# Glenn Stevens: Inflation targeting - a decade of Australian experience[1]

Address by Mr Glenn Stevens, Deputy Governor of the Reserve Bank of Australia, to South Australian Centre for Economic Studies April 2003 Economic Briefing, Adelaide, 10 April 2003.

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It is a pleasure to be here in Adelaide to take part in this Economic Briefing.

As the title of this address makes clear, I would like to look back over a decade of experience using an inflation target for monetary policy in Australia. Just a couple of weeks ago saw the tenth anniversary of a speech by Bernie Fraser, then Governor of the Reserve Bank, in which the outlines of our target can be seen.[2] It was, admittedly, a tentative beginning – there was no drum roll, or breathless talk of a new era. A reasonably careful reading of that speech was (and is) needed to see the contours of the approach to monetary policy which was being developed, and the framework was not fully formalised until the 1996 Statement on the Conduct of Monetary Policy.[3] It is perhaps for this reason that some commentators believe that inflation targeting in Australia in fact began much later.

But those who were there at the time – as I was – saw the material in that and a couple of other speeches of the period as quite significant, in that it associated intent of policy with numerical objectives for inflation, even if only fairly broadly defined ones. The behaviour of policy over the ensuing years was, moreover, quite consistent with those ideas. Hence I remain happy to claim that inflation targeting in Australia began about ten years ago in the first half of 1993.

So it is appropriate to mark the occasion with a look back at how inflation targeting has worked as a system. This is not the first review I have done – I drew some initial conclusions in 1999 after six years of experience.[4] But we now have four more years experience – four fairly eventful years – so we can refine our conclusions.

I shall argue that inflation targeting has been a success, on several criteria. It remains, in my judgement, the best model available for Australia. But it is not enough to look backward. It is only fitting that we consider the capacity of this framework to adapt to changing circumstances in the years ahead. I argue that it will be an adaptable system – though to meet some of the challenges may require even more emphasis on the medium-term nature of the target which has been a hallmark (and a strength) of the Australian approach thus far.

## Why Inflation Targeting?

First, some history. Graph 1 shows a long-run series for inflation in Australia, beginning in the mid 1950s. The post-World War II era was the time when persistently rising prices became a normal feature of economic life. Prior to that, there had been periods of inflation followed by periods of deflation, with relatively little drift in the price level over long periods. Through the 1950s, Australia had positive inflation, but it was quite low on average, even if rather variable. This was also the case through the first half of the 1960s.

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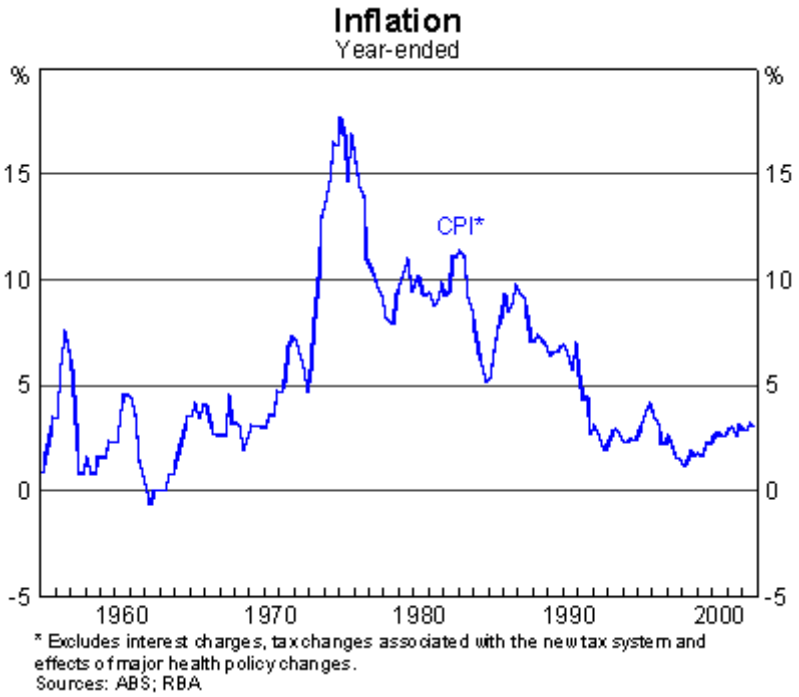
[1] Markus Hyvonen provided excellent research assistance for this speech.

[2] 'Some Aspects of Monetary Policy', Talk by the Governor, B.W. Fraser, to Australian Business Economists (ABE), Sydney, 31 March 1993, *Reserve Bank of Australia Bulletin*, April 1993, pp. 1–7.

[3] See Statement on the Conduct of Monetary Policy – available at http://www.rba.gov.au/MonetaryPolicy/Statement_on_the_conduct_of_monetary_policy_1996.html

[4] In an earlier speech ('Six Years of Inflation Targeting', Sydney, 20 April 1999 – available at http://www.rba.gov.au/PublicationsAndResearch/Bulletin/bu_may99/bu_0599_2.pdf), I treated in some detail the way the shift to inflation targeting was 'evolutionary rather than revolutionary'. Ian Macfarlane has provided a more comprehensive historical treatment of monetary policy (see 'Australian Monetary Policy in the Last Quarter of the Twentieth Century', Shann Memorial Lecture, University of Western Australia, 15 September 1998 – available at http://www.rba.gov.au/PublicationsAndResearch/Bulletin/bu_oct98/bu_1098_2.pdf).

**Graph 1**




By the end of the 1960s, it had become clear that, not only did prices always rise, but the rate of increase was getting larger. Inflation was trending higher, and this continued in the 1970s. As Ian Macfarlane has pointed out, Australian inflation was already at 10 per cent when the OPEC I rise in oil prices in late 1973 pushed global inflation up to levels rarely seen before. Australia's inflation reached 17½ per cent. It did decline thereafter, but by the end of the 1970s, was still running at about 10 per cent.

Following the recession of 1982–83, inflation fell to about 5 per cent, but quickly rose again as the recovery proceeded. Things were not helped by the large depreciation of the currency in 1985 and 1986, which pushed down the trade-weighted value of the Australian dollar by nearly 40 per cent in eighteen months. This was quite inflationary, given that a background environment of high inflation and relatively uncompetitive markets meant that price rises resulting from the exchange rate fall could be fairly easily passed on, quite unlike the situation we have seen in recent years.

The depreciation could have been more inflationary, had it not been for the Prices and Incomes Accord in place at the time. This framework allowed for wage claims under the highly centralised system then in operation to be 'discounted' for the estimated impact on the CPI of the depreciation. This was helpful in containing second-round impacts of the exchange rate change. More generally, the Accord framework provided for a reduction in real wages and lower inflation than would probably otherwise have accompanied the strong growth experienced through most of the second half of the 1980s.

Even so, by the end of the 1980s, Australia had experienced a period of two decades during which the rate of CPI inflation averaged 9 per cent. Not surprisingly, an inflation psychology was well and truly ingrained in the Australian community. Measures of inflation expectations showed them to be in double digits. The financial advice to a whole generation of Australians presumed that high inflation – with the incentives for tax-effective leverage that it produced – would be a permanent feature of economic life. Some people used to calculate the half-life of a dollar (about eight years) as a way of illustrating the erosion of the value of money. Another way of putting it was that a dollar in 1970 had purchasing power of 17 cents by 1990.[5]

[5] This is not the place to rehearse at length the corrosive features of inflation, though we do well not to forget them. Inflation surely cannot foster saving, or a productive allocation of capital to long-term ends. The poor are more likely to be hurt by

Through all this, various monetary policy frameworks had proven unsatisfactory. We had monetary targeting for about a decade, but targets were hard to hit in the regulated era, and even harder to hit after financial liberalisation, so that there was doubt about the role of money as an intermediate objective. We couldn't rely on the exchange rate as an anchor, because we didn't have the sort of domestic structural flexibility consistent with a pegged currency, particularly given the nature and size of the external shocks which hit the Australian economy. And a policy of completely unconstrained discretion lacked credibility precisely because there had been two decades of high inflation.

So when inflation came down during the aftermath of the recession in the early 1990s, to rates which were lower than anything seen since the 1960s, the question was how to take advantage of the opportunity to lock in low inflation as economic growth recovered.

Around the world, some countries were looking at a model in which there was no intermediate goal, like a monetary target, nor an operational goal, like a pegged exchange rate, but a numerical target for the final goal, namely inflation, combined with discretion to vary the policy instrument in pursuit of that goal.

In the New Zealand case, the attraction of inflation targeting was based as much on management and governance considerations as on the niceties of monetary theory: the thinking was that inflation was the variable for which the central bank should be accountable, so make it explicitly part of a formal agreement between the Governor and the relevant Minister.[6] Canada had its own slightly different conditions, as did the United Kingdom. What they all had in common was a relatively unsatisfactory history as far as inflation control was concerned.

It is no secret that the RBA had some reservations about the new approach. We felt that the very low target numbers and, more importantly, the quite narrow target bands espoused in some countries would prove too demanding in Australia (and probably elsewhere too). Nonetheless, the idea of articulating the goals of policy in terms of the ultimate objective made a lot of common sense. And we felt that having achieved low inflation, articulating a policy of keeping it low and behaving consistently with that stated policy did offer the prospect of combining a measure of price stability and good growth (which was, after all, expected to be one of the benefits of having price stability).

### Why '2 to 3'?

How did we come up with the particular formulation of '2 to 3 per cent, on average'? To be frank, this was to some extent serendipitous. We were already in that neighbourhood, with inflation down to about 2 per cent by 1992. When we looked around at the best performances on inflation, we saw first that no-one had managed to keep inflation within a very narrow band for long, and second, that the best average performances since World War II were in the 'two point something' region, with quite a wide degree of variation around that average.[7]

We formed the judgement that the Bundesbank, which was the inflation-fighting central bank *par excellence* of the 1970s, had been prepared to tolerate inflation of 2 per cent or a little more, but would always act to reduce inflation if it rose to 3 per cent or more. This seemed to be a fairly sensible approach. If we could achieve something like that in the 1990s, it would be a major improvement on

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inflation than the rich, whose affairs can be managed to protect them from, and in some cases to profit from, the effects of inflation. Society can learn to live with inflation by indexation, and adjustment to behaviour, but real resources are used in the process.

[6] Incidentally, it was never true, contrary to popular belief, that the RBNZ Governor's salary was linked to inflation performance. What was true was that he could be dismissed for failing to achieve the target.

[7] From 1952–1970, the figures for two leading low inflation countries were as follows:

| | Average | Minimum | Maximum |
|---|---|---|---|
| Germany | 2.0 | -2.6 | 4.6 |
| Switzerland | 2.2 | -1.4 | 5.4 |

our performance of the 1970s and 1980s. We could always argue later about whether the target might be a little lower or more tightly defined.

The 'on average, over the cycle' part of the formulation came from the observation that inflation was hard to control precisely, and that attempts to do so over short periods risked exacerbating the sort of economic instability we were trying to lessen. Experience has in my view borne out this judgement, even though the Australian approach was initially widely thought to be a bit too soft.

### How has performance turned out?

So much for the history of how we came to inflation targeting. Now I want to address performance. I offer several tests. First, have we achieved the target? Second, has the inflation psychology been removed from the economy? Third, has this been associated with any cost to growth, or has it instead been associated with good overall economic outcomes?

Inflation performance was shown in Graph 1 over a long period. The low average rate of inflation, and its greater degree of stability, since mid 1993 is quite clear. Table 1 shows some relevant data.

**Table 1: Inflation in Australia**[(a)]

| | 1970s | 1980s | 1990s | 1993-2002 |
|---|---|---|---|---|
| CPI | 10.1 | 8.3 | 2.3 | 2.3 |
| CPI ex interest | 10.1 | 8.1 | 2.8 | 2.5 |
| Treasury underlying[(b)] | 10.1 | 8.1 | 2.5 | n.a. |
| Weighted median[(c)] | | 7.9 | 2.5 | 2.2 |
| Trimmed mean[(c)] | | 7.9 | 2.5 | 2.2 |
| Market Sector ex volatile items | | | 2.6 | 2.3 |
| Target variable[(d)] | | | | 2.4 |

(a) Adjusted for RBA estimates of the effect of the new tax system
(b) Treasury underlying inflation series published from March 1972 to June 1999
(c) See Box D in May 2002 *Statement on Monetary Policy* for details of the definition of underlying inflation
(d) Treasury underlying series from September 1993 to June 1998. CPI ex taxes and health policy changes thereafter

In a paper given in 1995, my colleague, Guy Debelle, and I explained the target as follows:

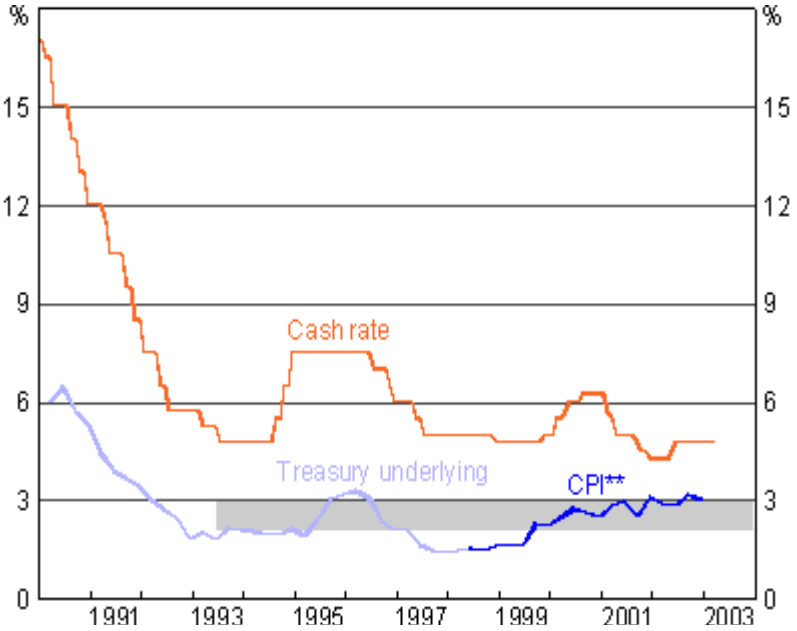
'…if, some years hence, we can look back and observe that the average rate of inflation has a "2" in front of the decimal place, that will be regarded as a success.'[8]

I can report that, after ten years, it is indeed the case that consumer price inflation, on any measure, has a 2 before the decimal place. For the target variable (which was the Treasury underlying CPI series until 1998 and the CPI thereafter[9]), and abstracting from the effect of the GST in 2000, the average inflation rate over the 38 quarters up to December 2002 is 2.4 per cent.

[8] G. Stevens and G. Debelle (1995), 'Monetary Policy Goals for Inflation in Australia', in A.G. Haldane (ed.), *Targeting Inflation*, Bank of England, London, pp. 81–100.

[9] The target was initially specified 'in underlying terms'. For practical purposes, the underlying CPI series devised by the Commonwealth Treasury was used as the yardstick. A key factor behind this choice was the inclusion of interest charges in the CPI for some years, which made for a perverse short-term relationship between monetary policy and inflation. From the September quarter 1998, the compilation of the CPI was changed to remove this component, replacing it with an alternative means of estimating housing costs. The Bank then indicated that the inflation target could be seen as applying to the published CPI. See Box D in the November 1998 *Semi-Annual Statement on Monetary Policy* – available at http://www.rba.gov.au/PublicationsAndResearch/Bulletin/bu_nov98/bu_1198_1.pdf.

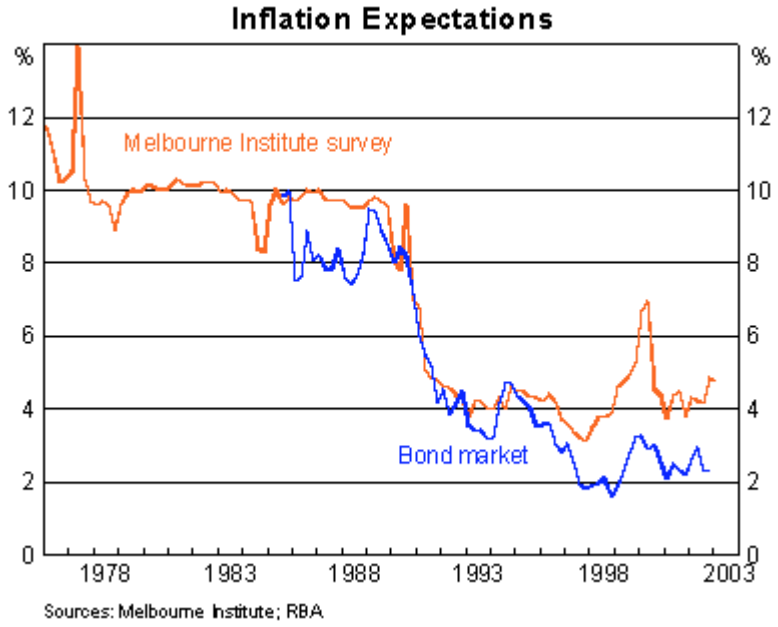
**Graph 2**




There have been a few cyclical swings in inflation over the period. But these swings were pretty moderate (which is, after all, the intention with inflation targeting). The targeted inflation measure varied between a high of 3.3 per cent and a low of 1.4 per cent. Measured in underlying terms using the median CPI, which is a measure often used by the Bank's professional staff, the lowest inflation rate in the period was 1.3 per cent in March 1998, and the highest was 3.2 per cent reached briefly in late 2001. Overall then, inflation has stayed within about 1 percentage point of 2½ per cent. This is, in my view, a most satisfactory performance.

Has the inflation psychology so prevalent in the 1970s and 1980s been removed from the economy? The answer is yes, with relatively few exceptions. Measures of inflation expectations are scarce, especially ones over a longer horizon. The Melbourne Institute's measure of expected inflation, derived from a monthly household survey and funded by the RBA over many years, showed a sharp break in 1990 when actual inflation came down. During the 1990s, it did not move much. It increased a lot in 2000 just ahead of the introduction of the GST which pushed the level of the CPI permanently higher and the rate of change of the CPI temporarily higher, and came down again shortly thereafter. The median measure averaged about 4½ per cent over the decade, which shows a persistent error in this measure of expectations (of the kind which is not supposed to occur in economics!). One reason for this is that there continues to be a significant proportion of households who anticipate inflation of 10 per cent or more even after a decade of inflation of 2½ per cent. Presumably our message has yet to filter through completely.

**Graph 3**




To the extent we can extract information from business surveys, they suggest that most businesses expect a low single-digit inflation rate to prevail for the economy in general. Perhaps more importantly, few businesses appear to believe they have 'pricing power', and individual price changes against a low inflation backdrop are much more transparent than was the case under high inflation. Witness, for example, the degree of scrutiny of price rises in the period after the introduction of the GST, or the attention routinely given to changes in petrol prices. Much of this is due, of course, to the more competitive nature of markets and the activities of the competition authorities, but the low inflation environment is also an important factor.

Perhaps the group who devotes most effort to anticipating inflation trends is professional investors in the bond market. Nominal bond rates are usually thought to embody an allowance for future inflation. The difference between the indexed bond yield – a real yield – and the conventional bond yield is a measure of the average rate of inflation anticipated over the life of the bond plus, probably, a premium for the variability of inflation. Initially, markets were sceptical that we would keep inflation to the targeted rate. But after monetary policy passed the first test in the inflation-targeting period – tightening in 1994 ahead of a pick-up in inflation in 1995, which was successfully capped and reversed – this measure of inflation expectations came down to levels which were consistent with the inflation target. There have been ups and downs in this gauge of expectations, which broadly corresponded to the cycle in actual inflation. But on the whole, from 1996 through to 2003, these expectations have been fairly closely matched to the 2 to 3 per cent target.

In general, I think we can say that while high inflation expectations have not been eradicated from every corner of the economy, generally speaking inflation expectations are low, consistent with the inflation target, and quite stable. That is no small benefit because it allows policy more flexibility than would otherwise be the case in assisting output in the face of shocks.

Has this performance on inflation been associated with any cost to growth? While we cannot know the counterfactual, I think everyone now acknowledges that Australia's growth performance in the past decade has been exceptionally good. Table 2 updates a table from an earlier evaluation of performance made by staff at the International Monetary Fund (IMF) in 1998, which compared Australia with other inflation-targeting countries and a group of non-inflation-targeting countries.[10]

[10] R. Brooks (1998), 'Inflation and Monetary Policy Reform', in *Australia: Benefiting from Economic Reform*, International Monetary Fund, pp. 63–94.

There are now more inflation-targeting countries than when that study was conducted and, of course, there are more years of experience. The Appendix details the construction of the data. For my present purposes, I will simply update the original table, but the Appendix also updates the sample of inflation-targeting countries.

**Table 2: Inflation and Growth**
Per Cent

| | Annual inflation[a] | | Real GDP growth[b] | |
|---|---|---|---|---|
| | **Mean** | **Stadard deviation[c]** | **Mean** | **Standard deviation[c]** |
| **Australia** | | | | |
| 1980–92 | 7.2 | 2.4 | 2.8 | 2.7 |
| 1993–present | 2.3 | 0.6 | 3.9 | 1.1 |
| **Other OECD inflation-targeting countries** | | | | |
| 1980 to adoption of targets[d] | 10.2 | 6.1 | 2.3 | 2.6 |
| Adoption of targets to latest | 2.7 | 1.3 | 3.0 | 1.6 |
| **OECD non-inflation-targeting countries[e]** | | | | |
| 1980–92 | 6.4 | 3.9 | 2.6 | 2.0 |
| 1993–latest | 2.2 | 0.9 | 2.9 | 1.8 |

(a) Headline consumer price inflation for all countries except Australia (the Treasury underlying CPI up to June quarter 1998 and the CPI since with an adjustment for the effects of tax and health policy changes), New Zealand (the CPI excluding credit services after December quarter 1989) and the United Kingdom (the Retail Price Index, excluding mortgage interest payments). Inflation rates are calculated as the year-ended change in the quarterly index

(b) GDP growth rates are calculated as the year-ended change in the quarterly GDP series. Where quarterly data are not available, year-average growth calculated from IMF data are used

(c) Calculated as the average of standard deviations across countries

(d) Dates used for adoption of targets are: Canada, 1991; Finland, 1993; Greece, 1998; Iceland, 2001; New Zealand, 1990; Norway, 2001; Spain, 1994; Sweden, 1993; the United Kingdom, 1992

(e) Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Japan, Luxembourg, Portugal and the United States. Finland and Spain are considered to have become non-inflation-targeting countries upon joining the third stage of the EMU in 1999, and Greece in 2001. The EMU is treated as a single entity after 1999

The table shows mean and standard deviations for inflation and real GDP growth for two periods: from 1980 to the adoption of inflation targeting, and since the adoption of inflation targeting. The data are for Australia and two country groups: other inflation-targeting countries in the Organisation for Economic Co-operation and Development (OECD), and other (non-inflation-targeting) countries in the OECD.

The essential results are unchanged from those of a few years ago:

- all groups observed a decline in inflation, much reduced inflation volatility, a pick-up in growth and reduced volatility of growth – it was a good period for most economies;

- compared with non-inflation-targeting countries, inflation-targeting countries saw a bigger reduction in inflation (from a higher starting point), a proportionately larger reduction in inflation variability, a larger pick-up in growth and a more marked reduction in volatility of growth (again, from a higher starting point);
- Australia enjoyed a smaller absolute variability in inflation, a bigger pick-up in growth, a bigger reduction in volatility of growth and a smaller absolute volatility in growth than either of the other two groups.

This is a particularly good story for Australia. It is apparent that inflation targeting has been associated not with reduced growth, but faster growth on average and less variable growth, as well as less variable prices. I will be the first to say that monetary policy cannot claim all the credit for this performance. There were, of course, major pay-offs during this period from a wide range of policy initiatives which aimed to liberalise markets, and make them more competitive. It is crucial that people understand the importance of these outcomes and the reforms which drove them. Monetary policy, as a demand instrument, cannot change the supply side of the economy, which is where the vast bulk of the community's gains in income and wealth originate.

That said, monetary policy has to be made in a way which is cognisant of, and adapts to, the changes taking place on the supply side. Without that adaptability, the gains from other reforms would not have been as easily or as quickly realised. It also has an important role in responding to cyclical demand-side shocks in a prompt, measured way. In general, I think the conduct of monetary policy during the period of inflation targeting has exerted a stabilising influence on the economy over the course of the business cycle, and has allowed the supply-side improvements to find expression in higher levels of non-inflationary growth.

## The Future

The record of inflation targeting in Australia is a good one. But it is not enough to look only backwards. We need as well to be asking whether the system we have is capable of coping with circumstances different to, and less advantageous than, the ones we have seen to date. I'd like to organise our thoughts here around three issues.

First, deflation. An argument might be made that fighting inflation is fighting the last war. Maybe the new enemy is deflation. Certainly, more countries have experienced deflation in the past year than for many years, if not decades, and in a great many more countries inflation is very low and renewed cyclical weakness could, if it occurred, push it down further, perhaps to or below zero in some cases.

There is no time today to go into detail about how we ought to think about deflation.[11] The point for today is that inflation targeting isn't just inflation fighting. It involves inflation fighting but it also involves deflation fighting in equal measure. To my knowledge, all the countries practicing inflation targeting view their targets as symmetric: undershoots are no better than overshoots. All targets are centred on a number above zero, partly to guard against unexpected lapses into deflation. Further, credible inflation targeting that helps anchor expectations of inflation above zero helps to avoid the worst kind of deflation, which is not a temporary decline in prices but a persistent and widespread expectation of falling prices.

The second potential challenge is dealing with adverse supply-side shocks. Monetary policy works on the demand side of the economy. When the prevailing disturbances come from that side too – as they have in the conventional business cycles which we have experienced in the past – monetary policy can dampen fluctuations in demand and by doing so it will be stabilising price fluctuations. When the shocks emanate from the supply side of the economy, on the other hand, things can be more difficult. Adverse supply shocks push activity down and prices up. Should this persist for any length of time, monetary policy is faced with more awkward choices, though there is no uncertainty about what its longer-term objective ought to be: to control inflation.

For most of its history, inflation targeting has coincided with, if anything, favourable supply shocks. We have had positive surprises on productivity, and in the supply-enhancing effects of internationalisation

[11] For my views, see 'Inflation, Deflation and All That', Sydney, 4 December 2002 – available at http://www.rba.gov.au/Speeches/2002/sp_dg_041202.html.

of production. These surprises tended to push output up and prices down. This has been, we have to admit, a very benign environment in which to operate monetary policy. It may not always be this way in future.

Inflation-targeting central banks will certainly find challenges if adverse supply disturbances occur, but this is also true of any other monetary policy model we could think of. I imagine that inflation targeters, if faced with a rise in inflation above target due to supply shocks, will focus on gradually bringing inflation down again. If inflation expectations are well anchored near the target rate, as they appear to be in most countries, there is no reason to believe this will be unduly difficult, and in fact there would in such circumstances be flexibility to take some time to achieve convergence back to the target, which could help adjustment on the real side of the economy significantly.

The third issue for the future is how, if at all, to respond to major movements in asset prices. This is the most difficult problem to tackle, both conceptually and in practice. Most people agree that asset price inflation *per se* should not be an objective of monetary policy. Most people also agree that, to the extent that asset price movements have implications for the course of the economy over the standard forecasting horizon of a couple of years – through wealth effects, for example – those effects should be allowed for in the setting of monetary policy. This is really just saying that in searching for the optimal policy setting to achieve the inflation target over a two-year horizon, all the relevant information should be taken into account. We can all sign up to that.

But there is a lot more to asset price dynamics than that. These events typically have a lower frequency than the business cycle frequency to which our normal policy practices are attuned. They build up over a number of years. Furthermore, asset price movements and their effects are often asymmetric. When asset prices are rising, they can easily co-exist with low CPI inflation. But because this is often associated with a build up in debt, the ensuing correction in asset prices can cause acute distress to borrowers. This means both that spending behaviour is affected and that there can be a risk of systemic financial instability because distressed borrowers often mean a deterioration in the asset quality of the lenders. This, if it occurs, weakens the economy significantly and can push inflation down sharply.

In that final phase of this asset price cycle, monetary policy will need to be easy. The question, however, is whether during the earlier phase it should be tighter than normal, in order to try to lessen the probability of a bust, at the expense of having somewhat lesser short-term growth and inflation lower than the announced target. Put another way, should policy accept a mild short-term undershoot of the inflation target in order to lessen the likelihood of a much bigger undershoot in three or four years' time?

Here there is less agreement. Some people argue that there is a strong case for this additional response, particularly on the grounds that if the costs of the bust are large it is worth paying some cost to avoid it if at all possible. Others argue that a modest response of policy to the asset price problem would be ineffective in dampening the asset price dynamics, and that an aggressive response would bring on the problems that policymakers are setting out to avoid. In this view, policy should stick to its usual macroeconomic concerns, responding to any after-effects of the asset price cycle when they emerge.

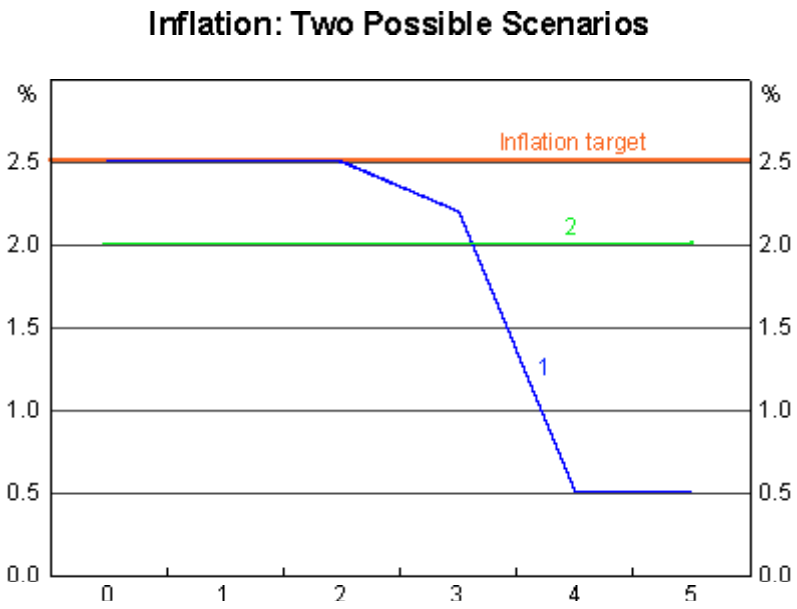
Does inflation targeting allow scope for responding to asset price concerns, if that is thought to be sensible? I think it does, provided we are prepared to adopt a sufficiently long time horizon. Inflation targeting is often presented, for expositional purposes, as a commitment to vary the instrument so as to keep the forecast inflation rate at the target at some particular horizon – two years, for example.[12] But surely policymakers care, in principle at least, not just about the inflation rate two years from now, but the whole path of future prices. We care not only about where inflation will be two years from now, but where it might be heading at that time and how quickly.

Consider two hypothetical outlooks. In one, a given set of policy interest rates assumed for the forecast is associated with inflation in two years' time at the target, but also with an asset price boom and increasing leverage, which means that there is an uncomfortably high probability that, beyond the two-year horizon, perhaps in year 4, there will be a crash which could impair the financial system, take the economy into recession and reduce inflation well below the target. In the alternative outlook, a

[12] For example, Lars Svensson (1997), 'Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets', *European Economic Review*, 41(6), pp. 1111–1146.

higher assumed set of policy interest rates is associated with lower growth and lower than target inflation over the standard two-year horizon, but also with reduced risk of the really big fall in inflation and activity in year 4.

**Graph 4**




Would we automatically select the first of these two possibilities purely on the basis that inflation is at target in two years' time? There would be a fair proportion of people who might select the second alternative, given the choice.

Of course, life is not quite as simple as the hypothetical choice I have concocted here. We don't know enough about the behaviour of asset prices, much less their linkages to the economy through the financial sector, to make such forecasts with any confidence. Nor do we know much about how the dynamics might respond to monetary policy. So we cannot easily identify the optimal response to the situation. There would, as well, be significant communication issues associated with a policy which sought to reduce the risks associated with asset price developments, but which carried the side effect of slowing the economy.

But despite the difficulties, it seems to me that thinking through the nature of risks posed by these asset price swings is helpful. Policy should not rush to respond to every asset price movement that comes along. But a case *might* be made, on rare occasions, to adopt a policy of 'least regret' so far as asset prices are concerned, if financial and macroeconomic stability were thought to be at risk. To do so would probably require an acceptance of a longer time horizon for inflation targets, and an acceptance of a bit more short-term deviation from the central point of the target. These issues remain unresolved among theorists and practitioners of monetary policy. There will be a good deal of further discussion about them in the period ahead.[13]

## Conclusion

Inflation targeting has been a successful model for monetary policy in Australia. It has been associated with lower, less variable inflation, and better and less variable economic growth. While I would not claim that improved overall economic performance has been entirely due to the adoption of inflation targeting, I do claim that this approach to policy has made a significant contribution.

[13] For discussion of these issues in more detail, see Claudio Borio and Philip Lowe (2002), 'Asset Prices, Financial and Monetary Stability: Exploring the Nexus', BIS Working Paper No. 114, July – available at http://www.bis.org/publ/work114.htm.

Inflation targeting allows a considerable degree of short-term flexibility for monetary policy decisions, but also imposes the appropriate medium-term constraints. That's a very good combination. There are no alternative models at the moment for Australia's monetary policy which offer a better mix.

We must still be on the look-out for challenges. Coping with cyclical fluctuations in the economy and shocks of various types will remain constant tasks. But I think that the most difficult issues likely to confront monetary policymakers in most advanced countries remain those associated with asset price swings. Opinion remains divided as to how to cope with them. But in the event that opinion coalesced in favour of some more active response to asset prices in the interests of longer-run financial and economic stability, I think inflation targeting as a system is sufficiently adaptable to encompass that.

Will we return here in another decade to celebrate twenty years of inflation targeting? Actually, I hope not. My hope would be that a system for running policy which has worked well will continue to do so, adapting as needed to changing conditions, to the point that a sound monetary system is just part of the economic furniture and we spend our time debating other issues. I think we are well on the way to that situation, and our part in the RBA is to keep us on that track.

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## APPENDIX (for Table 2)

Table 2 is an updated version of a table prepared originally in Brooks (1998). The inflation rates are calculated as the year-ended change in the quarterly index. The GDP growth rates are calculated as the year-ended change in the quarterly GDP series. Where quarterly data are not available, year-average growth calculated from IMF data are used. Other overseas data are sourced from national statistical authorities and the OECD, while Australian data are sourced from the Australian Bureau of Statistics (ABS).

Mean inflation and growth rates for the country groupings are calculated as simple averages of the country means. Similarly, the standard deviations are calculated as simple averages of the country standard deviations.

The averages for the 'other OECD inflation-targeting countries' grouping are calculated based on dates when inflation targeting was adopted in each country, which are the same as in Brooks (1998). Large and small non-inflation-targeting countries are all put together in this version of the table, unlike in the original, because the advent of the euro left very few small non-inflation targeters.

An alternative version of Table 2 is presented below, with Austria, Korea, Mexico, the Netherlands and Switzerland included, as these OECD countries were omitted by Brooks (1998). The inclusion of Korea and Mexico as inflation targeters makes the decline in inflation and inflation variability for the targeter group larger, but the pick-up in growth smaller and probably insignificant. The inclusion of Austria, the Netherlands and Switzerland as non-targeters makes relatively little difference to the story for that group as a whole. In this version of the table, Australia's performance still stands out as remarkably good.

**Inflation and Growth**
Per Cent

| | Annual inflation[a] | | Real GDP growth[b] | |
|---|---|---|---|---|
| | **Mean** | **Stadard deviation[c]** | **Mean** | **Standard deviation[c]** |
| **Australia** | | | | |
| 1980–92 | 7.2 | 2.4 | 2.8 | 2.7 |
| 1993–present | 2.3 | 0.6 | 3.9 | 1.1 |
| **Other OECD inflation-targeting countries** | | | | |
| 1980 to adoption of targets[d] | 13.0 | 9.1 | 2.8 | 2.9 |
| Adoption of targets to latest | 3.1 | 1.2 | 2.9 | 1.6 |
| **OECD non-inflation-targeting countries[e]** | | | | |
| 1980–92 | 5.9 | 3.5 | 2.5 | 2.0 |
| 1993–latest | 2.1 | 0.9 | 2.7 | 1.7 |

(a) Headline consumer price inflation for all countries except Australia (the Treasury underlying CPI up to June quarter 1998 and the CPI since with an adjustment for the effects of tax and health policy changes), New Zealand (the CPI excluding credit services after December quarter 1989) and the United Kingdom (the Retail Price Index, excluding mortgage interest payments). Inflation rates are calculated as the year-ended change in the quarterly index

(b) GDP growth rates are calculated as the year-ended change in the quarterly GDP series. Where quarterly data are not available, year-average growth calculated from IMF data are used

(c) Calculated as the average of standard deviations across countries

(d) Dates used for adoption of targets are: Canada, 1991; Finland, 1993; Greece, 1998; Iceland, 2001; New Zealand, 1990; Norway, 2001; Spain, 1994; Sweden, 1993; the United Kingdom, 1992

(e) Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Japan, Luxembourg, Portugal and the United States. Finland and Spain are considered to have become non-inflation-targeting countries upon joining the third stage of the EMU in 1999, and Greece in 2001. The EMU is treated as a single entity after 1999