The use of explicit targets for monetary policy: practical experiences of 91 economies in the 1990s

By Gabriel Sterne of the Bank of England's Centre for Central Banking Studies.

In June 1999 the Bank of England hosted its sixth Central Bank Governors' Symposium. This year the subject was 'Monetary policy frameworks in a global context', based on a report prepared by DeAnne Julius of the Bank's Monetary Policy Committee and Maxwell Fry, Lavan Mahadeva, Sandra Roger and Gabriel Sterne of the Bank's Centre for Central Banking Studies (CCBS). In this article Gabriel Sterne draws on one of the chapters of the report. The report uses a survey of 91 central banks to assess developments in monetary frameworks across a wide cross-section of economies. The final report, along with a selection of papers originally presented at a CCBS Academic Workshop in November 1998, will be published by Routledge in mid 2000.(1)

Introduction

'... I find myself wondering if this swing of the pendulum to more autonomy [of central banks] can really be sustained. No matter how hard we work at disclosure, as long as there are perceptions that the central bank is making judgments about some important policy trade-off... I wonder whether we all won't get pushed to far more narrowly defined objectives'.

Gordon Thiessen (Governor), Bank of Canada, speaking in 1994 at the Tercentenary Symposium of the Bank of England on 'The Future of Central Banking'.(2)

A monetary policy framework comprises 'the institutional arrangements under which monetary policy decisions are made and executed' (McNees (1987), page 3). Following the breakdown of the Bretton Woods system of exchange rates, policy-makers have employed a variety of monetary frameworks in order to increase the credibility of monetary policy.(3) Since the key characteristic of the framework is often an explicit target for monetary policy, the aim of this article is to assess the use of such targets in a range of economies in the 1990s. The analysis is based on data provided by 91 central banks that responded to a questionnaire on monetary policy frameworks circulated by the Bank of England in late 1998. Table A lists the participating countries.

Explicit monetary policy targets have become more widely used in the 1990s than at any time since the Bretton Woods era. In the survey of 91 central banks,(4) 96% (all but four countries) were using some form of explicit target or monitoring range in 1998.(5) This contrasts sharply with 1990, when only 55% had an explicit target or monitoring range.(6) So Governor Thiessen's prediction, that objectives might become increasingly narrowly defined, appears to have been fulfilled across this broad sample. So does the role he suggested for an explicit target—that of helping to define an institutional relationship between the central bank, the government and the population.

Table A
The countries included in the survey

Industrial	Transitional	Developing	
Australia	Albania	Argentina	Kuwait
Austria	Bosnia Herzegovina	Bahamas	Lebanon
Belgium	Bulgaria	Bahrain	Malaysia
Canada	Croatia	Bangladesh	Mauritius
Denmark	Czech Republic	Barbados	Mexico
Finland	Estonia	Belize	Mongolia
France	Georgia	Botswana	Mozambique
Germany	Hungary	Chile	Namibia
Greece	Kazakhstan	China	Nigeria
Hong Kong	Kyrgyz Republic	Cyprus	Peru
Iceland	Latvia	Eastern Caribbean	Sierra Leone
Ireland	Lithuania	Ecuador	South Africa
Israel	Macedonia	Egypt	Sri Lanka
Italy	Moldova	Fiji	Tanzania
Japan	Poland	Ghana	Thailand
Korea	Romania	Guyana	Tonga
Malta	Russia	India	Turkey
Netherlands	Slovakia	Indonesia	Uganda
New Zealand	Slovenia	Jamaica	Uruguay
Norway	Turkmenistan	Jordan	Vietnam
Portugal	Ukraine	Kenya	West African States
Spain			Zambia
Sweden			
Switzerland			
Taiwan			
United Kingdom			
United States			

Note: The European Monetary Union countries were surveyed pre-entry.

The article assesses in detail the use of explicit targets. The first section of the article argues that the choice of policy target rests not just on the likelihood and utility of hitting a single number. Other important roles for explicit targets may include defining informal or formal contractual

(1) 'Key issues in the choice of monetary policy frameworks in Industrial, Transitional and Developing Economies', in *Monetary Policy Frameworks in a Global Context*, forthcoming.
(2) See Capie, Goodhart, Fischer and Schnadt (1994), page 258.
(3) See Cottarelli and Giannini (1997) for a detailed assessment of the experience since Bretton Woods.
(4) The survey aimed to include a wide variety of countries. However, some sample selection bias may remain. For example, small open developing economies that target the exchange rate are under-represented.
(5) The exceptions include Japan, but not the United States. In 1998 the Federal Reserve still published a monitoring range for broad money growth.
(6) Of the countries in the survey, seven did not exist in 1990; so 55% relates to 84, not 91, monetary frameworks.

relationships between institutions, and focusing analysis on particular economic indicators.

The second section goes on to examine which targets have been adopted in the 1990s by the 91 countries sampled, and the degree of flexibility with which they have been implemented. The announcement of an explicit target can represent full commitment to a particular outcome, or it may be no more than a benchmark used to explain deviations from the target. The sample provides extremes of experience that include rigidly fixed exchange rates on the one hand, and loose monitoring ranges for one or all of the exchange rate, money and inflation on the other.(1) In the case of domestic monetary targets, the data used in this article relating to the deviations of outcomes from targets indicate that, in many cases, targets have been implemented quite flexibly.

A review of the arguments for different explicit targets

The reported changes between 1990 and 1998 show a shift towards some form of explicit monetary policy target. And most of the central banks that said that their monetary frameworks targeted a particular variable specified the exchange rate, money or inflation. The choice depends on a number of diverse though interrelated factors. The following six factors are among those that influence the choice of policy target.

(i) The role of the targeted variable and the impact of different shocks on the transmission mechanism from policy instruments to inflation

Much of the literature(2) on the choice of target has focused on the stability of the relationship between the target and the final objective of monetary policy. In turn this relationship depends partly on structural economic changes. For example, rapid financial liberalisation can lead to instability in the velocity of money; this was one explanation for industrialised countries such as Australia and Canada dropping money targets in the 1980s. More recently some transitional and developing economies have followed suit because of similar problems.(3) In contrast, Issing (1997) argues that velocity has been stable in Germany, partly because of the stability with which policy has been implemented.

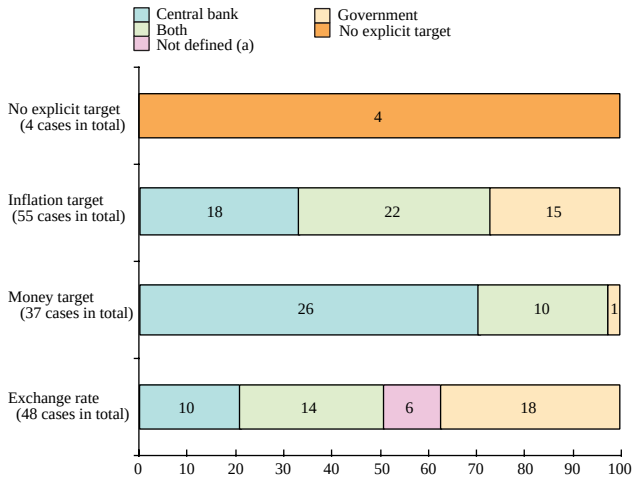
Similarly, aggregate supply shocks can undermine inflation targets. In the case of Uganda, Atingi-Ego (1998) stresses the importance not only of the unpredictable velocity of money, but also of volatility in domestic food prices, related to rainfall.(4) And the closeness of the relationship between the exchange rate and the final policy objective may also depend upon structural factors; for example exchange rates may be more closely related to consumer prices in small open economies where a high proportion of consumer goods are imported.(5)

Though these structural factors remain important, the diversity of experience in the choice of explicit target illustrates that the choice also depends on a range of other factors.

(ii) The role of the target in defining a relationship between the central bank, the government, external institutions and the private sector

An important function of explicit inflation targets has been to define the roles of the government and the central bank in the monetary strategy. The global experience offers a variety of approaches, ranging from demarcation of responsibilities to drawing together institutions to formulate targets. Chart 1 represents the responses of 91 central banks when asked whether they or the government set the explicit target in 1998, or whether it was set jointly.

Chart 1
Who sets explicit targets and monitoring ranges for the exchange rate, money and inflation?



Note: From a sample of 91 economies describing their practices in late 1998; the figures in the bars indicate the number of economies with this arrangement. The length of the bars indicate the percentages set under different arrangements.

Source: Bank of England survey of monetary frameworks.

(a) These mainly include countries that are defined by the IMF as having a fixed exchange rate, but that do not announce an explicit target.

In a contractual approach, the government sets a target in a contract with the central bank, and gives the central bank operational independence so that it can use its policy instruments in pursuit of the target. Countries including Israel and the United Kingdom have adopted this approach. In 15 of the 55 economies with an explicit inflation target in 1998, the target was set by the government only. There are circumstances, however, when it is difficult to specify objectives that are narrow enough to define a contract. Some countries have important financial stability or balance of payments objectives, as well as inflation targets. And for countries that are undertaking disinflation, there are often at

(1) Fry, Julius *et al* (*op cit*) measure the degree to which policy in different countries focuses on different objectives.
(2) Starting with Poole (1970).
(3) See Hrnčíř and Šmidkova (1998) for an assessment of velocity developments in Czech Republic. Their paper also illustrates the difficulties of specifying an inflation target in the presence of supply shocks.
(4) Similarly, Alfaro and Schwartz (1999) argue that many of the shocks that affect price developments in Mexico are beyond the immediate control of monetary policy. These include developments in the exchange rate, wages, controlled prices and external inflation.
(5) See Crockett (1999) for a more detailed assessment of the effect of structural factors on the choice of target.

least two inflation targets; one for the current period and one for the long run. In the event of inflation falling below the short-term target but remaining above the long-term one (as happened in 1998 in Israel, Czech Republic, Chile and Poland), it may be difficult for a contract to specify adequately the policy objective. For example, if inflation in the short term is below the short-term target but above the long-term target, while output is no lower than expected, should monetary policy aim for a higher rate of inflation?

Where contracts become complicated, an alternative approach may be for the government and the central bank to agree an explicit target, in order to emphasise joint ownership of the monetary strategy. In 22 cases out of 55 (40% of the countries with explicit inflation targets), the government and the central bank jointly set the inflation target. A further possibility is 'target independence', where the central bank sets its own explicit objectives. 18 central banks set inflation targets independently. In some cases, (such as Chile), this is indicative of the central bank having a high degree of goal independence. In others, the capacity to set an explicit target is less related to goal independence. For example some central banks set an inflation target, but this target may remain subordinate to a government-set target for the exchange rate.

The government had a role in setting the target in 76% of the countries with exchange rate targets[1] (see Chart 1). In contrast, money targets have generally been the central bank's prerogative: in 36 out of 37 cases the central bank either solely or jointly sets the money target. Assumptions about inflation, output and velocity developments are a prerequisite for setting money targets, and central banks have a comparative advantage in researching banking system developments that may cause changes in velocity. Thus a government that wishes to instruct the central bank to meet an explicit target is more likely to set an inflation or exchange rate target.

The importance of targets in defining relationships between different agents in the economy goes beyond that of the central bank and the government. For countries with IMF programmes, levels of money and credit aggregates are used as performance criteria which must be met to ensure continued financial support from the Fund. Cottarelli and Giannini (1998) argue that where policy-makers in developing countries have little anti-inflationary credibility, adopting a Fund programme may be the most effective means of enhancing the credibility of a disinflationary strategy.

(iii) The role of targets and forecasts in providing a basis to explain outcomes

Targets and forecasts may be used either as means of pre-committing to a particular outcome, or as benchmarks for explaining deviations from predicted outcomes. Mexico uses a combination of the two. Alfaro and Schwartz (1999) describe how the annual programme of the Banco de México involves setting an annual inflation target, which, subject to certain shocks, represents a pre-commitment. The programme also incorporates a forecast for the daily path of the monetary base, given the information available in early January of each year, which represents a benchmark. Such a benchmark provides a basis for comparing developments during the year with those anticipated at the start of the year.

(iv) The skills and experience within the central bank

Central banks have limited budgets for analytical resources. The constraints are particularly binding in poorer countries, because less money is available and skilled staff are more scarce.[2] Skills may include knowledge of reserve money programming, broad money targeting, inflation targeting or analysis of the implications of implementing crawling exchange rate bands. So there may exist some 'transaction costs' from buying in to one or other domestic monetary framework, both in terms of re-education within the central bank, and in terms of explaining policy to the public. This may help to explain why many central banks take an evolutionary approach to changing monetary frameworks, with radical shifts generally taking place only in response to external shocks and crises.[3]

(v) The extent to which 'policy technology' gives policy-makers confidence in their ability to influence targeted variables in a predictable fashion

Central banks may require comprehensive data and powerful analytical tools to be confident that they are setting instruments optimally. But in many countries, data can be patchy, infrequent, and available only for short time series; rapid structural change may wrap very wide confidence intervals around estimated relationships between macroeconomic variables.

The question of whether the availability of good data and analytical techniques should affect the choice of target is controversial. On the one hand, inflation targeting in industrialised economies has benefited from the existence of macroeconometric forecasting models. But such models are difficult to estimate accurately where data are inadequate, and if analytical capacity is limited.[4] This might seem to suggest that countries that lack good data and analytical capacity should not be setting inflation targets. On the other hand, poor analytical capacity undermines implementation of *any* domestic target; money targets depend implicitly upon an inflation projection, whether or not the projection is cast in terms of a forecast, target, or desired outcome. One possible solution to poor knowledge about domestic transmission may be to announce an exchange rate peg, but even the choice of peg may increase the costs of disinflation if there is limited knowledge of the equilibrium exchange

(1) Excluding those countries that did not provide details about who set the exchange rate target.
(2) Fry, Goodhart and Almeida (1996), pages 90–96, illustrate that in developing countries, the proportion of graduate staff increases with a country's income.
(3) Changes to the monetary framework are analysed in greater detail in Fry, Julius *et al*, (*op cit*).
(4) In response to the question 'Have researchers in your bank considered the Phillips curve and output gaps in the last five years?', only 24% of the transitional and developing countries responded that they had been considered in detail.

rate.[1] Analytical limitations may indeed influence the optimal choice of target, but it is not clear that the influence will be in a particular direction in all cases.

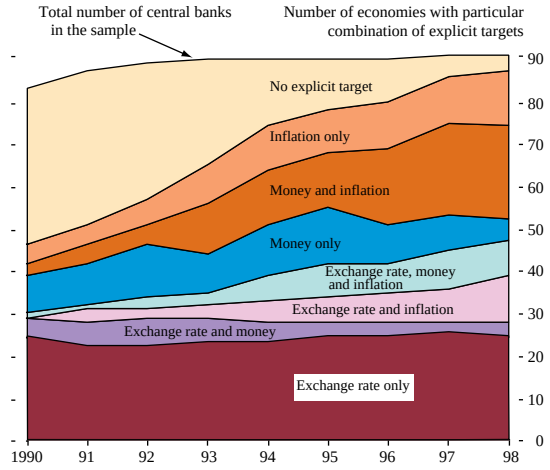
(vi) Attempts to impose discipline on fiscal and monetary policy

Fry, Julius *et al* show that exchange rate targeting has been the only regime which has delivered five-year periods of low, stable inflation in developing economies between 1970 and 1996. And Crockett (1999) argues that 'although exchange rate targeting has frequently ended in currency crisis, it cannot be denied that exchange rate pegs have also often been instrumental in braking inflation expectations'. Much of the credit for this must be due to the widespread understanding that exchange rate pegs imply strict constraints on credit expansion. Exchange rate pegs have frequently acted as a means of engendering fiscal and monetary discipline. And as it is possible for the private sector to understand what is at stake, inflation expectations can be rapidly lowered when the peg is implemented.

Explicit targets in the 1990s

The past three decades have seen marked swings in the choice of explicit targets and monitoring ranges.[2] These are summarised in Chart 2.[3]

Chart 2
Explicit targets in the 1990s



Note: Money targets include all targets for different definitions of money and credit.

Sources: Bank of England survey of monetary frameworks, Cottarelli and Giannini (1997), and IFS (various issues).

The data highlight three particular trends:

- *Explicit targets have become much more widespread in the 1990s than in the previous two decades.* The use of explicit targets—whether for the exchange rate, money or inflation—grew in the 1990s. Their use is now more widespread than at any time since Bretton Woods. The number of countries with explicit exchange rate targets increased from 30 to 47; the number of countries with explicit money targets increased from 18 to 39. The number of countries with inflation targets increased almost seven-fold, from 8 to 54.[4] Of the 54 countries that had inflation targets in 1998, 13 (14% of all countries) had inflation targets only. At the start of 1990, 8 countries had explicit inflation targets, and only one of these (New Zealand) claimed it to be the centrepiece of its monetary framework.

- *Many countries in the sample use more than one explicit target.* In 1998, 55% of the sample announced an explicit target (or monitoring range) for more than one of the exchange rate, growth in money or credit, and inflation. In 1998, each country published an average of $1^1/_2$ targets for these variables. And 24% of all countries announced targets simultaneously for (only) money and inflation.

- *In the 1990s, there were 101 examples of a country announcing a new explicit target for any of the exchange rate, money and inflation; and only 17 countries dropped an explicit target.* Ten of the targets dropped were exchange rate targets. These were for Egypt (1991), Finland, Norway, the United Kingdom, Sweden (1992), Croatia (1993), Mexico (1994), Mozambique (1995), Czech Republic (1997), and Russia (1998).[5] The majority of these changes were in response to an exchange rate crisis. A further seven economies dropped money targets (or monitoring ranges) during the period. These were Portugal (1992), Turkey (1992), Spain (1994), Macedonia (1995), Czech Republic, Poland, and the United Kingdom (1997). Generally, these represented an acknowledgment that money growth was not necessarily at the top of the central bank's hierarchy of indicators. There were virtually no cases of a country dropping its explicit inflation target in the 1990s.[6]

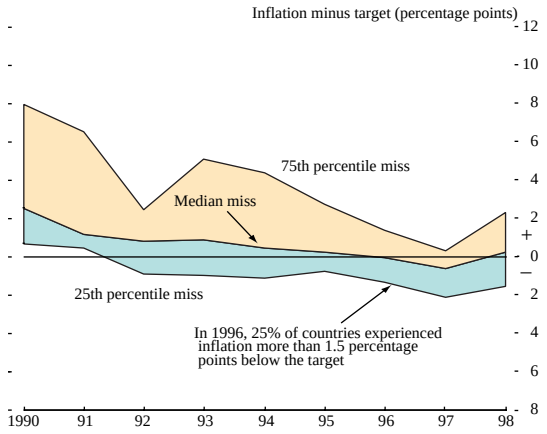
Flexibility and uncertainty in the implementation of inflation and money growth targets

Policy-makers may sometimes regard it as acceptable to miss their target. In the analysis that follows, a larger miss is associated with a relatively flexible approach to policy targeting. An important caveat, however, is that even when policy attempts to adhere rigidly to targets, transmission lags may imply that policy is unable to restore a variable to its targeted path within the period. The data used here cannot distinguish between these two scenarios.

(1) See Christoffersen and Doyle (1998).
(2) In the remainder of the article we refer to 'targets' rather than 'targets and monitoring ranges'. Nevertheless, we acknowledge that some countries, including the United States, have stated that monitoring ranges have limited importance in terms of guiding monetary policy.
(3) See Fry, Julius *et al*, (*op cit*).
(4) There are cases where the government publishes a forecast for inflation in its annual budget that may or may not represent an explicit target for monetary policy. We regard these as explicit targets of monetary policy only if a central bank responded that there was an explicit inflation target.
(5) These do not include any of the Asian economies that abandoned their 'soft-dollar' pegs.
(6) Some countries that joined the European single currency may have dropped formal targets for domestic inflation in 1999.

Charts 3 and 4 show the average performance relative to target and the distribution of misses for broad money growth and inflation targets.(1) In each year of the 1990s the charts show the median miss, plus the value of the miss for the country at the 25th and 75th percentile of the distribution. Thus the shaded area encloses the outcomes for the half of the sample with the smallest misses above and below the target ('accurate' observations). The analysis focuses on the median rather than the mean, because the distribution is skewed by a very small number of wide target misses.

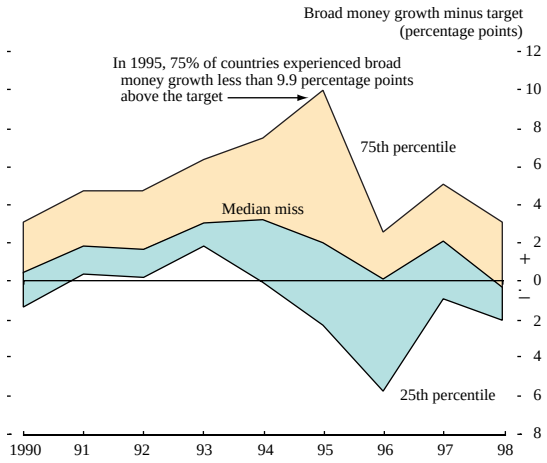
Chart 3
The distribution of inflation target 'misses' in the 1990s



Note: See Table B for the number of observations and the median target set in each year.

Source: Bank of England survey of monetary frameworks.

Chart 4
The distribution of broad money target 'misses' in the 1990s



Note: See Table B for the number of observations and the median target set in each year.

Source: Bank of England survey of monetary frameworks.

The number of observations varies from year to year, as do the median target levels (see Table B). For both money and inflation targets, the number of observations is particularly small in 1990–92. So we focus on the results between 1993 and 1998, when there are between 20 and 51 observations in each year.

Table B
Number of observations of inflation and broad money target misses in each year, and the median target

	Number of observations for inflation targets and outcomes (a)	Median inflation target	Number of observations for broad money targets and outcomes (a)	Median broad money target
1990	6	3.8	10	11.5
1991	10	6.0	11	10.0
1992	13	10.0	14	10.0
1993	22	10.0	20	12.0
1994	29	8.0	24	12.7
1995	35	8.0	26	13.6
1996	42	7.0	27	15.0
1997	48	7.1	30	15.0
1998	51	6.5	21	13.5

Source: Bank of England survey of monetary frameworks.

(a) Some outcomes for 1998 are not yet available from central banks. Where possible, these outcomes have been estimated using IMF data.

The data raise several questions:

- *To what extent is the increased use of explicit targets indicative of a more rigid approach to monetary policy?*

For inflation targets between 1993 and 1998, the average width of the range of target misses between the 25th and 75th percentile is 4 percentage points (see Chart 3). Chart 4 illustrates country experience with broad money growth targets. Between 1993 and 1998, the average width of the range enclosed by the 25th percentile miss and the 75th percentile miss is 7.3%. These data suggest that broad money targets have not been treated as rigid rules.

The cross-sectional evidence presented here is complementary to the time series evidence that assesses the likelihood of adhering to particular inflation outcomes. The time series evidence from the 1980s and earlier suggests a humbling degree of inaccuracy in central banks' capacity to meet targets. Haldane and Salmon (1995) estimate a model for inflation in a particular country (the United Kingdom) and observe errors based on historical experience.(2) They find that on the basis of UK data between 1960 and 1994, in some of their simulations there is 'only a 50% probability of adhering to a target range of 6 percentage points'. As a result, Haldane (1995) suggests that the central bank faces a trade-off between 'credibility and humility'.(3)

The cross-sectional evidence from our survey suggests that, in the 1990s, central banks have done considerably better in meeting explicit inflation *and* money targets than might have been expected from earlier experience.(4) Nevertheless, the results from Table C.1 show that the median absolute miss in the 1990s was between 1 and 5 percentage points; ie there was approximately a 50% success rate in adhering

(1) Data are responses to the Bank of England questionnaire. As far as possible we have sought to make data consistent by asking for information about when the target was set in the year prior to which the target referred. Where there is a target range, we have taken the average as the reference point. Where the target is specified as a ceiling, we have treated the ceiling as the reference point.
(2) The authors use a small macro model, add to it a policy rule, and then solve the system by feeding in a set of shocks calibrated from the historically estimated residuals. The authors control for policy-induced volatility. Their results are in line with time series results for other countries estimated at the same time.
(3) Haldane (1995), page 203.
(4) Though the cross-sectional analysis used here has the disadvantage of being unable to explain such good performance.

to an inflation target range of ±1.5 percentage points in the 1990s.(1) For countries setting an inflation target of less than 3.5%, there has been around a 50% probability of adhering to a much narrower range of ±0.8 percentage points. For money targets and outcomes, Table C.2 suggests greater accuracy than that predicted by models based on time series data. For explicit money targets, there was approximately a 50% success rate in achieving an outcome within 3.2 percentage points either side of the target.

Table C
Summary of misses from inflation and broad money targets in countries that announced explicit targets in the 1990s

Table C.1
Summary of median(a) misses from inflation targets

Total number of annual observations = 256. Total number of countries = 54.

Percentiles in distribution	All	0–25th	25th–50th	50th–75th	75th–maximum
Range of targets implied by percentiles (percentage points)		Less than 3.5	3.5–7.8	7.8–13.8	Above 13.8
Median miss	0.2	-0.5	0.2	0.5	1.4
Median absolute miss	1.5	0.8	1.1	1.9	6.4

Table C.2
Summary of misses from broad money targets

Total number of annual observations = 183. Total number of countries = 31.

Percentiles in distribution	All	0–25th	25th–50th	50th–75th	75th–maximum
Range of targets implied by percentiles (percentage points)		Less than 8.0	8–12.5	12.6–17.0	Above 17.0
Median miss	1.5	0.1	0.4	2.4	3.8
Median absolute miss	3.2	2.3	4.3	2.9	6.0

Table C.3
Comparison of misses from inflation and broad money targets in economies where both were announced in the same year

Total number of annual observations = 115. Total number of countries = 25.

Observations for:	All observations		Low target observations (b)		High target observations (b)	
	Inflation	Money	Inflation	Money	Inflation	Money
Median absolute miss	1.9	3.8	1.1	2.8	4.2	6.2

(a) The analysis focuses on median rather than the mean, because a very small number of very large misses strongly affects the mean miss.
(b) The 'high' and 'low' groups were divided according to the magnitude of the sum of the inflation and money target in that year.

Why is the time series and cross-country evidence different? One possibility is that judgment combined with models markedly improves the accuracy of policy. Another is that whereas the time series results are based on estimates over several decades, the results from our survey refer only to the 1990s, when there may have been fewer exogenous (non policy induced) shocks that induced inflation volatility. This explanation is consistent with the view that the 1990s provided a relatively shock-free environment highly conducive to credible explicit targets.(2)

- *Are the results suggestive of bias—ie do outcomes tend to overshoot or undershoot the target on average?*

Chart 3 suggests that inflation outcomes have, since 1994, not been obviously biased in either direction relative to target. In the years since 1994, the median miss has been within the range of +0.8 to -0.7 percentage points. And in the sample as a whole, the median miss is +0.2 percentage points (see Table C). In contrast, Chart 4 provides evidence that money targets have been overshot more often than undershot. Table C.1 shows that the median money target miss for the entire sample was +1.5 percentage points.

- *To what extent do the results depend upon the rate of inflation when the targets are being set?*

The sample contains examples of targets announced when inflation is low, and examples of explicit targets being announced as part of a policy plan to reduce inflation from high rates. High inflation that occurs because of adverse shocks or because there are pressing policy objectives other than low inflation is likely to make it harder to achieve monetary targets. Table C summarises the relative size of target misses in 'low' and 'high' inflation economies. Table C.1 contains the median misses from explicit inflation targets in the 1990s for all observations. It also divides the sample into four groups, according to the magnitude of the target. One quarter of observations represent countries targeting a rate of inflation of under 3.5%; half are below 7.8%; and three quarters are below 13.8%. Table C.2 provides analogous information, based on the experience of explicit targets for money growth. The data used in each section of the table are set out in two rows. The first relates to the median miss, which may be greater or less than zero depending upon whether targets are relatively more likely to be overshot or undershot. The second gives the median absolute misses, irrespective of whether the outcome was above or below the target.

Each section of Table C shows that misses are higher when the targets are higher, for inflation and for money growth. Overall, the table shows that misses remain roughly in proportion to the level of the target. There are more than 60 observations in total for annual inflation targets of less than 3.5%. They illustrate that the median miss is just -0.5 percentage points (the minus sign indicating that low-inflation countries have undershot the target more often than overshooting it), and the median absolute miss is 0.8 percentage points. Low-inflation countries have established a track record of accuracy in hitting targets, with little evidence of systematic over or undershooting. For countries with higher targets, Table C.1 confirms that misses have been larger and outcomes are more likely to be above target.

Money growth targets exhibit a similar pattern of misses, increasing in magnitude for higher-target observations. However, in absolute terms, the median misses are similar in each of the ranges up to 17%. This is because several economies, such as Taiwan, have had considerable success in anticipating shifts in velocity and meeting money targets, even when the targets are set at relatively high growth rates.

(1) This is the median absolute miss for the entire sample—shown in the first column of Table C.1.
(2) What is less clear is how the proliferation of explicit targets has helped to create such a shock-free environment.

The final question to be addressed using these data is:

- *Are monetary and inflation targets implemented with equal or differing degrees of flexibility?*

Table C.3 provides information on countries that had explicit inflation and money growth targets in the same year. This makes it possible to compare the flexibility with which inflation and money targets are implemented in countries that announce both. An important caveat is that the misses could be attributable not only to greater flexibility in policy, but could also arise because of the differing impact of demand, supply and velocity shocks on money and inflation targets. If policy is not able to restore the variable to target within the period because of relatively long transmission lags, then even attempts to adhere rigidly to targets may not succeed in eliminating target misses.

The results show that inflation outcomes were significantly closer to target than broad money growth outcomes, irrespective of whether the targets were low or high. The median inflation target miss (in absolute terms) for countries that announce both inflation and money targets is 1.9 percentage points, compared with 3.8 percentage points for broad money growth. The results are consistent with the view that over a broad range of countries, the mix of shocks leads to greater deviations from money targets than inflation targets. In particular, velocity shocks may have led to relatively larger deviations from money targets. The results may also reflect the priority that policy-makers give to inflation targets over money targets, in the event of a conflict between them.

The results also illustrate that in practice it is difficult to assert that inflation targets imply any more or less discretion than do money targets. It might be thought that inflation targets are more discretionary in the short term. Cottarelli and Giannini (1997) note that money targeting is 'characterised by the announcement of a short-term intermediate target, either in the form of a monetary aggregate or of a (typically crawling) peg'.(1) Policy instruments typically affect money aggregates sooner than inflation, and hence policy-makers wishing to adhere to money targets may have to act sooner and with less discretion.(2) Yet money target outcomes have deviated from target by more than inflation outcomes, indicating that money targets are either harder to hit or are interpreted more flexibly. This would support the view that policy may be set in a pragmatic manner, irrespective of the published target.

Rules versus discretion revisited

The debate about rules versus discretion in monetary policy can be traced back a number of decades.(3) The arguments are well summarised by Guitian (1994). He describes how, under a successful rules-based policy, 'the predictability of policy should help offset the unpredictability of the environment'. In contrast, a successful discretionary approach involves using 'policy adaptability as a means of keeping an uncertain environment under control'.

The choice of intermediate target for monetary policy has usually been framed in terms of the controllability of a particular variable and the stability of the relationship between that variable and the final objective.(4) Yet it is hard to explain some countries' choice of targets using such a framework. Why do so many liberalising countries with poor data and unstable velocity use money targets? Why do other countries that have poor data and are vulnerable to supply shocks use explicit inflation targets? Are 'explicit targets' in some cases better described as benchmarks for variables, against which outcomes can be usefully measured and deviations analysed?

In the light of this debate, explicit targets for domestic nominal variables can be seen as an attempt to maximise the benefits of both rule-based and discretionary approaches. This is a point taken up by King (1996), who argues that:

'The search for a simple policy rule to guide the transition is an illusion. But central banks can try to accelerate the learning process by 'teaching by doing'; in other words making clear their own preferences and explaining their own view of how the economy behaves.' (1996, page 444.)

On this view, the choice of target depends not only on the role of the candidate variable in the transmission mechanism, but also on the issues of transparency and governance in monetary policy. We noted above the increase in the number of economies that announced targets for more than one variable. Chart 2 above illustrated that the fastest-growing 'regime' is the combined use of explicit money and inflation targets. This combination was used by 24% of the sample, more than the combined total of inflation targets only (14%) and money targets only (5%). The use of dual targets is consistent with the view that targets sometimes represent benchmarks. Policy-makers use explicit targets because they find that it is better to have narrow objectives and explain misses, rather than having imprecise objectives that make success or failure difficult to measure.

Many authors assessing the international context of monetary frameworks have reinforced the message of compromise between explicit targets and flexibility. In summarising the debate between rules and discretion, Guitian reminds us that 'there is an exception to every rule'. Similarly Bernanke, Laubach, Mishkin and Posen (1999) describe inflation targets as 'a framework not a rule' and 'constrained discretion'.(5) And responses to our survey

(1) This argument about the nature of the implementation of intermediate money targets does not necessarily conflict with the view that inflation is purely a monetary phenomenon in the long term.
(2) Although if inflation targeting implies rigid adherence to an inflation forecast, this may limit the scope for discretion even when policy does not attempt to hit the current inflation rate. Goodhart (1999) assesses how targeting future inflation may still leave scope for discretion in policy decision.
(3) Simons (1948) stresses the policy benefits of stable money rules, also promoted by Friedman (1960).
(4) See, for example, Cukierman (1995).
(5) See Guitian (1994), page 36, and Bernanke, Laubach, Mishkin and Posen (1999), pages 293 and 299.

illustrate the flexibility in money targeting. Indian policy-makers describe their framework as 'money targeting with feedback', and the Swiss respondent to our survey described their framework as 'money targeting with an escape clause'. The Swiss response also informs us as to how a central bank may implement such 'constrained discretion':

'Overall, money targeting provided a useful framework to explain current policy and deviations from targets. Target misses were explained in detail and attributed to specific shocks. Deviations resulted in a policy response but not necessarily within the same year. The combination between a long-term commitment to price stability and short-run policy discretion was reaffirmed in 1989 by the change from annual targets to multi-year targets. Since then the SNB [Swiss National Bank] has tried to use the flexibility provided by a multi-year target without letting the deviations get out of hand. The multi-year target itself may be described as an ideal path that would be valid in the absence of shocks, ie with output matching potential and inflation equal to the inflation target.'

The increasingly widespread use of explicit targets over the past decade reflects the progress of the debate between rules and discretion. Explicit targets can be used to demonstrate that a particular variable ranks high up the hierarchy of indicators, even if it is acceptable to miss the 'target'.

To improve the trade-off between flexibility and credibility, policy-makers have attempted to build flexibility into the design of targets. The designers of policy targets face a number of trade-offs in their attempts to produce an optimal indicator of policy. Yet there may be trade-offs between the target's comprehensiveness and its clarity (Cufer, Mahadeva and Sterne (1998)). Fry, Julius *et al* assess the use of differing target bandwidths, time horizons of targets, and exclusions of measurable components from target indices. The data from the survey illustrate highly diverse practices used in central banks. It is clear that even if attempts are made to design targets in such a way that provide for flexibility in policy, it would be difficult to specify a target that encompasses the entire range of shocks. Explaining misses will inevitably remain important. So it is unsurprising that the increasing push towards explicit targets has been associated with greater efforts by central banks to explain policy.

Summary and conclusions

Throughout the world, monetary policy objectives in the 1990s have become increasingly focused on more narrowly defined objectives that are consistent with central banks' statutory objectives of price and monetary stability. From the wealth of experience evident from the responses to the questionnaire, it is clear that explicit targets are being used more than at any time since Bretton Woods, and the publication of targets for domestic aggregates has never been more widespread. This represents a marked convergence in the approach to policy.

The results have illustrated that countries have been far more successful in minimising the deviation of outcomes from target than might have been expected on the basis of experience in the 1960s, 1970s and 1980s. This may be partly the result of a relatively low incidence of external shocks (such as hikes in commodity prices) that contributed to higher global inflation in previous decades. But it is also likely to reflect the value of an explicit target as a forward-looking guide to central bank action.

The variety of combinations of published targets and the varying degrees to which targets are met illustrate their possible use as either a pre-commitment or a communication device. Such diversity reflects widely differing economic and institutional circumstances in the various countries in the survey.

The greater use of explicit targets does appear to be part of a broader move to build credibility through transparency. In the long run, credibility is built primarily by actions and achievements. But a strong message from the survey is that defining objectives more narrowly, and making an effort to explain the outcome of targeted variables more clearly, can be an important contribution to central bank credibility and policy.

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