

In Search of a Nominal Anchor

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Abstract

Since the break-up of the Bretton Woods fixed exchange rate system in the early-1970s, there has been a protracted search for a credible nominal anchor. This article examines the experiences of several industrial countries who have experimented with monetary targets, exchange rate targets and more recently, inflation targets. While it is acknowledged that the results of inflation targeting have been very encouraging so far, the article concludes by arguing that for the UK at least, inflation targets need to be combined with targets for the monetary base to prevent the central bank from acting in a dynamically inconsistent manner.

1. Introduction

Since the collapse of Bretton Woods fixed exchange rate system in the early-1970s, the search for a credible nominal anchor has excited a great deal of interest amongst monetary economists.² Theoretically, a credible nominal anchor, designed to constrain the value of domestic money, stimulates and co-ordinates anti-inflationary forces around a pre-announced specified numerical value. With pre-announced targets, inflationary expectations are tied down and time-inconsistency problems are less likely to arise than if the authorities were pursuing discretionary policies. Without a nominal anchor, the monetary and fiscal authorities may bow to pressure not to tighten monetary policy as quickly as necessary.

Broadly speaking, since the generalised float after 1973, the three most common types of

nominal anchor for the industrialised countries have been as follows:³

- Monetary targets. The monetarists argued that there was a stable relationship between one or more monetary aggregates and the general level of prices. Monetary policy was directed at a particular rate of growth in the monetary aggregate (the intermediate target) compatible with low inflation. During the 1970s there was a gradual move towards monetary targets in many of the industrialised countries. By the end of the 1980s, however, monetary targets had been dropped by many countries in favour of exchange rate targets and this was followed in the 1990s by a rise in inflation targets.

- Exchange rate targets. The prospect of volatile floating rates led a core group of European countries to form a European Common Margins Agreement (the 'snake') which was designed to narrow the margin of fluctuation of EC member currencies below those set by the 1971 Smithsonian agreement. The Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) was formed in 1979 and developed into a Deutschmark (DM) block during the 1980s where the DM was the key currency and member countries were required to follow the monetary policy of the Bundesbank. The intermediate target for members was to maintain an announced exchange rate against the DM, while the final objective was low inflation.

- Inflation targets. Whereas monetary targets and exchange rate targets are weapons of control, an inflation target is a target and nothing else. Inflation targets have been a recent innovation, introduced when other techniques of monetary control have failed, for instance in the United Kingdom, Finland and Sweden in the wake of leaving the ERM, or in Canada following the failure of monetary targeting.

The motivation for this article is two-fold. First, to establish why there has been such a protracted, and for some industrial countries, painful search for a durable nominal anchor in the past thirty years and to examine some country experiences during each policy framework. Secondly, to sound a note of caution to those who are enthusiastic with the experience of inflation targets. It is clear that inflation targets have restored credibility to monetary policy for many countries and have delivered low levels of inflation. However, both exchange rate targets and monetary targets were hailed by some as offering a permanent elixir for controlling inflation control and were found wanting. Will inflation targets ultimately suffer the same fate as the other nominal anchors?

To examine these issues, the structure of the article is as follows. The first part examines the theory underlying each of the three techniques listed above. This is followed by an evaluation of how each of these techniques have been implemented. While this article will draw on a number of countries, it will pay more attention to the United Kingdom, which has used all three nominal anchors in the last thirty years, as well as having an implicit nominal anchor between 1986-1990.⁴

2. Types of nominal anchor

As Bordo and Jonung (2001) illustrate, across time and space two types of monetary regimes have existed: a regime based on the commitment to convertibility of the domestic currency

into specie and the other based on fiat.⁵ Under the former, the ultimate source of liquidity was not under the discretionary control of the monetary authorities and there were binding constraints on fiscal policies (except during major wars and their immediate aftermath). Under specie-convertible regimes, the rule fixing the currency-price of specie (gold and/or silver coin) was the nominal anchor. This standard ensured that price levels returned to some mean value over long periods, providing that the relative price of specie remained constant. Clearly, nations who pegged to the fixed price of gold lost monetary and fiscal independence as the aim of the authorities was to maintain convertibility of their currencies into precious metals and not stabilisation of their domestic economies.

Under a fiat regime with a fixed exchange rate, the authorities can print money but the result will be a balance-of-payments crisis. Interest rates will have to be raised which will curtail monetary growth. The nominal anchor is not as stable under a fixed exchange rate based on a fiat money regime, unless all members define their currency in terms of one dominant country (e.g. the US under Bretton Woods or Germany in the EMS). The dominant country, in turn, must follow a rule, which requires it to maintain price stability. Under floating exchange rates, there is every possibility that the monetary authorities could abuse their freedom from the external constraint and could resort to the printing press to finance expenditure, which in extreme cases could lead to hyper-inflation (the classic example of printing press money causing hyper-inflation is the Weimar Republic in Germany in the 1920s).

Following the collapse of the Bretton Woods regime, many countries were given the freedom to employ their own devices to control inflation and some readily turned to this. Germany for instance, did not abuse its freedom from the external constraint and directed its monetary policy to aim at a lower domestic

inflation rate. Germany's success in achieving a current account surplus in 1974 placed further upward pressure on the German mark (which made the external constraint more binding in those countries that were pegged to the German mark). Germany was one of the few countries that accepted quite rapidly that a nominal anchor was required to promote price stability and would act as a constraint on discretionary policy. In turn, the nominal anchor would help to reduce time-inconsistency problems and achieve long-run price stability.

The shift towards rules-based approaches by many other countries (the apogee of which included the adoption of monetarism during the 1970s) was the result of a combination of factors. The work of Friedman and Schwartz (1963) seemed to show that there was a stable, lagged relationship in the US between changes in the rate of growth of broad money and changes in nominal income and that monetary policy mistakes had been made in the past; interest in monetary rules grew as inflation burgeoned following the first oil shock; and the discrediting of the Phillips curve analysis which convinced policymakers that there were no benefits to allow inflation to ratchet upwards.

3. What are the advantages and disadvantages of each type of nominal anchor?

Monetary targets allow a central bank to adjust its monetary policy to domestic conditions and send almost immediate signals to the markets about the stance of monetary policy and the intentions of policymakers. Exchange rate targets are more transparent to the public and financial markets and involve setting the exchange rate against a low inflation anchor country. Some developing countries have adopted a crawling peg in which their currencies are allowed to depreciate at a steady rate so that their inflation can be higher than that of the anchor currency. Over time, this will result in a convergence of tradable prices and price

inflation to foreign levels, but it will not necessarily result in the convergence of overall domestic prices and price inflation. While strict monetary targets were eventually downgraded, the rules based approach offered by monetary policy was continued in the form of exchange rate and inflation targets.

Exchange rate targets have a long history, but as the international economy has moved away from the strict rules of the gold standard to the discretionary management of inconvertible paper money, there has been a greater emphasis placed on control of inflation through domestic means, i.e. monetary targets and inflation targets.

Targeting monetary aggregates can only work if there is a strong and reliable relationship between nominal income or inflation and the targeted aggregates and if the central bank can effectively control the monetary aggregates. Monetary targets were adopted during the course of the 1970s when there were a number of constraints on domestic finance and velocity of circulation was predictable. However, as a number of countries underwent a process of financial liberalisation during the course of the 1980s, velocity became difficult to predict. Whilst financial liberalisation is occurring the velocity of money declines. This would mean that an increase in broad money growth during the process of financial liberalisation is not a guide to future inflation, and policy might be tightened unnecessarily. Conversely, when the demand for broad money declines and velocity increases, money growth will be more inflationary, and policy might be loosened unnecessarily.

Due to the unpredictable nature of velocity and the difficulties associated with hitting the broad money targets precisely, the monetary authorities were forced to redefine the components of broad money aggregates while simultaneously introducing narrow monetary targets. The outcome was a loss of credibility in the authorities' monetary strategy, and inter-

mediate monetary targets were abandoned in favour of intermediate exchange rate targets and increasingly, final targets for future inflation.

Inflation targeting has a similar advantage to monetary targeting and contrasts to exchange rate targets in that it enables monetary policy to focus on domestic considerations and to respond to shocks in the domestic economy. The authorities also use all available information to determine the optimum setting for monetary policy, and velocity shocks are irrelevant because the strategy does not rely on a stable money-inflation relationship. Like exchange rate targeting, inflation targeting is also highly transparent (i.e. clear, simple and understandable) and central banks have even begun to produce regular inflation reports to improve the channels of communication between the general public, financial markets and the politicians.

However, every central bank has imperfect control over inflation and there are three reasons generally given as to why inflation control is imperfect. First, the lags between monetary policy actions and the effect on inflation are long and variable. Second, inflation is affected by things other than monetary policy such as fiscal policy and supply side shocks, including changes in inflation expectations. These shocks invariably occur after the change in monetary policy but before the effect on inflation. Finally, economists are uncertain about the workings of the economy, including the transmission mechanism, and about the nature of the shocks affecting the economy.

Due to the lags between changes in monetary policy and their impact on inflation, monetary policy is designed to be forward looking. Monetary policy under inflation targeting can be expressed as choosing a path for the short-run nominal interest rate (such as the repo rate for the Bank of England or the Federal funds rate in the USA) or some monetary aggregate such that

$$E_t \pi_{t+j} = \pi^* \quad j = 0, \dots, \infty \quad (1)$$

where $E_t \pi_{t+j}$ is the expectation, based on information available at time t , of the inflation rate j periods ahead, and π^* is the inflation target. The objective is to use the chosen monetary instrument to condition $E_t \pi_{t+j}$ such that the inflation target is met at all times.

The procedure to determine what degree of monetary stringency is needed to achieve the inflation target is as follows. First, the authorities will prepare a forecast of inflation, for example, 1-2 years, assuming an unchanged monetary policy. Second, they will estimate how future inflation is likely to be affected by changes in the current setting of interest rates. Third, they will set monetary policy conditions so that inflation projections meet the inflation target. If the inflation projection is above the target, monetary policy is tightened, if it is below, then it is loosened. So suppose a country has a target range for inflation of 0-4 percent per year. In order to maximise the probability that inflation stays within this range, the authorities aim for a midpoint, 2 percent per year.

Some critics have claimed that inflation targeting is heavily reliant on forecasting, and have argued that this is the fundamental weakness of the technique, as forecasts are unstable. Yet, even monetary targets are based on the assumption about the relationship between current monetary growth and future inflation, and current interest rates and future monetary growth. Moreover, just as a monetary aggregate is the intermediate target in a strategy designed to control the growth of the money supply, so the inflation projection is the intermediate target in an inflation-targeting regime. The authorities will adjust monetary policy conditions so that the corresponding inflation projection (the intermediate target variable) is on target at an appropriate horizon. By regarding the inflation projection as an intermediate target and adjusting monetary policy accord-

ingly, this partly solves the problem of imperfect control of inflation.

4. The experience with money supply targets

The debate about whether to adopt monetary targets had been protracted in several countries during the 1970s. For instance, in the United States money targets could be traced back to the open-market directive of the 'proviso clause' in 1966 and then the 1970 provision for interim revisions of target money-market conditions when particular monetary aggregates departed from a specific range. In the British case, more attention was devoted to monetary aggregates following the 1971 reforms known as Competition and Credit Control, although the Bank of England was quick to point out that the aggregates should be regarded 'as guide lines for overall policy rather than as targets' (Bank of England, 1971, p. 44). In 1970, the council of the German Bundesbank was divided on the issue of whether or not to adopt monetarism, and it was largely through the strenuous efforts of its vice president, Otmarr Emminger, that monetarism was adopted in Germany. Indeed, as Johnson (1998, pp. 82-84) has detailed, in 1973 Emminger managed to push through a crucial vote to abandon the defence of fixed exchange rates and to adopt floating rates and money targets when two of his key opponents were in hospital and a third was on a skiing trip!

With the removal of the fixed exchange rate, the authorities in the United Kingdom, Germany and Switzerland acknowledged that they needed to provide some form of monetary discipline and over a very short period of time, the behaviour of the money stock became the focus of central bank attention. The Governor of the Bank of England in his Mais lecture of 1978 acknowledged that domestic monetary policy could provide the stability previously associated with fixed exchange rates. The adoption of a so-called aggregate strategy, as Price (1977) and Thunberg (1977) have shown,

was generally attributed to the deficiency of interest rates as a monetary indicator under conditions of rapid inflation. However, in some countries, by the late-1970s, there did seem to be a certain amount of inconsistency in statements on monetary control; the British Chancellor in 1979 told the House of Commons that monetary expansion would not accommodate inflation, and then went on to explain that the money supply growth rate would be reduced in direct response to declines in the rate of inflation. As Laidler (1974) has pointed out, official thinking in some American quarters implied that direct controls would permit deceleration of the high monetary growth rates without the short-run adjustment costs normally associated with deflation.

Perhaps some of this inconsistency arose because the authorities were unsure why they had introduced monetary targets. On the one hand, monetarists advocate a target for the money supply as an intermediate target for controlling nominal GDP. However, there is another reason why monetary targets can be adopted, and that is because such targets can be used for political purposes, in particular to influence expectations in financial markets in an attempt to stop them from behaving in an undesirable way.

There are two ways of trying to ensure stable monetary growth. The North American and Swiss schools of monetarism argue that the stock of money in the economy (the money stock) should be regulated by the central bank controlling the *supply* of money; that is, the monetary base should be controlled. In contrast the Bank of England has always argued that, if the money stock is to be controlled, this should be achieved by operating on people's *demand* for money and that this should be done by altering short-term interest rates.

However, despite the emphasis on controlling the supply of money in Switzerland and Germany, the regimes have been very far removed from a Friedman-type monetary tar-

getting rule. Bernanke and Mishkin (1997) have suggested that German and Swiss monetary policy is a 'hybrid' of inflation targeting and monetary targeting and in practice is closer to the former than it is to Friedman-like monetary targeting. As Issing (1996, p. 120) notes, 'one of the secrets of success of the German policy of money-growth targeting was that . . . it often did not feel bound by monetarist orthodoxy as far as its more technical details are concerned'. For instance, when Germany set its first monetary targets, it announced a medium-term inflation goal of 4 per cent which was above what it considered to be the appropriate long-run goal for inflation, stating that the former was the 'unavoidable rate of price increase'. It took nine years before the medium-term inflation goal (then renamed as the 'normative rate of price increases') was considered to be consistent with price stability, which was perhaps the most gradual 'gradualist approach' to reducing inflation in the industrial world!

However, while the money supply target in both countries has been missed fifty percent of the time since 1979 (Mishkin, 1999, p. 588), Germany's monetary-targeting regime has resulted in low inflation (von Hagen 1995). Yet as Clarida and Gertler (1997) have argued, the Bundesbank has reacted asymmetrically to target misses, raising interest rates in response to overshooting of the money-growth target and choosing not to lower interest rates in response to undershooting. Indeed, the Bundesbank was criticised for its particularly tight monetary stance in the mid-1990s - when German inflation had fallen below the 2 per cent normative goal - which led to an increase in unemployment in Germany and those countries tied to the German mark.

Switzerland has had similar problems to the United Kingdom with its experience of monetary targets (see below), but the Swiss National Bank pursued targets for longer and more successfully than their British counterpart. Following the 40 per cent trade-weighted

appreciation of the Swiss franc between 1977 and 1978, the authorities suspended monetary targets and moved to an exchange rate target until the Spring of 1979, whereupon it reintroduced an unannounced monetary target. From 1980, the Swiss National Bank switched to monetary base control. Between 1989 and 1992, the authorities failed to maintain price stability, despite having reduced inflation. This was a result of two factors. First, the strength of the Swiss franc caused the authorities to allow the monetary base to grow at a faster rate. Secondly, a new interbank payment system was introduced, and a wide-ranging revision of the commercial banks' liquidity requirements in 1988. These factors contributed to an excessive loosening of monetary policy and a rise in inflation to above 5 per cent. Although inflation was subsequently controlled, the Swiss National Bank abandoned the one-year targets for money base growth and announced a new medium-term framework for money base growth.

The experiences of the United Kingdom in the 1980s can be divided into three phases (Oliver, 1997, Chs. 4-6). During phase one (1979-1983), the Government's monetarist economic experiment faced two difficulties. First, the chosen monetary aggregate (£M3) consistently overshot its target band. This gave the impression that monetary policy was loose when in fact it was very tight, and merely encouraged a continuation of tight policies. Secondly, the domestic economy underwent a period of rapid contraction, which was exacerbated by the tight monetary regime. A debate opened in policymaking circles as to whether the government should adopt a different monetary target or abandon monetarism altogether.

In phase two (1983-1986), the government began to be bogged down with the sterling issue and money technicalities. Those economic advisers who had been supporting the Government began to argue for membership of the Exchange Rate Mechanism (ERM) as a

means of stabilising currency fluctuations and for controlling inflation. There were also widespread arguments beginning to appear in the monetarist camp over which money aggregates to target. The Chancellor, Nigel Lawson, was left with the problem of having to choose between conflicting advice from the experts. From 1985, the money targets were suspended and policy became more pragmatic.

In phase three (1986-1990), the Government returned to crude demand management with macroeconomic policies set for a traditional 'stop-go' cycle. Conflicts in policy and personality became widespread including the disagreements between the Prime Minister, her economic adviser, Alan Walters and Chancellor Lawson over whether United Kingdom should join the ERM. It was during the course of phase three (between March 1987 and May 1988) that Chancellor Lawson came up against his greatest problems with the exchange rate versus the money supply dichotomy as he pursued an exercise in currency shadowing, undertaken to show the Prime Minister how well the economy could perform if it had the stability of the ERM. The United Kingdom's experience with an implicit nominal anchor was disastrous. The markets believed that it was the intention of the Chancellor to keep the sterling/German mark rate below DM3.00, and to prevent the rate from rising above DM3, the monetary authorities sold sterling and bought convertible currencies but were later forced to cut interest rates to prevent the exchange rate from rising. The massive interventions by the Bank in the foreign exchange markets ultimately grew to such a level that Treasury and Bank officials were becoming worried about sustaining them. Excessive monetary growth was ignored and inflation then rose, more or less precisely in accordance with monetarist theory (Pepper and Oliver, 2001).

The US experiment with monetarism between October 1979 and May 1982 also had

some similarities with the British experience, yet in contrast to the Bank of England, the Federal Reserve attempted to control bank reserves, albeit in a peculiar way. The outcome was a huge rise in interest rates followed by huge fluctuations in interest rate movements. According to Poole (1982), the Fed.'s mechanism bore no resemblance to the textbook model of monetary base control and it was qualitatively very similar to the old interest rate mechanism. In short, there is some doubt about whether the Fed was seriously trying to control the base: the experiment may have been merely a political exercise which enabled the Fed to raise interest rates by more than would otherwise have been acceptable. The Fed may have been giving priority to the politics of money supply targets rather than control of the money supply in its own right.

Other European governments have been far from ideologically purist when they followed a more pragmatic approach to monetarism after the break-up of the Bretton Woods agreement. In the aftermath of the first oil crisis, monetary targets were seen as only one of numerous tools to achieve national economic goals. Moreover, European governments viewed the fixing of their exchange rate in the European Monetary System (EMS) as a way to reinforce the attempt to reduce inflation. This more pragmatic monetarism was promoted by experts in international organisations such as the OECD, in policy reports written for the European Community and in economic policy circles inside the national governments.

5. An exchange rate discipline in Europe

Exchange rate targeting has several advantages and has been successfully adopted by many industrial countries as a more robust nominal anchor than monetary targets. The results of exchange rate targets are frequently impressive: for instance, when the United Kingdom pegged to the German mark between 1990 and 1992, inflation fell from ten per cent to two per

cent, respectively. When France first pegged the franc to the mark in 1987, inflation stood at three per cent, which was two percentage points above the German inflation rate. By 1992, its inflation rate was two per cent and below that in Germany.

Exchange rate targeting has also reduced inflation quickly in emerging market countries: Argentina's successful experience with a currency board is one such example.⁶ Inflation was reduced from an annual rate of over 1,000 percent in 1989 to under five percent by the end of 1994. This was accompanied by economic growth averaging almost eight percent annually between 1991 and 1994. *Per contra*, although an exchange rate target might bring inflation down relatively quickly, many central banks in such economies do not have an established reputation for sound money. Consequently, a successful speculative attack can lead to a sharp depreciation of a currency, which can result in resurgence of inflation. For instance, inflation in Mexico stood at an annual average of over 100 percent prior to the adoption of exchange rate targets in 1988 but was in single digits by 1994; however, a foreign exchange crisis in 1994 led to a return to double-digit inflation (50 percent) by 1995.

As is well known, the EMS was a mixture of pegged and adjustable exchange rate regimes. Periods of exchange rate stability provided many of the benefits of fixed exchange rates and the realignments re-addressed serious competitiveness problems. The periods of exchange rate stability with the occasional realignment were only possible, however, because capital controls protected central banks' reserves against speculative attacks driven by anticipations of realignment (Eichengreen, 1993). In the first ten years of the EMS existence, the authorities did at least retain limited policy autonomy. Yet the 'new' ERM was described by some economists as 'half-baked' (Walters, 1988) and Padoa-Schioppa (1988) pointed out that there was

now an 'inconsistent quartet' of policy objectives: free trade, capital mobility, fixed (managed) exchange rates and independent monetary policies. Thus Spain, the United Kingdom and Portugal all joined the ERM just when the system was about to become more volatile but appeared more stable. While the strategy of no realignments and no controls did seem to work for a while, the Jeremiah's predictions eventually unfolded during the early 1990s.

A major problem with exchange rate targeting is that there is a loss of independent monetary policy. While there might be a considerable advantage in 'tying one's hands' to those of an anchor currency, an exchange rate target does mean that shocks to the anchor country are directly transmitted to the targeting country because changes in interest rates in the anchor country lead to a corresponding change in interest rates in the targeting country. This problem was cruelly demonstrated when German short-term and long-term interest rates began to rise in the wake of reunification in 1990 and was transmitted directly to the other countries in the ERM who were pegged to the mark and who also had to raise interest rates.

This then led to a practical demonstration of another major weakness of exchange rate targets discussed earlier in the case of Mexico, namely speculative attacks on currencies (Obstfeld, 1996). As member countries struggled to maintain their parities within the ERM, speculators began to question how long such a commitment could last in the wake of rising unemployment. In short, it was only a matter of time before the British pound, French franc, Swedish krona, Italian lira and the Spanish peseta would be devalued against the mark, and selling these currencies enabled speculators to make high profits with little risk. By September 1992, only France was able to sustain her commitment to the fixed exchange rate, while the aforementioned members decided to suspend their ERM membership.

With the advantage of eight years of hind-

sight, the perverse outcome of the collapse of the ERM in 1992 was that it made monetary unification inevitable. In the 'old EMS', capital controls help to guard central banks' reserves from speculators but once these had been abolished in the 'new EMS', the system collapsed. To resolve this problem, there were two solutions. One was to return to floating exchange rates. Arguably, with floating rates countries can still integrate their economies while retaining monetary autonomy (e.g. Canada, Mexico and the US in the North American Free Trade Area). However, in Europe the calls for greater exchange rate stability arose because of the problems associated with floating rates and the CAP, coupled to the *sentiment* that fixed rates are preferable to floating and the political agenda to move to a federal system. The second solution was to fix exchange rates between existing national currencies. Yet in this instance there will always be the possibility that exchange rates may change in the future under dire circumstances (the 'escape clause') and because such circumstances are often unobservable, nominal exchange rates may end up being destabilised (Obstfeld, 1992). In short, a fixed exchange rate system has less credibility than a system in which the countries share a common currency.

Without wanting to enter into a protracted debate on the merits or otherwise of a common currency, it is nevertheless important to note two problems with the European single currency project and the 'two pillar' monetary strategy (a combined nominal aggregate and inflation targeting regime) of the Euro zone that may yet unravel it in the next ten years. First, in contrast to the United States, where the currency union is mandated by its Constitution and defensible by force of arms, European members of the monetary union have the option to exit if they so wish. So even if the EMU does not fall apart because it lacks a binding commitment, member countries could use a threat of exit to influence monetary poli-

cy in the European Central Bank and prevent the currency from becoming a reliable international anchor (Calomiris, 1999). Second, as monetary policy cannot be directed at inflationary pressures in any individual country *per se*, each country within the union has to conduct its own appropriate internal policies (fiscal or structural) - in order to curtail inflation. While Duisenberg (2000) has expressed optimism that Euro members will respect a common code of fiscal conduct, there is more strength in Calomiris's (1999, p. 446) argument that the current absence of credible constraints will not limit the long-run monetization of deficits in soft money members and cause much 'inflationary mischief'. Whether this will go so far as to threaten the continued existence of the monetary union as Calomiris and other commentators have suggested remains to be seen (Ferguson and Kotlikoff, 2000).

6. Inflation targets

From the early 1990s, several countries began to announce quantitative inflation targets. The first country to introduce inflation targets was New Zealand in March 1990 and other countries which have introduced them include Canada (introduced in February 1991), Australia (approximately April 1993), Israel (1992), Sweden (January 1993), and the United Kingdom (October 1992). Finland took up inflation targets temporarily, but then returned to a fixed exchange rate when it joined the European Single Currency. Academic assessments have begun of the experience with inflation targets within each country, and several issues should be noted.

First, in many cases, inflation targets have been introduced when other monetary policy techniques have failed. In the case of New Zealand and Canada, disappointment with monetary targeting led to the switch: the Governor of the Bank of Canada, Gerald Bouey, conceding that 'we didn't abandon

monetary targets, they abandoned us' (quoted in Allen, 1999, p. 6). For the United Kingdom, Sweden and Finland, inflation targets were seen as a way of providing a new nominal anchor after having been forced off fixed exchange rates.

Second, the horizon of the inflation target varies in each country. For example, in Canada and New Zealand eighteen months was allowed for the achievement of the initial target, thereafter targets were set at 18 month and

The minutes of the monthly MPC meetings are published within six weeks of each meeting and the way each member votes is published, allowing them to be quizzed in public (the members of the MPC are regularly questioned by the Treasury Select Committee). MPC members make frequent speeches about monetary policy in all parts of the country, and these are published on the web pages of the Bank of England and the Treasury. Moreover, if the rate of inflation does stray from the target by more

Table 1. Average Inflation Performance in Inflation Targeting Countries

	Decade preceding inflation target		Period following inflation target	
	Ave. rate of inflation	Variance	Ave. rate of inflation	Variance
Australia	6.2	8.41	2.7	1.71
Canada	5.8	7.90	2.0	2.51
Finland	5.2	3.37	1.1	0.51
Sweden	6.6	6.65	2.3	2.29
New Zealand	11.6	25.70	2.5	2.70
UK	5.2	2.21	2.8	0.09
Average	6.8	9.0	2.2	1.6

Source: King (1997, p.436)

12 month intervals, respectively. In the United Kingdom, the first specific target was set in May 1997, and following the Bank of England Act (1998), the inflation target was set at 2.5 per cent at all times. Similar time horizons are found in other countries, although Australia is different because the time horizon for the inflation target is the length of the business cycle.

Third, the move to inflation targets has also coincided with a decision by many authorities to promote openness and transparency, which is an effective means of improving credibility. For instance, in the United Kingdom the Bank of England publishes a quarterly Inflation Report, outlining the Monetary Policy Committee's (MPC) analysis of recent economic developments and a forecast of inflation and output growth over the coming two years.

than plus or minus one per cent, the Governor of the Bank has to write an open letter to the Chancellor explaining how the discrepancy arose, how long it is expected to last and how the MPC will correct it. As Vickers (1998, p. 370) has acknowledged, however, there is some information relevant for policymaking which is 'simply incapable' of being made public so that the optimal monetary policy can never be absolutely transparent.

Fourth, all of the countries pursuing inflation targets have chosen to set targets above zero, ranging from 1.5 per cent in the case of New Zealand to 8.5 per cent in Israel. Arguably, targeting inflation above zero diminishes the possibility of negative effects on real economic activity and some recent evidence has suggested that this does not lead to instability in infla-

Table 2: Average GDP Growth in Inflation Targeting Countries

	Decade preceding inflation target		Period following inflation target	
	Ave. rate of inflation	Variance	Ave. rate of inflation	Variance
Australia	3.2	10.18	4.2	0.96
Canada	2.8	9.99	1.9	3.09
Finland	1.4	17.33	3.2	6.49
Sweden	1.6	4.73	1.9	5.09
New Zealand	1.8	6.95	2.4	7.78
UK	2.4	5.76	3.0	1.04
Average	2.2	9.2	2.8	4.1

Source: King (1997, p.436)

tion expectations or a decline in the central bank's credibility (Laubach and Posen, 1997)

Finally, it is important to ask how successful have inflation targets been? The oldest regime is just ten years old, so any evaluation must be preliminary and requires several business cycles before a reliable appraisal can be made. However, as Table 1 shows, inflation has been more than halved in comparison with the preceding decade and as Table 2 indicates, the reduction in inflation has not come at the expense of either average output growth or greater variability in output.

7. Conclusions

Since the break-up of the Bretton Woods fixed exchange rate system, broadly speaking the industrial countries have chosen to set targets for the money supply, exchange rate or inflation to limit the increases in prices.

The problem with the money supply targets for many countries was that when wide monetary aggregates were chosen, the targets were more visible but their controllability was lower. Ultimately, monetary targets became discredited even as inflation fell in countries pursuing targets (e.g. the United Kingdom and the US).

The use of an exchange rate target eliminates the trade-off between controllability and visi-

bility, which exists with an inflation target or a money supply target. The exchange rate target is fully controllable (provided that there are sufficient foreign exchange reserves) and highly visible. However, an exchange rate anchor creates other trade-offs, for example in the area of the balance of payments and there is a loss of independent monetary policy.

While inflation targets are presently in vogue with several monetary authorities, some countries have shown that they do not need to employ this framework for the successful conduct of monetary policy (for example, Germany and the United States). In countries where the credibility of monetary policy is in question, and the reputation of the central bank poor, inflation targeting has controlled the growth of inflation. Bordo and Jonung (2001) have claimed that inflation targeting has strong similarities with the gold standard period with monetary policy geared towards the goal of low inflation. However, within the Euro zone, the current fiscal arrangements suggest that deficit monetization could threaten monetary stability. Moreover, as both authors acknowledge, unlike the gold standard, the monetary system today is a managed fiat system not an automatic specie system. Inflation targets are not as rigid a rule and certainly do not stymie discretion as much as the gold standard regime.

In short, will inflation targets on their own be robust enough to prevent central banks from acting dynamically inconsistently? This author would contend they are not and would suggest that for the United Kingdom, monetary base control coupled to inflation targets would be a more desirable nominal anchor, although a full debate on this proposal is beyond the scope of this paper (for a discussion calling for a revival of monetary base control see Pepper and Oliver, 2001).

Endnotes

1. Bates College, USA.
Email: moliver2@bates.edu Homepage: <http://www.bates.edu/acad/depts/econ/faculty/oliver/homepage> The author is indebted to Professor Gordon Pepper for his constructive criticisms on an earlier draft, Dr Andrew Abbott and an anonymous referee.

2. Recently the literature on the design, implementation and choice of a nominal anchor has benefited from a number of authoritative surveys, some of which this article draws on, including Bernanke *et al.* (1999), Mahadeva and Sterne (2000), Mishkin (1999) and Taylor (1999).

3. Cottarelli and Giannini's (1997) wide ranging survey of 100 industrial and developed countries over the 1970-1994 period has identified nine basic monetary frameworks: use of foreign currency as the only legal tender; membership in a currency union; replacement of a central bank with a currency board; pegging the exchange rate in the absence of capital controls; pegged exchange rates with capital controls and a short-term intermediate monetary target; exchange rate peg with capital controls without an intermediate target; inflation targeting; short-term intermediate target (monetary aggregate or crawling peg) and discretion. The authors omit nominal income targets and medium- to long-term intermediate monetary targets on the grounds that there 'is the absence of practical examples of these frameworks in our country group'.

4. The United States has had a successful experience with an implicit nominal anchor since the early-1990s. The Federal Reserve has a strategy

which involves forward-looking behaviour to monitor carefully signs of future inflation and conducts periodic pre-emptive strikes by raising interest rates if there appears to be a threat of inflation (Mishkin, 1999). While the pre-emptive strategy is a feature of inflation-targeting regimes, the United States does not have an official nominal anchor and its monetary policy regime is not as transparent as that of other countries which are under a regime of inflation targets. Arguably, the Federal Reserve is more prone to time-inconsistency problems, a point that has been acknowledged by one of the Governors (Myer, 1999).

5. Bordo and Jonung define convertibility as the ability to freely convert the national currency into a fixed weight of specie. As they note, this is different from the concept of convertibility which developed after the breakdown of the classical gold standard in 1914 and is embedded in the 1944 Bretton Woods Agreement.

6. A currency board arrangement (CBA) is an exchange rate rule where the domestic currency is fixed to an 'anchor currency'. A significant factor that contributes to the credibility of the currency board and a country's monetary stability is the fact that under this regime, the central government can only issue domestic currency that is backed by a minimum of 100 per cent (up to a maximum of 110 per cent) of reserves or foreign assets. Through this arrangement, holders of the domestic money can be assured that the money is fully convertible to a major stable currency. This in effect creates confidence in the domestic currency as well as the idea that the country is serious about maintaining economic credibility. Additionally, an orthodox currency board cannot act as a lender of last resort, does not regulate reserve requirements for commercial banks and only earns seigniorage from interest on reserves (Enoch and Gulde, 1998). Argentina's unorthodox convertibility system does perform some lender-of-last-resort activities; regulates reserve requirements for commercial banks; it can hold up to one-third of the dollar-denominated reserves it keeps to back its monetary liabilities in the form of bonds issued by the government of Argentina; and the Convertibility Law only requires that the central bank's monetary liabilities be covered by a minimum of 100 per cent in dollar-denominated assets. Although the peso-dollar exchange