was picking up, wage behaviour had altered and inflation expectations were falling, so that prospects for inflation were for it to fall below 2 per cent for a period. This easing phase was driven, as the tightening phase had been, by our evolving assessment of the prospects for inflation, with proper account taken of the real economy. It seems reasonably clear in hindsight that the general direction of policy adjustments was appropriate. What was also interesting about that easing phase was that, unlike some earlier phases of easing (in early 1990 say), it was not accompanied by criticism that the reductions in interest rates were inappropriate, or politically motivated or the like. By this time, monetary policy had acquired a lot more credibility.

The third episode really began in mid 1997 with the onset of the Asian crisis. Here was something which, while its dimensions were highly uncertain initially, always had the potential to cause a major change in the international environment so far as Australia was concerned. Progressively the crisis deepened, resulting in savage contractions in output in a number of important east Asian trading partners. Japan turned down at the same time. By early 1998, many other Asian countries were in recession. New Zealand, the third largest destination for Australian exports, was also heading into recession. By the second half of 1998, the Asian and Japanese contractions had resulted in substantial declines in commodity prices. Even with effective re-direction of many commodity exports, this represented a substantial loss of income to Australians. With Australia's absorption continuing to increase strongly, the current account deficit widened noticeably. The exchange rate depreciated against the major currencies by about 20 per cent between the middle of 1997 and the end of 1998.

What was the response of monetary policy to these developments? Historically, the combination of strong domestic expansion, a weak world, widening current account deficit and a falling exchange rate has tended to produce concerns about inflation and higher inflation expectations, and a sense that things were getting out of control. This has usually resulted in a tightening of monetary policy. Had the events of the past year occurred at the end of the 1980s, I suspect that the debate on Australian monetary policy would have been over how much tightening might be needed and how bad a subsequent recession might be. While there was no shortage of pessimism at some stages during 1998 over economic prospects, it was remarkable how sensible the public discussion on monetary policy actually was. Some thought that a tightening might be needed because the falling exchange rate might feed into inflation. Others thought that easing might be required because of weakening growth. But in general, the discussion in the media and financial markets was conducted on the assumption that the Bank would and should conduct policy within the inflation-targeting framework. A high level of confidence has been maintained, moreover, regarding prospects for keeping medium-term inflation low, despite the weaker currency. So much so, in fact, that apart from a brief period during the period of intense market volatility after the Russian default, Australian 10-year bond spreads relative to US Treasury yields have remained at historical lows.

As we have spelt out in some detail in our regular reporting on the economy, monetary policy did not need to respond to the exchange rate decline and the various international forces with higher interest rates on this occasion. To some extent this reflects the somewhat fortunate conjuncture when the Asian crisis arrived: inflation was quite low, and the economy had a reasonable degree of spare capacity, so we could accept some decline in the exchange rate without immediate concerns over escalating inflation (which is not to say that the manner in which the exchange rate moved at some times did not raise concerns along other dimensions). I am acutely conscious, as well, that this episode is not yet completed – so we cannot at this stage look back on it and pronounce with certainty that it has been a success. But I would argue that in a very real sense, having a well-functioning and well-understood policy regime has been a considerable advantage, and has given us more flexibility than we have usually enjoyed in the past.

So on this test, whether policy adjustments (or non-adjustments) have generally been timely and in the appropriate direction given the economy's circumstances, and whether policy has been afforded some 'room for manoeuvre', as the Germans put it, I think the regime scores a good mark. Doubtless many will quibble about the timing of various movements of the instrument, and in hindsight argue that things could have been done a bit better. Perhaps so, but overall, it does not seem unduly difficult to defend the record of what has been done.

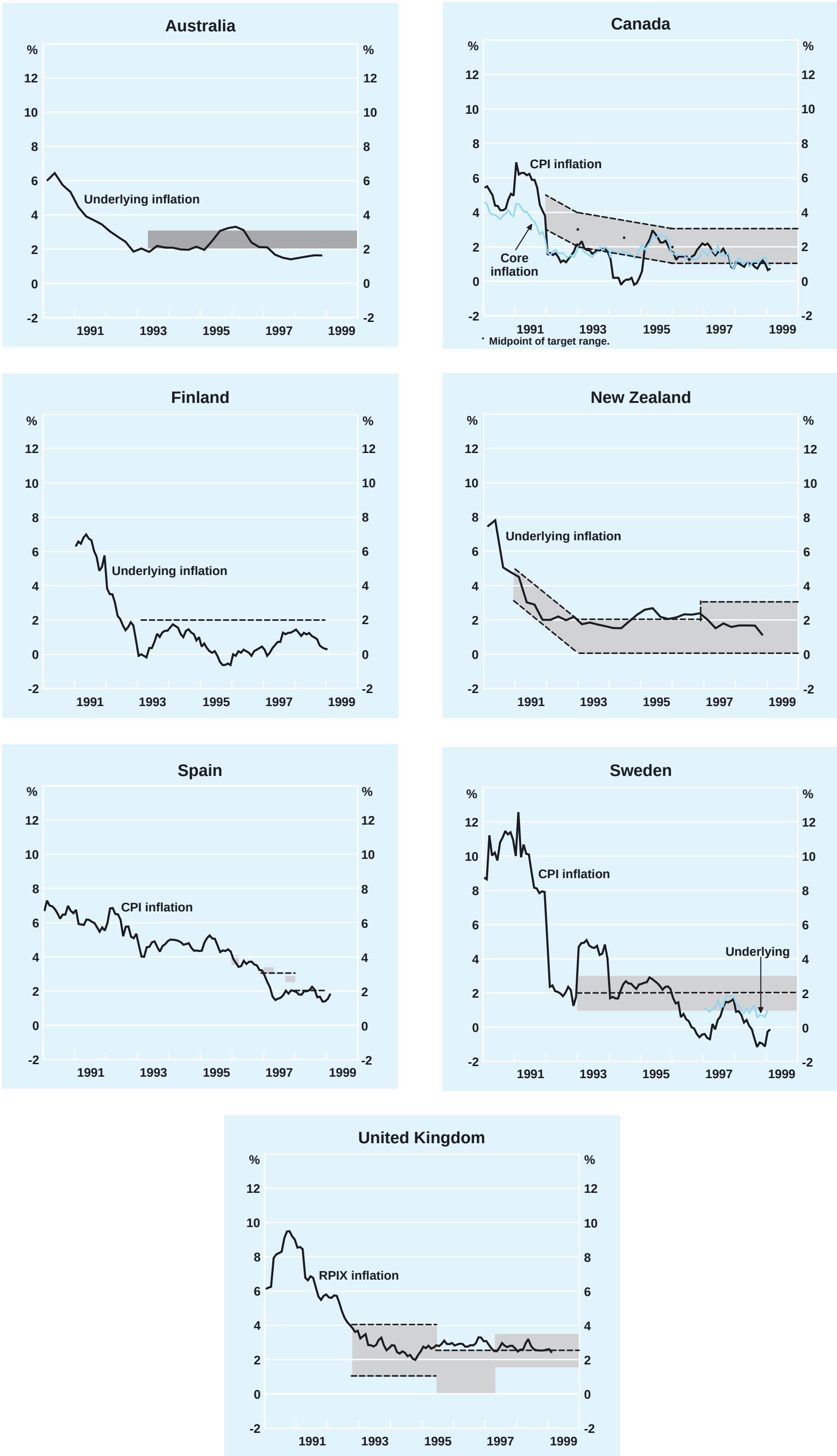
Comparative economic performance

The final evaluation criterion I want to apply is a comparison of performance with other countries, particularly but not only, inflation-targeting countries. For it could be that inflation has been low everywhere, and growth good everywhere, making it easier to achieve good performance in Australia. (Mind you, the fact that inflation in most advanced countries fell sharply in the early and mid 1980s and remained low thereafter did not stop Australia from continuing to run fairly high inflation for another five years or so. Nor has good growth performance abroad always been mirrored in Australia.)

For the inflation part of the equation, we can return to Table 1, which shows outcomes for the inflation-targeting countries since the

Graph 2

Inflation in Targeting Countries



adoption of their targets. Graph 2 shows the time series. Note that in the case of Finland and Spain, the inflation target is no longer the centrepiece of policy because both have joined the Euro area, and accept the ECB's monetary policy.

In general, it might be said that inflation outcomes have been fairly close to the stated targets in each case and vastly improved in comparison with earlier history. I think it might also be said that over the past year or two, inflation has tended to be below target or in the lower part of tolerance intervals where countries have such intervals. The exception to this is the UK, where inflation has been fractionally above the 2½ per cent target for several years until recently – though one would have to regard this as a fairly successful inflation outcome overall.

In the spirit of the analysis above, however, we want a broader economic comparison than that. Almost every country in the world has seen lower inflation over the past five years. So the question is not just how well the inflation-targeting countries fared relative to their target, but whether as a group they managed to achieve better inflation performance than might have been expected had they simply done as well as the world average, and whether this was done without cost to real growth. To answer this question in detail would take more time than is available today, but happily the staff of the IMF have done an exercise of exactly that nature, which was published recently.[12] I have reproduced the key table from that paper as Table 4. The data are only up to 1997, which explains some minor differences with figures quoted in my earlier tables.

Table 4: Inflation and Growth
Per cent

	Annual inflation(a)		Real GDP growth	
	Mean	Standard deviation	Mean	Standard deviation
Australia				
1980–92	7.2	2.4	2.8	2.8
1993–97	2.2	0.6	3.9	1.1
Other inflation-targeting countries				
1980 to adoption of targets(b)	7.8	3.5	2.1	2.6
Adoption of targets to 1997	2.3	1.1	2.5	2.1
Large non-inflation-targeting countries(c)				
1980–89	6.0	3.7	2.5	1.8
1990–97	2.9	1.2	2.1	2.2
Small non-inflation-targeting countries(d)				
1980–89	13.9	6.5	2.7	2.7
1990–97	4.6	2.3	2.8	1.9

(a) Headline consumer price inflation for all countries except Australia (the underlying CPI), New Zealand (the CPI excluding credit services) and the United Kingdom (the Retail Price Index, excluding mortgage interest rates). Inflation rates are calculated as the year-on-year change in the quarterly index.

(b) Dates used for adoption of targets are: Canada, 1991; Finland, 1993; New Zealand, 1990; Spain, 1994; Sweden, 1993; and the United Kingdom, 1992.

(c) France, Germany, Italy, Japan and the United States.

(d) Belgium, Denmark, Greece, Iceland, Ireland, Norway, and Luxembourg and Portugal.

Source: Brooks (1998), p. 91.

12. See Brooks (1998).

The results are quite interesting. First, inflation-targeting countries have achieved a reduction in inflation larger than that of a group of large non-inflation-targeting countries, though not as large as a group of small non-targeters, mostly small European countries who were required to converge to low inflation for EMU reasons. Not only that, but in the targeting period, the inflation targeters as a group have achieved higher output growth than before, and lower output volatility, in contrast to the large non-targeter group. This is evidence which favours the hypothesis that inflation targeting has made a positive difference to overall macroeconomic performance, more than would have occurred just because of better international circumstances.

The results also show a reduction in inflation and inflation variance in Australia. At the same time, growth in output increased, while its variance declined. So we shared in these two areas of improvement along with other members of the inflation-targeting group. But in both cases, the improvements were more marked for Australia than for the other inflation targeters. This is a pretty good story for inflation targeting, and for Australia in particular.

The author concludes, rightly, that it is still a bit early to draw more than tentative conclusions. But to date, the evidence suggests that Australia's flexible, medium-term approach to inflation targeting has paid very worthwhile dividends.[13] It is gratifying to see this receiving some recognition and it is not surprising that phrases like 'flexible' and 'medium term' are coming up more frequently in discussions of inflation targets by some other central banks.[14]

A Specification Issue in the Inflation Target

A question to which I promised to return is the specification of the inflation target as being 'on average, over the course of the cycle'. As noted above, this is really a shorthand description. In the past, I have explained this notion as follows: if we were to come back here five years from now, and find that the average rate of inflation has a 2 before the decimal place, we would regard that as satisfactory performance, and consistent with the target.

In some ways that is not quite a full enough description, because it does not say much about variance. We have not spelt out a tolerance interval, as have some of the other countries with inflation targets. This was partly because past experience with forecasting errors was such that a band wide enough to encompass genuine forecasting uncertainty would have been very wide indeed.[15] Another concern was that inflation expectations might gravitate to the top of a band rather than the middle. So we have been a little ambiguous on how much variance in inflation policy could expect to tolerate. But obviously, less variance is better, other things equal. An outcome where the average rate of inflation was, say, $2^1/_4$ per cent, but with inflation reaching 6 per cent in the upswing and -4 per cent in the downswing, would surely have to be counted as inferior to the one we have actually achieved, with inflation averaging $2^1/_4$ per cent and staying between $1^1/_2$ and $3^1/_2$ per cent. Of course, such an evaluation would have to take into account also the nature of the shocks which hit the economy, and the variability in real output.

13. Brooks (1998) puts it this way: 'It is not yet clear whether the relatively flexible approach to inflation targeting (as in Australia) is preferable to the more rigid approach taken in other countries, particularly New Zealand. The rationale for adopting inflation targeting discussed earlier would argue that regimes with a well-defined and transparent target, and a central bank that is held accountable for inflation outcomes, would gain in terms of enhanced credibility and lower costs of maintaining inflation, when compared with the Australian approach. A comparison of Australia's inflation and output performance with other inflation-targeting countries, however, suggests that Australia's approach has produced superior results thus far'.
14. See Drew and Orr (1999).
15. See Stevens and Debelle (1995), p. 89.

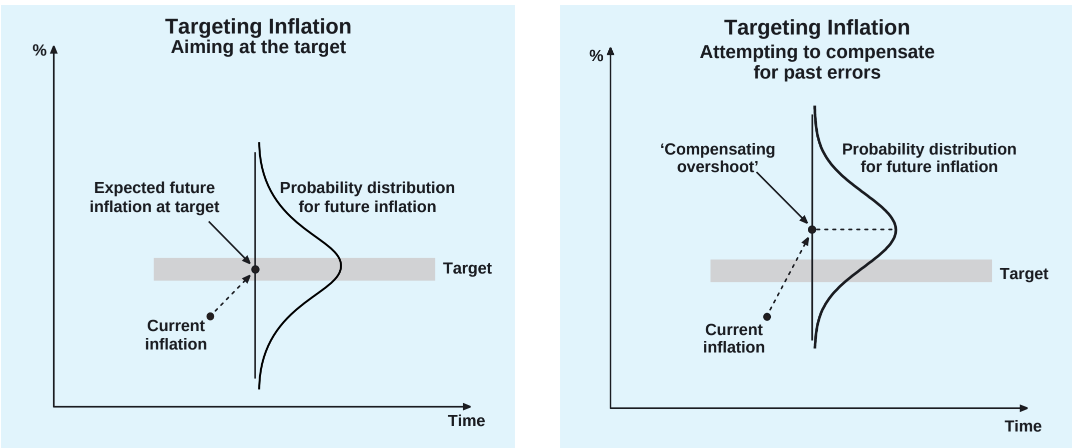
There is, however, a more serious potential ambiguity in the 'on average' wording, and it is the following. We sometimes hear the argument that since inflation has been under the stated objective for about two years, then policy could tolerate inflation going over the target for the same length of time, because at the end of four years, we would have achieved the target on average. I have even heard suggestions which border on the idea that policy should deliberately aim at such a temporary overshooting, as an offset to earlier undershooting, so as to ensure an appropriate average.

We in the Bank do not agree with this idea. It is altogether too mechanical an interpretation, and does not allow sufficiently for the inherent difficulties in policy-making, particularly the probabilistic nature of the process of making forecasts and devising appropriate policy responses.

Let me try to explain this in more detail. In principle, the inflation-targeting framework is, as Lars Svensson has pointed out[16], really inflation *forecast* targeting. The central bank cannot really promise that actual inflation will always be at the target; what it *can* promise is to so adjust its policy instrument that its unbiased *forecast* of inflation is at the target, at some suitable horizon. Provided shocks to the economy and forecast errors are roughly symmetric, over a reasonable period of time this will deliver an average inflation outcome which is consistent with the target. But it does so because *policy aims at the target, regardless of the current state of inflation and regardless of past undershoots or overshoots*. In the current environment, the fact that inflation has been below 2 per cent for two years does not mean we should do anything other than set policy so that inflation in the forecast moves to the 2–3 per cent area and then remains there.

Imagine an alternative strategy, of trying to offset previous misses. (This actually amounts to a price *level* target, which most observers agree is a stricter policy approach than targeting inflation.[17]) Setting policy such that the most likely outcome is a deviation from the stated target means that, because of forecast errors and shocks, there is a high probability that the outcome will be a bigger deviation than policy was seeking. As Graph 3 shows, if policy settings are such that the most likely outcome is a target miss, then not only is much of the distribution of likely future price outcomes above target, but there is a 50 per cent chance of bigger 'misses' than desired. If such a bigger miss occurred, then policy would be faced with seeking to offset *that* error – and so on. It is easy to see how this could generate much greater volatility in the real economy, and volatility which was not

Graph 3



16. See Svensson (1997).
17. See Fischer (1994) for a discussion of price level targets.

necessary at all for the purposes of maintaining low average inflation.

This issue is perhaps clarified most by imagining a world in which inflation has overshot the target for a period. Should policy try to offset that overshoot with an undershoot? Setting out to do so would run a serious risk of recession. I doubt many people would regard that as sensible. Nor can it really be argued that things are different in the cases of undershoots. Always seeking to offset an undershoot with an overshoot, but not *vice versa*, amounts to an inflationary bias in policy, and the inflation target would be exceeded, on average, over a long period.

So the correct policy is to always aim at the target, regardless of where you are today, and regardless of what has happened in the past. Bygones are, and should be, bygones. That does not mean that, should some shock occur which quickly pushes inflation from one side of the target to another, a draconian policy shift should necessarily accompany that in an attempt to immediately reverse the deviation. Again, policy should be set so as to return inflation to the target over a reasonable horizon.

Inflation Targets Six Years from Now?

It could be that the number of countries in the inflation-targeting group might decline at some stage, if Sweden and perhaps the UK were eventually to join the Euro area. Working the other way, there is certainly live discussion of the idea of inflation targets in the United States (see Bernanke *et. al.* (1999), Mishkin (1997)), and the ECB has a reasonably clear definition of price stability and a clear commitment to achieve it.

It might be argued that the environment in which inflation targets were developed – a legacy of high inflation, and high inflation expectations, with little credibility of monetary policy in the countries concerned – has been left behind. The world has moved on, it might be said, and inflation is no longer the threat it was. Everyone accepts inflation will be low, some countries are even battling *de*flation. In such a world, some will perhaps argue that policy should avoid an excessive focus on inflation *per se* and especially on particular numbers, in favour of a more broadly, less precisely, defined stability objective.

The world is certainly not static, and central banks have to be on the lookout for changes in the environment like anyone else. That's just common sense. But in all the agonising about the fine details of specific targets and so on, it is important to remember that the basics of good monetary policy remain pretty much the same. There are maybe six things we have learned about monetary policy in two centuries of economists and others thinking about it:

- monetary policy affects principally, or only, prices in the medium term;
- it affects activity in the short term;
- because of lags, policy has to look forward; but
- the future is uncertain, as is the impact of policy changes on the economy;
- expectations matter, so giving people some idea of what you are trying to do, and acting consistently, is useful; and
- an adequate degree of operational independence for the central bank in the conduct of monetary policy is important.[18]

A virtue of the current inflation-targeting regime in Australia is that we have never allowed an obsessive focus on particular numerical targets to obscure those principles. On the contrary, inflation targeting as the RBA has practised it has been a very effective way of putting those principles into practice. That, I am confident, will remain the case for the foreseeable future. The Bank is not about to 'dump' inflation targeting, or to suddenly renounce a reasonably broad and sensible formulation in favour of something that might be more convenient in the short term. That would be a rather short-sighted approach.

18. A seventh truth we could perhaps add is that monetary policy – and for that matter most other policies – usually can't do everything that people might hope for.

But neither, I suspect, will policy-makers allow their hands to be tied too tightly by an unduly mechanical, literalistic interpretation of inflation targets.[19] One possible danger of a very literal approach to inflation targeting is that it tends to promote the presumption that everything important for the economy can be reduced down to one statistic, namely the deviation of the inflation forecast from the target. Much of the time, the inflation forecast may well be a 'sufficient statistic' for monetary policy; but there will be times when it is not. In those times, there are advantages in having and using a degree of flexibility.

But regardless of where policy-makers may be on the literal-flexible spectrum, the essential framework employed in inflation targeting – seeking a low, single-digit, positive rate of inflation over the medium term; looking forward; making allowance for uncertainty; being realistic about what policy can achieve; being patient about short-term results in the interests of macro economic stability – will surely remain the favoured approach of the central banks which are practising inflation targets now. For that matter, something very much the same as that will be the choice of most policy-makers who have any regime which allows an element of discretion. In that sense, perhaps one day someone will say 'we are all inflation targeters now'.

19. One more quote from Bernie Fraser (1994): 'The cardinal rule is that the authorities will act decisively, when necessary, to keep inflation under control...This does not mean that minor fluctuations in headline inflation rates should elicit draconian responses which threaten to plunge the economy into recession for the sake of taking a fraction of a point off the CPI. It does mean that developments which are fundamentally at odds with holding inflation at around 2–3 per cent over a run of years will bring forth an appropriate monetary policy response'. This was written when the assumption was that it would be rises in inflation which would be the predominant problem. But the same sentiments apply symmetrically when inflation is below the medium-term target. There is no sense in doing things which would de-stabilise the economy in order to *add* a few tenths of a per cent to the CPI: patience and good sense are needed.

Appendix

Data

The GDP comparisons in Table 1 use the latest quarterly GDP estimates for Australia, and the OECD's published national accounts data for the OECD area. The OECD's latest estimate is used to generate an observation for 1998.

The timing of the cyclical upswings for Australia is as follows:

Cyclical lows	**Cyclical peaks**
June 1974	June 1982
March 1983	June 1990
June 1991	

I compute the average annual rate of growth between these respective dates. Note that this ignores two significant periods of weak growth, in 1977/78 and 1979/80, when growth in GDP on a year-ended basis fell to about zero; the recovery from the 1970s recession was quite weak.

Note also that this type of calculation overstates the economy's long-run growth trend since it ignores the periods of recession. Hence 20-year average growth rates are lower than those quoted above, since they incorporate two or three recessions.

For the OECD, I use the annual data published by the OECD. Growth rates are computed between 1975 and 1981, 1982 and 1990, and 1991 and 1998.

Inflation targets

Table A1 shows the main characteristics of the inflation targets which have been in force over recent years.

Table A1: Characteristics of Inflation Targets

Country	Date adopted	Target	Target variable
Australia	1993	average of 2–3% over the medium term	'Underlying' CPI up until October 1998; CPI thereafter.
Canada	February 1991	midpoint 2%, ±1% band	CPI
Finland[(a)]	February 1993	2%, no explicit band	CPI excluding indirect taxes, subsidies and housing-related costs.
New Zealand	March 1990	0–3%	CPI excluding interest, government charges, indirect taxes and subsidies and significant changes in import or export prices.
Spain[(a)]	November 1994	2%	CPI
Sweden	January 1993	midpoint 2%, ±1% band	CPI
United Kingdom	October 1992	2.5%, ±1% reporting range	Retail price index excluding mortgage interest payments.

(a) Now members of the Euro area.

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