Inflation Targets in a Global Context

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Inflation targeting has become a global framework. There is an inflation-targeting country on every continent, and many other countries have introduced particular characteristics of inflation targeting into their monetary framework. Inflation targets have thus far proved to be durable: no country has dropped its inflation target, other than to join a monetary union.

Assessing the global contribution of inflation targeting in pioneering new options for framework designers is, however, complicated. Drawing lessons from a narrowly defined group of countries commonly labeled as inflation targeters may understate the mechanism's contribution in influencing the frameworks of a very wide range of countries. Conversely, it is also possible to overstate its contribution, since many of the characteristics of inflation targeting have been previously used in other contexts. The Bundesbank, for example, has clearly stated its numerical inflation and money objectives for a number of years, and according to Posen (2000), the transparency with which the Bundesbank explained expected deviations from these objectives is a model for emerging economies.

An accurate assessment of the wider contribution of inflation targeting must therefore look at global developments in monetary framework design. This paper focuses on the relations among the jigsaw pieces of characteristics that together form a monetary policy framework. It not only assesses the experience of those countries recognized as operating inflation-targeting frameworks, but examines the monetary frameworks of a total of ninety-four economies using the results of a survey contained

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in Fry and others (2000). That survey of monetary framework design is the broadest ever conducted, and it contains questions relating to central bank objectives, targets, independence, accountability, transparency, and the analytical capacities of central banks.

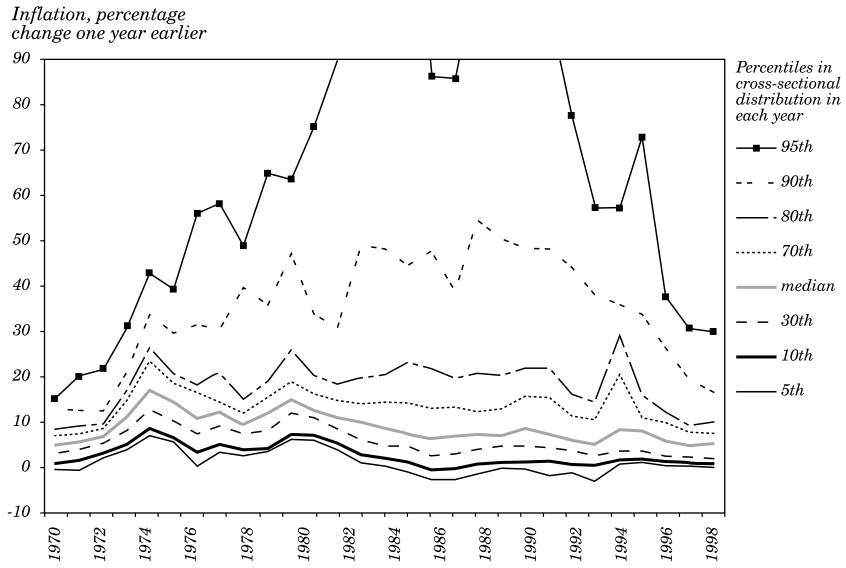
The following section sets the scene by reviewing international performance in using various alternative nominal anchors to achieve stable inflation since 1970. Sections 2 and 3 address the roles of inflation targeting as seen by practitioners, compare these views with more formal definitions of inflation targeting provided in the literature, and then outline how a broadly based survey of monetary framework characteristics can be used to place the contribution of inflation targeting in a global context. Sections 4 through 6 present some results of the survey, focusing on how targets have been used and relating their use to other framework characteristics of independence, transparency and analysis. Section 7 concludes.

1. The Search for Inflation Stability over Three Decades

Judging by inflation outcomes, the search for a nominal anchor was quite successful in the 1990s. Many different types of economies registered declines in inflation: inflation fell across the spectrum of low-, medium-, and high-inflation economies. Figure 1 illustrates the cross-sectional distribution of inflation rates across ninety-one economies for which continuous inflation data exist between 1970 and 1998. The lowest line in the figure represents the fifth percentile of the global inflation distribution. The lowest point on this fifth percentile line shows that in 1993, 5 percent of countries in the sample had inflation below –3 percent (that is, deflation of over 3 percent). In contrast, the upper line, which represents the ninety-fifth percentile, goes off the scale in some years. Inflation fell sharply across a very wide distribution of economies after 1994. These reductions mirror the rapid increases in inflation following the oil price shocks of the 1970s, but there is no causation in the 1970s and 1990s. The chart shows that global inflation (across the entire distribution) is lower now than it has been since the start of the 1970s.

The data are also useful for establishing the circumstances in which inflation stability has occurred. I define a stable period of inflation as occurring when inflation remains within a particular range for a minimum of five years. The ranges are specified by splitting the sample according to percentiles in the entire distribution of inflation, using

Figure 1. Cross-Sectional Distribution of Inflation Rates in Ninety-One Economies, 1970–98a



Source: World Bank, World Development Indicators; IMF, International Financial Statistics.
a. Data taken from ninety-one developing and industrialized economies for which data are available in each year from 1970 to 1998. Data for 1997 and 1998 includes estimates.

data for 96 economies between 1970 and 1996.[1] Of the 2,520 annual observations, 20 percent are of inflation that is less than 3.8 percent; 40 percent are less than 7.4 percent; 60 percent are less than 11.5 percent; 80 percent are less than 19.7 percent; and 20 percent are higher than 19.7 percent. This generates the following ranges:

—Very low inflation: under 3.8 percent;

—Low inflation: 3.8 to 7.4 percent;

—Medium inflation: 7.4 to 11.5 percent;

—High inflation: 11.5 to 19.7 percent; and

—Very high inflation: over 19.7 percent

The results establish that very low inflation (below 3.8 percent) is strongly associated with periods of stable inflation. In other words, once inflation is low, it is more likely to stick there than is the case at higher rates. Of the seventy occasions in the study in which inflation remained

1. The sample includes full data on the framework used in each year for the ninety-six economies, but five of these countries lack full inflation data. The analysis does not include transitional economies, as their time series are not long enough.

in a particular range for at least five years, 39 percent (twenty-seven cases) were episodes of very low, stable inflation (less than 3.8 percent).

The data suggest that exchange rate targeting has been the most successful nominal anchor in terms of achieving periods of stable inflation.[2] Thirty-nine of the seventy stable-inflation episodes occurred when the country was targeting the exchange rate for all or most of the period. Industrialized countries have been far more successful than developing countries in achieving episodes of stable inflation within ranges of very low, low, or medium inflation.[3] Over the past three decades, low, stable inflation has occurred predominantly in Germany, Japan, and the United States, as well as in countries that successfully fixed their exchange rates to these large economies. More recently, it has also been achieved by inflation-targeting countries and by Switzerland, which historically has used money targeting.

The analysis highlights the poor historical performance of domestic anchors in emerging economies, together with the consequent gap that might be filled by the recent developments in monetary frameworks. Currency crisis have pushed a number of emerging economies toward a floating exchange rate regime.[4] At the same time, there is no example of a developing economy achieving very low or low stable inflation while relying on a domestic policy anchor.[5] The fourteen episodes of very low or low stable inflation in developing economies were all achieved through exchange rate targeting, that is, through borrowing monetary credibility from abroad. The data contain no precedents of developing and transitional economies successfully using a domestic nominal anchor to achieve periods of inflation stability.

The poor historical record of developing countries in using domestic nominal anchors to achieve stable inflation is not necessarily suggestive of a similar future performance. Advances in the technology of monetary frameworks, ranging from reduced provision for fiscal deficit finance to greater independence, accountability, and transparency of policy, have increased the likelihood of improving inflation performance within individual countries.

2. Data for monetary frameworks are from Cottarelli and Giannini (1997), supplemented by International Monetary Fund (IMF) annual publications and the Bank of England survey.

3. This could be attributable both to policy and to a greater prevalence of exogenous shocks such as commodity prices.

4. Fischer and Sahay (2000), for example, note that only four transitional economies had fixed exchange rate regimes in early 2000.

5. India achieved stable inflation in the medium range in the 1990s using a discretionary policy that was based on managing—as opposed to pegging—its exchange rate.

2. The Essence of Inflation Targeting: Practitioners' Views

Inflation targeting has received positive mid-term reports in some of the countries in which it has been implemented, where it is widely regarded as having contributed to achieving monetary stability.[6] The reflections of framework practitioners are thus a good place to identify the most important themes and questions concerning inflation targeting. Over fifty central bank governors and deputy governors addressed the issue of monetary policy frameworks at the Bank of England in June 1999. Josef Tosovsky of the Czech National Bank framed the key issue in the choice of framework design in nautical terms: As "navigators aboard the good ship *Monetary Policy*", he argued that we search not just for an explicit target to provide a nominal anchor, but for institutional arrangements that constitute a harbor for safe anchorage (in Mahadeva and Sterne, 2000, pp. 191–92). The discussion provides an overview of the nature and the importance of inflation targeting from the point of view of practitioners.[7] The governors represented four countries that have several years of experience with inflation targeting (namely, Canada, the Czech Republic, New Zealand, and the United Kingdom), as well as many others that have more recently implemented an inflation targeting regime or whose frameworks have been influenced by the mechanism.

2.1 Does Inflation Targeting Represent a Sea Change in Framework Design?

The discussion indicates that practitioners generally perceive inflation targeting to be important in the evolving framework options, rather than viewing it in terms of a radical shift from previous frameworks. According to Mervyn King (Bank of England), when the Bank of England was deciding on its monetary framework following the country's exit from the ERM (the European exchange rate mechanism), its choice of framework was not influenced exclusively by central banks that had pioneered inflation targeting, such as the Reserve Bank of New Zealand. King reports that "[We] looked at what we thought were broadly successful central banks around the world, and let me take the examples

6. Haldane (1995) contains an early assessment of its use, while Bernanke and others (1999) compare inflation targeting frameworks with those used in Germany, Switzerland, and the United States. In the context of emerging economies, Blejer and others (2000) conclude that the strategy should be considered further.

7. The discussion is published in Mahadeva and Sterne (2000, pp. 182–205).

of the Bundesbank and the Federal Reserve. Neither had an inflation target: one had a monetary target and the other had no quantified specific target at all, though it had general commitment to price stability and high employment. But, we asked ourselves, what sort of discussion took place in the Bundesbank Council and the FOMC [the U.S. Federal Open Market Committee]? And it seemed to us that a good description of what they actually did was that they looked ahead to where inflation was likely to go in the absence of a policy change. And then they decided whether or not the likely inflation outcome was acceptable" (Mahadeva and Sterne, 2000, p. 184).

All frameworks aim to keep inflation low in the long run but to respond to shocks, an observation that prompted King to state that "An inflation target is not a new view of monetary economics or the monetary transmission mechanism" (Mahadeva and Sterne, 2000, p. 182). Christian Stals (Reserve Bank of South Africa) reinforces the view and expresses reservations about classifying countries into different frameworks: "[A] monetary policy framework is very much about presentation, transparency, explanation, and so on.... I think there is only one particularly defined monetary policy framework: it can begin with an inflation target, and if you have an inflation target you have to control the growth in the money supply, and if you have to control the growth in the money supply you have some kind of restriction on bank credit extension, and if you have to control bank credit extension then you have a liquidity policy, and if you have a liquidity policy you have an interest-rate policy.... So deciding in the end which one of those elements of the framework you use as a reference point or as an intermediate target or as a final target, you cannot ignore the other elements of that framework" (Mahadeva and Sterne (2000, p. 195).

2.2 The Benefits of Inflation Targets

The aspects of inflation targeting that practitioners mention as being particularly important are its contribution to improving coordination between the fiscal and monetary authorities, to influencing expectations of the private sector, and to providing focus within the central bank itself. These contributions however, are cited primarily by practitioners in low-inflation countries. Gordon Thiessen (Bank of Canada) comments that "It changes the way you make decisions and the way you describe decisions and I must say from my own personal point of view it has changed enormously my relationship with the House of Commons standing committee. Having an agreed target just changes the whole nature

of these discussions and I think makes monetary policy more credible, more understandable, and less an issue of controversy than it was before" (Mahadeva and Sterne, 2000, p. 194). Similarly, Don Brash (Reserve Bank of New Zealand) holds that specifying the inflation target in conjunction with the government is "hugely beneficial." He argues that "Having the target agreed with the government and known to the public greatly reduces the risk of government criticism of the central bank as long as the inflation rate is, and seems likely to remain, above the floor of the inflation target." Brash further states that "If the government stipulates an inflation target that it wants the central bank to deliver, it implicitly states that if fiscal policy is eased in a way that is inconsistent with that inflation target, the central bank will of necessity tighten monetary policy" (Mahadeva and Sterne, 2000, p. 187).

The target may also be useful in influencing the behavior of the private sector. With reference to wage setting, Brash reports that "When our inflation target was introduced, the trade union movement basically denounced it, and called the central bank Governor all kinds of unflattering names. But at the same time, they told their members that as long as this undesirable policy was in place, the unions would have to restrain their wage demands; otherwise unemployment was going to go up. And I think inflation targeting really meant that unions recognized that they were no longer influencing the inflation rate; they were influencing the unemployment rate, and I think that was a very important learning point."

Similarly, King argues that the inflation target can serve as a useful benchmark for explaining objectives and as a reference point to explain interest rate decisions. He argues that "It seems to be fundamental to get across to the public that the objective of monetary policy is solely to do with price stability in the long run." In terms of explaining particular policy decisions, he states that "it is more difficult to explain to the population at large that a particular interest rate decision was made in order to control the growth of a monetary aggregate. It is easier, I think, to explain if you can relate the decisions to something that is visible and comprehensible, and an inflation target has that great advantage" (Mahadeva and Sterne, 2000, p. 184).

Finally, several governors from a variety of economies spoke of the benefits of the inflation target for the internal workings of the central bank. Mervyn King explains that "It does give everyone in the central bank a very clear view as to what the domestic anchor for policy is. It is a common-sense approach to say that what we are trying to achieve is price stability, so let's be very clear and judge our

success or failure by what happens to inflation" (Mahadeva and Sterne, 2000, pp. 182–83). Josef Tosovsky (Czech National Bank**)** went even further by suggesting that **"**Inflation targeting changes the central bank completely. In our case, there were changes in organizational structure, in procedures, and in responsibilities and accountability of individual people in the central bank, including the board. So one breaks down the barriers and communicates very effectively with the general public. The 'kitchen' of monetary policy has to be open, showing what ingredients were used when the staff was preparing the forecast and what was behind a particular decision" (Mahadeva and Sterne, 2000, p. 194).

Inflation targeting thus has the potential to bring about improved credibility by affecting the incentives of policymakers, even when a sound track record has not yet been established. This is explained by Tosovsky: "Perhaps the most important issue in the framework of inflation targeting [is] expectations. Inflation targeting helps to reach a certain consensus on the inflation outlook between trade unions, on the one hand, and the Government and, of course, the central bank on the other. Gaining such agreement on the mix of policies—income policy, fiscal policy, and monetary policy—should be beneficial because it should reduce the cost of disinflation."

2.3 Under What Circumstances Should Inflation Targeting Be Implemented?

The governors' indicate two approaches to this question. The first is voiced by Arminio Fraga (Brazil), who argues that "It is very hard not to move toward inflation targeting once you have chosen to float" (see Mahadeva and Sterne, 2000, p. 202). An extension of this argument would suggest that even if it were not possible to implement all the ingredients for an effective domestic nominal anchor based on inflation targeting, implementing some of them is better than the alternative of doing nothing.

The second approach is to focus on the prerequisites and constraints to effective inflation targeting. Daudi Ballali (Bank of Tanzania) used the experience of Tanzania to illustrate the limitations of inflation targeting: "[W]hen the Treasury asks what is the size of reduction in the inflation rate that is achievable in the coming year, I just say, 'If you can give me the size of the deficit, then I can say what is achievable" (see Mahadeva and Sterne, 2000, p. 199). Similarly, Dr. Matthews Chikaonda (Bank of Malawi) extends the nautical analogy in stating, "What we need to do is to cross over to the other side of the harbor, the

fiscal side, and bring those guys on board." In the United Kingdom, too, Eddie George (Bank of England) feels that the success of the framework depends on government support for it. He argues that "Once [that] has been accepted at the political level and embodied in statute, or in the government endorsing or imposing a monetary or inflation target on the central bank, then… you can expect to have greater coordination on the fiscal side. And that is why the explicit endorsement by the political authorities in the country is absolutely crucial, in our experience, in implementing this regime" (see Mahadeva and Sterne, 2000, p. 203). All of these prerequisites are similar to those for operating an effective money-targeting or discretionary regime.

3. Using Definitions of Monetary Frameworks and Inflation Targeting

It is considerably easier to provide a general definition of a monetary framework than it is to identify precisely those components that distinguish different types of monetary frameworks such as money targeting and inflation targeting. McNees (1987, p. 3) defines a monetary framework as "the institutional arrangements under which monetary policy decisions are made and executed." Therefore, the analysis of any monetary policy framework necessarily extends considerably beyond a particular target and beyond the confines of the central bank. Monetary policy frameworks are normally politically determined. They may depend, for example, on the country's financial institutions, the degree of expertise in monetary policy matters that exists both inside and outside the central bank, and other institutional and structural economic features. With so many variables, one size does not fit all.

Inflation targeting is a particular type of monetary framework. Its emergence suggests that a more robust nominal anchor may be available across a wide variety of economies. Bernanke and others (1999) are among those who point out that it involves "a framework not a rule." To draw lessons, it is helpful to define the key characteristics of inflation targeting in those countries that have practiced it, which a number of authors do. Table 1 illustrates some of the core features of inflation- and money-targeting frameworks in industrialized economies as defined by various authors. Analogies such as "constrained discretion" capture the essence of inflation targeters.[8] It is difficult, however, to establish a consensus on a precise definition that distinguishes

8. See Bernanke and others (1999, pp. 293).

inflation-targeting, money-targeting, and discretionary frameworks. Definitions must, in practice, identify specific framework characteristics, yet defining essential characteristics of inflation targeting does not fit comfortably with the view that no single program is applicable to all monetary policy frameworks. Some definitions, for example, may be interpreted as overstating the relative importance of analytical methods or institutional characteristics to a particular framework.

Table 1. Different Definitions of Money and Inflation Targets

Study	*Main distinction made between money and inflation targeting*
Leiderman and Svensson (1995)	With reference to Canada, Finland, New Zealand, Sweden and the United Kingdom, the authors write, "These inflation targeting regimes have two characteristics: an explicit quantitative inflation target (specifying the index, the target level, the tolerance interval, the time frame, and possibly situations under which the inflation target will be modified or disregarded… [and] the absence of an explicit intermediate target for monetary aggregates or exchange rates."
Masson, Savastano, and Sharma (1997)	The authors mention four essential ingredients of inflation targeting: "explicit quantitative targets for the rate of inflation some period(s) ahead;… clear and unambiguous indications that the attainment of the inflation target constitutes the overriding objective of monetary policy in the sense that it takes precedence over all other objectives;… a methodology ('model') for producing inflation forecasts that uses a number of variables and indicators containing information on future inflation; and a forward-looking operations procedure in which the setting of policy instruments depends upon the assessment of inflation pressures and where the inflation forecasts are used as the main intermediate target."
Cottarelli and Giannini (1997)	"Inflation targeting is not purely the announcement of some short-run inflation target by the government—something that to different degrees occurs in most countries—but the announcement of a targeted inflation path extending up to a few years ahead, coupled with the setting up of procedures for public monitoring of how the monetary authorities pursue their objective." In contrast, monetary targeting is "characterized by the announcement of a short-term intermediate target, either in the form of a monetary aggregate or of a (typically crawling) peg."
Mishkin (2000)	"Inflation targeting is a monetary-policy strategy that encompasses five main elements: (i) the public announcement of medium-term numerical targets for inflation; (ii) an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated; (iii) an information-inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate, are used for deciding the setting of policy instruments; (iv) increased transparency of the monetary-policy strategy through communication with the public and the markets about the plans, objectives, and decisions of the monetary authorities; and (v) increased accountability of the central bank for attaining its inflation objectives."

3.1 Against a Prerequisite Approach to Introducing Inflation Targets

In labeling frameworks, a number of papers stress both the importance of macroeconometric models in inflation-targeting economies and the problems in building and using such models in developing and transitional economies.[9] Yet the survey results indicate that even in frameworks described by central banks as inflation targeting, judgmental forecasts are used just as frequently as model-based forecasts. Similarly, inflation targeting emphasizes the role of forward-looking policy and transparency, but these may be equally important in money-targeting frameworks and even more important in discretionary frameworks. In addition, definitions that focus on the explicitly targeted variable may not fully capture policy preferences. Very few money targeters, for example, would choose to adhere to the target if there was clear evidence of a velocity shock.

In a global context, attempts to define who is and is not targeting inflation can be an arbitrary exercise. Moreover, any attempt to establish prerequisites or preconditions to being classified as an inflation targeter is counterproductive.[10] Practitioners may interpret such discussions of prerequisites as implying that they should not employ an inflation target as an important part of their framework unless they already have in place transparency, central bank independence, and sound forecasting capacity. This would be a mistake.

There is no firm evidence, to my knowledge, that introducing certain characteristics associated with inflation targeting must be sequenced in a particular order. Emphasizing the importance of an inflation target could, in fact, be beneficial even when the other characteristics are not in place. Like other framework inputs, an inflation target may have positive marginal productivity toward the output of monetary stability, irrespective of the state of the other framework inputs. For example, a carefully negotiated inflation target could conceivably contribute to improved coordination of fiscal and monetary policy, even if forecasting capacity is limited, central bank independence is restricted, and little effort is being made to explain policy to the public. There are indeed many examples of both industrialized and emerging economies that adopted an inflation target be-

9. For example, Masson, Savastano, and Sharma (1997); Debelle and Hoon Lim (1998) for the Philippines; Christoffersen and Wescott (1999) for Poland; and Hoffmaister (1999) for Korea.

10. The discussion of prerequisites is a flaw in an otherwise excellent paper by Masson, Savastano, and Sharma (1997).

fore improving the coordination of fiscal and monetary policy, their forecasting performance, and central bank independence.[11]

The evidence on building credibility through the flexible use of targets presented below further undermines the view that strict prerequisites need to be in place before targets are adopted. Countries with unstable velocity have found intermediate money targets to be useful, just as countries with supply shocks, no detailed macroeconometric model, and limited independence have found inflation targets to be useful. In short, framework choices may evolve in a number of ways to meet particular circumstances, and focusing on prerequisites to any particular framework carries the risk of distracting policymakers from pursuing an optimal choice.

3.2 A Survey-Based Approach to Assessing the Contribution of Inflation Targeting

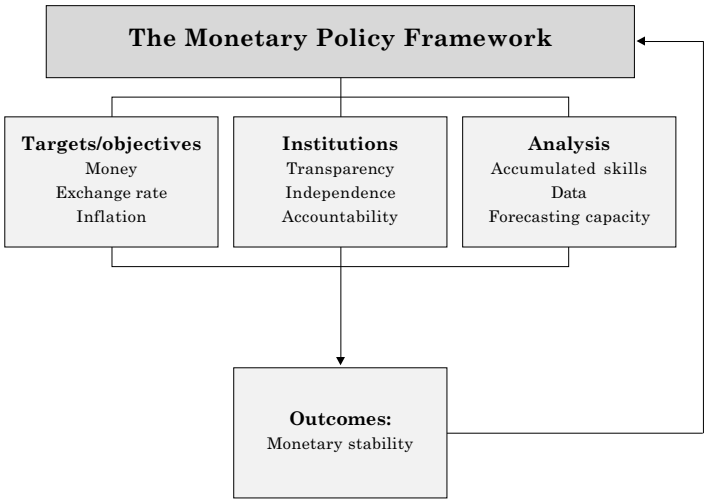
Macroeconomic policymakers have evolved their frameworks by fusing successful strategies from different types of regimes. The key advantage of a broadly based survey is that it considers the potential for a marginal contribution of any particular framework characteristic irrespective of the state of others. The paper investigates, for example, the extent to which inflation targets may be useful irrespective of the degree of transparency, accountability, independence, or other elements of an inflation-targeting framework. Similarly, it is possible to assess the contribution of transparency to delivering price stability irrespective of whether an inflation target is used.

A clearer perspective on the contribution of inflation targeting emerges when the experiences of inflation-targeting countries are compared with those from other economies that have developed nominal anchors over recent decades.[12] Figure 2 summarizes the characteristics from which a prototype monetary framework might be chosen. This paper analyzes each of these characteristics on the basis of data for a very broad group of ninety-four monetary frameworks that were surveyed in late 1988. The data are taken from a survey contained in Fry and others (2000); the countries included in the survey are listed in the appendix (table A1). Figure 2, which forms the basis of the framework characteristics measured by the

11. The Bank of England, for example, did not become independent until four years after it implemented inflation targeting, and its forecasting capacity was given impetus by the switch to inflation targeting.

12. None of the central banks from the largest three economies in the world, for example, describe their framework as inflation targeting.

Figure 2. Monetary Framework Characteristics



survey, is based on the presumption that there exist prerequisites to monetary stability, rather than to any particular monetary framework. The figure illustrates the distinct characteristics that may contribute to price stability. It would be difficult, however, to circle a group of these characteristics and identify them only with inflation targeting or money targeting. There would be many exceptions. Even the most carefully constructed definition of inflation targeting, such as Mishkin's, cannot exactly distinguish inflation targeting from money targeting frameworks, since effective money targeting might imply very similar ingredients.[13]

To improve understanding of the interactions between objectives, constraints, and the choice of policy framework instruments, the survey sought to measure as fully as possible the characteristics of frameworks. These include the following: the extent to which each country focuses on (1) exchange rate objectives, (2) money objectives, and (3) inflation objectives; institutional factors, namely, (4) the degree of independence of the central bank, (5) the accountability of the central bank to government and parliament, and (6) policy explanations (the extent to which the central bank provides the public with sufficient information to understand more fully the goals and reactions of policy); and analytical factors, namely, (7) the extent to which the central bank uses various indi-

13. See Posen's (2000) assessment of the post-war performance of the Bundesbank.

cators of inflation expectations, (8) the extent to which the central bank uses models and forecasts, and (9) the importance of analysis of money and the banking system to the choice of the monetary framework.

The authors use the survey results to compile a score between zero and a hundred percent for each of the categories, based on the weighted sum of responses to individual questions according to the criteria shown in the appendix (tables A2 to A7). The survey responses provide a store of facts, and many of these statistics can be drawn from the numbers in the right-hand side of each table. These columns illustrate the distribution of answers in all economies, together with a breakdown by industrialized, transitional, and developing economies.

4. The Use of Explicit Targets: Practical Experiences in the 1990s

The key characteristic of the framework is often an explicit target for monetary policy. This section assesses the use of such targets in a range of economies in the 1990s. The analysis is based on data provided by the ninety-three central banks that responded to the Bank of England questionnaire.[14]

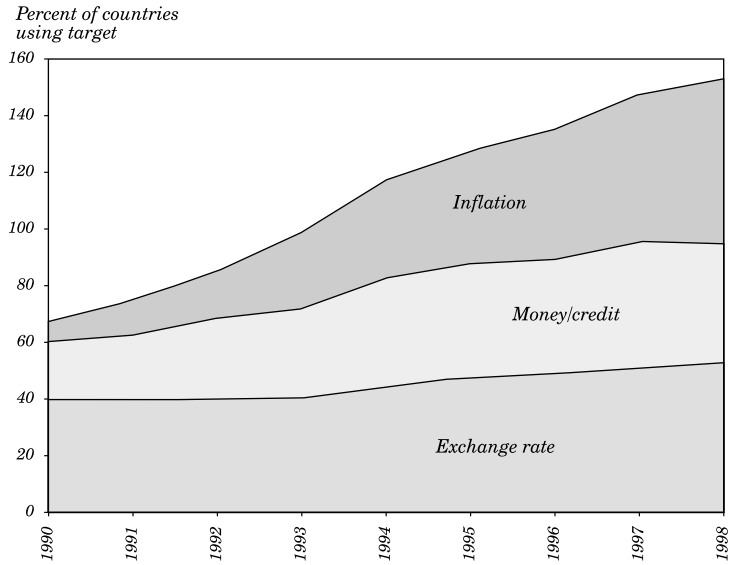
Explicit monetary policy targets became more widely used in the 1990s than at any time since the Bretton Woods era. In the survey of ninety-three central banks, 95 percent (all but four economies) used some form of explicit target or monitoring range in 1998.[15] The past three decades saw a marked increase in choices of explicit targets and monitoring ranges (see figure 3).[16] Table A8 in the appendix provides detailed information on the periods in which exchange rate, money, and inflation targets were adopted, used, and dropped in all ninety-three economies in the sample and for every year in the 1990s. The data indicate three particular trends.

14. The survey's ninety-four respondents include the European Central Bank (ECB), which completed the survey in 1999—later than other central banks. The information used here relates to the period before 1999, however, so the ECB data were excluded. The survey aimed to include variety of countries. Even so, some sample selection bias remains. For example, small open developing economies that target the exchange rate are under represented.

15. The exceptions are Botswana, Japan, Sri Lanka, and Thailand, but not the United States. In 1998 the Federal Reserve still published a monitoring range for broad money growth.

16. In the remainder of the section, I refer to targets rather than targets and monitoring ranges, although I acknowledge that some countries, including the United States, have stated that monitoring ranges have limited importance in terms of guiding monetary policy.

Figure 3. Explicit Targets Used in the 1990s



Source: Bank of England Survey of Monetary Frameworks.

First, many countries in the sample use more than one explicit target. In 1998, nearly half the economies in the sample announced an explicit target for more than one of the variables (namely, the exchange rate, growth in money or credit, and inflation), compared with only 8 percent in 1980. In 1998, each country published an average of 1.5 targets for these variables.

Second, the use of explicit targets—for the exchange rate, money, or inflation—became much more widespread in the 1990s than in the previous two decades. Between 1990 and 1998, the percentage of economies with explicit exchange rate targets increased from 37 to 54 percent; the percentage of countries with an explicit money target increased from 17 to 43 percent; and the number of countries with inflation targets increased over tenfold, from 5 to 58 percent of the sample.[17] Of the fifty-four countries that had inflation targets in 1998, eleven (12 percent of all countries) had an inflation target only, while of the six coun-

17. Some governments publish forecasts for inflation in their annual budget that may or may not represent an explicit target for monetary policy. These are considered explicit targets of monetary policy only if a central bank responded that there was an explicit inflation target.

tries that had explicit inflation targets in 1990, only one (New Zealand) described it as the centerpiece of its monetary framework.

Finally, in the 1990s (up to 1998), there were 114 examples of an economy announcing a new explicit target for the exchange rate, money, or inflation, while only nineteen economies dropped an explicit target. In other words, more new targets were adopted than there are economies in the sample. No country dropped its explicit inflation target in the 1990s, with the exception of countries joining the European single currency.[18]

5. Targets and Policy Reactions: Rules and Discretion in the Use of Explicit Targets

The debate about rules versus discretion in monetary policy can be traced back several decades.[19] The arguments are well summarized 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 following section uses evidence from international experience in the use of money and inflation targets to determine the extent to which targets are followed rigidly.

5.1 Inflation and Money Target Misses

Policymakers may sometimes regard missing their target as acceptable. Such a choice could occur either because of shifts in preferences or because of shocks.[20] 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 a given period. The data used here cannot distinguish between these two possibilities.

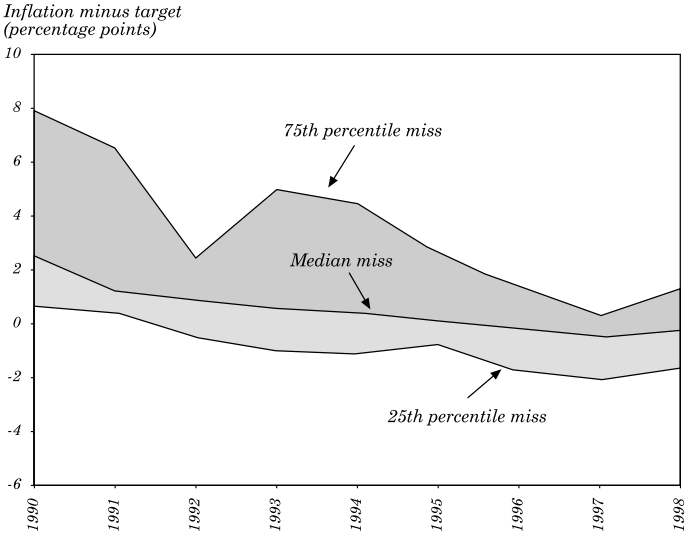
Figures 4 and 5 show the average performance relative to target and the distribution of misses for broad money growth and inflation

18. Some countries that joined the European single currency may have dropped formal targets for domestic inflation in 1999.

19. Simons (1936) stresses the policy benefits of stable money rules, which are also promoted by Friedman (1960).

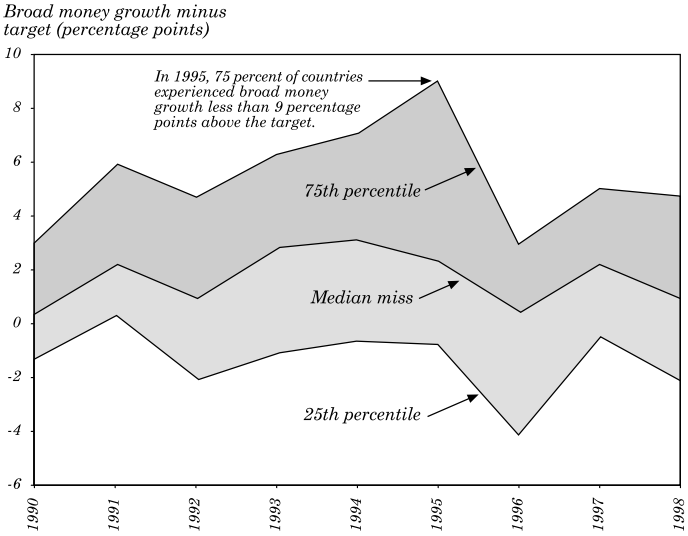
20. Debelle (1999) argues that the flexibility built into the design of inflation targets shields inflation targeting from criticism that they ignore output and employment.

Figure 4. Distribution of Inflation Target Misses in the 1990s[a]



Source: Bank of England Survey of Monetary Frameworks; Cottarelli and Giannini (1997); IMF, International Financial Statistics (various issues).
a. Money targets include all targets for different definitions of money and credit period.

Figure 5. Distribution of Broad Money Target Misses in the 1990s[a]



Source: Bank of England Survey of Monetary Frameworks.
a. See table 2 for the number of observations in each year.

Table 2. Number of Observations of Inflation Misses

	Inflation target		*Money target*	
Year	*Number of observations*[a]	*Median target*	*Number of observations*[ab]	*Median target*
1990	7	3.5	14	9.2
1991	11	5.0	16	10.8
1992	14	9.0	19	10.5
1993	23	10.0	23	12.0
1994	30	8.0	27	12.5
1995	37	8.0	29	13.2
1996	44	7.0	30	14.8
1997	50	7.3	33	15.0
1998	53	6.5	26	11.6

Source: Bank of England Survey of Monetary Frameworks; International Monetary Fund (IMF).
a. Some outcomes for 1998 were not available from central banks. Where possible, these outcomes have been estimated using IMF data.
b. These are predominantly targets for broad money. Narrower measures were included only when no broad money target was used.

targets.[21] The number of observations varies from year to year, as do the median target levels (see table 2). For both money and inflation targets, the number of observations is particularly small in 1990–92. I therefore focus on the results for 1993–98, when there are between twenty-three and fifty-three observations in each year. The figures show the median miss for each year of the 1990s, plus the value of the miss for the country at the twenty-fifth and seventy-fifth percentile of the distribution. The shaded area thus encloses the outcomes for the half of the sample with the smallest misses above and below the target (that is, accurate observations). The analysis centers on the median rather than the mean because the distribution is skewed by a very small number of wide target misses.

The data raise several questions. First, to what extent does the increased use of explicit targets indicate 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 twenty-fifth and seventy-fifth percentile is 3.9 percentage points (see figure 4). Figure 5

21. Data are responses to the Bank of England questionnaire. We tried to make data consistent by asking for information about when the target was set in the year prior to which the target referred. Target revisions during the course of the year were excluded, even when such data were provided. Where there is a target range, we use the average as the reference point. Where the target is specified as a ceiling, we treat the ceiling as the reference point.

illustrates country experience with broad money growth targets. Between 1993 and 1998, the average width of the range enclosed by the twenty-fifth percentile miss and the seventy-fifth percentile miss is 7.3 percentage points. 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 the United Kingdom and observe errors based on historical experience (1960–94).[22] In some of their simulations, they find that there is "only a 50 percent probability of adhering to a target range of 6 percentage points." This leads Haldane to suggest that the central bank faces a trade-off between "credibility and humility" (Haldane, 1995, p. 203). In practice, the relatively strong forecasting performance implies that the model-based results overstate such a trade-off. The cross-sectional evidence from the survey suggests that in the 1990s, outcomes were considerably better in meeting both inflation and money targets than model-based analysis of earlier experience suggested.[23] Nevertheless, the results from Table 3 show that the median absolute miss in the 1990s was 1.5 percentage point. In other words, the success rate for adhering to an inflation-target range of ±1.5 percentage points was approximately 50 percent in the 1990s.[24] Countries setting an inflation target of less than 3.5 percent had around a 50 percent probability of adhering to a much narrower range of ±0.7 percentage points.

One possible explanation for why the time-series and cross-country evidence differ is that combining judgement with models markedly improves the accuracy of policy. Another is that the time series results are based on estimates over several decades, whereas the results from the Bank of England survey refer only to the 1990s, when there may have been fewer exogenous shocks (that is, shocks that were not induced by policy) that triggered inflation volatility. This explanation is consistent with the view that the 1990s provided a relatively shock-free

22. Haldane and Salmon 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. They control for policy-induced volatility. Their results are in line with time-series results for other countries estimated at the same time.

23. Though the cross-sectional analysis used here has the disadvantage of being unable to explain such good performance.

24. This is the median absolute miss for the entire sample—shown in the first column of Table 3.

Table 3. Misses of Inflation and Broad Money Targets in Countries that Announced Explicit Targets in the 1990s

Type of target and indicator	*All observations*	*Percentile*			
		Low target observation		*High target observation*	
		0 – 25	25 – 50	50 – 75	75 – 100
Misses of inflation targets[a]					
Range of targets (percentage points)		Less than 3.5	3.5 – 7.2	7.2 – 13.5	Above 13.5
Median miss	0	– 0.4	0	0.3	1.3
Median absolute miss	1.5	0.7	1.0	2.2	6.7
Misses of money targets[b]					
Range of Targets (percentage points)		Less than 6.5	6.5 – 12.3	12.3 – 17.0	Above 17.0
Median miss	1.8	0.3	1.8	2.7	3.5
Median absolute miss	3.1	1.8	3.0	3.0	6.5
Comparison of misses of inflation and money targets in economies that announced both in the same year[c]					
Median absolute miss					
Inflation targets	1.5	0.8	—	4.4	—
Money targets	3.2	2.3	—	6.2	—

Source: Bank of England Survey of Monetary Framework.
a. Total number of annual observations is 269; total number of countries is 56.
b. Total number of annual observations is 217; total number of countries is 37.
c. Total number of annual observations is 143; total number of countries is 31. The high and low groups were divided according to the magnitude of the sum of the inflation and money target in that year.

environment conducive to building credibility through the use of explicit targets.[25] Finally, sustained low inflation may have reduced the likelihood that shrinks will recur.

The second question raised by the data is whether the results are suggestive of bias—that is, do outcomes tend to overshoot or undershoot the target on average? To the extent that unexpected shocks even out over the sample period, the results suggest that policymakers have, on average, been realistic in setting inflation targets. In the sample as a whole, the median miss was close to zero. In contrast, money growth tended to overshoot the target. Part of the explanation may be that central banks consistently underestimated falls in velocity. Figure 5 provides evidence that money targets have been overshot more often than undershot. The table shows that the median money target miss for the entire sample was +1.8 percentage points.

25. It is less clear how the proliferation of explicit targets has helped to create such a shock-free environment.

Third, to what extent do the results depend on the inflation rate prevailing when the targets are set? Each section of table 3 shows that misses are higher when the targets are higher, both for inflation and for money growth. Overall, misses remain roughly in proportion to the level of the target. There are more than sixty-seven observations spread over the entire sample length for annual inflation targets of less than 3.5 percent. They illustrate that the median miss is –0.4 percentage points (the minus sign indicates that low-inflation countries have undershot the target more often than overshooting it).[26] 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, the table confirms that misses have been larger and outcomes more likely to be above target than for countries with low targets.

Money-growth targets exhibit a similar pattern of misses, increasing in magnitude for higher-target observations. The size of the absolute miss is not as clearly related to the size of the target as is the case for inflation. 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.

The results show that inflation misses were less than half of those for money targets. The median inflation target miss (in absolute terms) for countries that announce both inflation and money targets is 1.5 percentage points, compared with 3.2 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 policymakers 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, although inflation targets might be thought to be more discretionary in the short term. Cottarelli and Giannini (1997) note that money targeting is "characterized by the announcement of a short-term intermediate target, either in the form of a monetary aggregate or of a (typically crawling) peg."[27] Policy instruments typically affect

26. Some of these targets are ceilings, so a marginal undershoot may not be indicative of systematic target undershooting.

27. 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.

money aggregates sooner than inflation, such that policymakers wishing to adhere to money targets may have to act sooner and with less discretion.[28] 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 pragmatically, irrespective of the published target.

5.2 Inflation Targets and Policy Reaction Functions: A Survey-Based Approach

The survey responses provide new evidence with which to assess how central banks around the world direct policy toward their objectives. In particular, the survey sheds light on the capacity of monetary frameworks such as money and inflation targeting to distinguish adequately among frameworks, and it examines the extent to which exchange rate strategies are being pushed toward more extreme choices of freely floating or rigidly fixed arrangements.

Policy focus and framework labels

It is convenient to attach labels to frameworks, such as inflation targeting, money targeting, and exchange rate targeting. In practice, only a small minority of economies treat their targets as rigid rules—and nearly all of these are targeting the exchange rate—so a label cannot predict how policy will react to a given shock. In the short run, almost all central banks may treat domestic targets flexibly in response to certain shocks. In the long run, by contrast, almost all central banks are likely to aim for monetary stability, as defined by their legal objectives.

Rather than categorize economies into lists of labeled frameworks, this study attempts to capture the degree to which policy focuses on a particular variable by assessing (i) whether a target is announced; (ii) whether the central bank defines its framework in terms of targeting a particular variable; (iii) how the central bank ranks policy priorities in practice; and (iv) which variables prevail in policy conflicts. Each

28. Although if inflation targeting implies rigid adherence to an inflation forecast, it may limit the scope for discretion even when policy does not attempt to hit the current inflation rate. Goodhart (2000) assesses how targeting future inflation may still leave scope for discretion in policy decision.

economy is given a single score—between zero and a hundred—for each variable. (See the appendix for a description of the scoring system and a list of scores.) The scores give an indication of the degree to which policy focuses on its principal objective and how far policy may be diverted toward other objectives.

The tables in the appendix help explain what governs the short- and medium-term policy focus. (The legal mandate of central banks to achieve price stability is often interpreted as a long-term objective.) For the great majority of countries, the indexes show that policy is sometimes diverted from its prime focus. The measures of policy focus suggest that only 10 percent of frameworks in the sample have a policy that focuses exclusively on either the exchange rate, money, or inflation. In the other 90 percent, the responses show evidence of discretion. For example, money targeters may rank inflation as important in setting the target, while inflation targeters may pay close attention to the exchange rate. Prospects for domestic inflation may affect decisions about exchange rate pegs.

A labels approach carries potential pitfalls, as demonstrated by a comparison of the categorization of regimes according to the variable for which a numerical target is published and self-classification by policymakers. In terms of how central banks in the sample classify their frameworks, just under a third of respondents do not classify their framework as targeting one variable in particular. Of those that do classify their regimes as targeting one particular variable, exchange rate targeting is the most popular self-classification (28 percent of the sample), followed by money-targeting (24 percent) and inflation-targeting (16 percent). There is by no means a one-to-one correspondence between such self-classifications and the variables for which policy targets are announced. The pitfalls of a labeling approach thus include the following:

—Not all targets are announced. About 7 percent of economies do not publish targets or reference values for the variable they classify themselves as targeting.

—Fourteen percent of countries publish a target for only one variable, but do not classify themselves as targeting that variable.

—Central banks that publish both inflation and money targets, but not exchange rate targets, do not classify their frameworks uniformly. Of these twenty-five economies, fourteen classify themselves as money targeting and three as inflation targeting, while eight choose not to classify themselves according to a single label.

—It is not possible to distinguish between money- and inflation-

targeting frameworks by observing which countries publish inflation targets, because virtually all countries that classify themselves as money targeters also publish inflation targets, guidelines, or reference values. These include the central banks of Germany (up to 1998) and Switzerland, which clearly state their medium-term inflation preferences, even though they do not describe themselves as inflation targeters. It is not surprising that so many money-targeting central banks announce inflation targets. To establish a money target, countries need to work back from an inflation and growth target or forecast. If the inflation projections are being missed while money targets are on track—for example, because of a velocity shock—there is no intrinsic reason why the intermediate target should take precedence over such inflation and output projections.

—Differences between money and inflation targeting do not necessarily reflect differences in a central bank's reaction function. Although 24 percent of respondents classified their regime as money targeting, only 1 percent reported that money always prevailed over inflation and exchange rate objectives in the event of policy conflicts. The survey results indicate that in the event of velocity shocks, both money and inflation targeters are likely to focus on inflation objectives.

—There are around four times as many central banks with explicit inflation targets as there are central banks that categorize themselves as inflation targeting. About 60 percent of economies announce inflation targets and 33 percent rank the variable as the main objective of policy, yet only 13 percent classify themselves as inflation targeting.

In practice, then, there is a continuum of overlapping possibilities, from inflation and money targets to exchange rate targets. Many frameworks have some of the characteristics of each. Analysts should therefore take a broad approach to assessing the extent to which the various objectives of monetary policy are, in the short and medium term, better described as complementary or as alternatives.

The increasing tendency of policymakers in money-targeting economies to announce such inflation projections as targets or reference values may have contributed to making policy preferences more transparent in these economies. In the 1990s a growing number of countries receiving support from the International Monetary Fund (IMF) have announced inflation objectives, reflecting their increasing importance in Fund-supported programs. This represents a change in emphasis from practices in the 1980s, when the IMF gave relatively more prominence to the role of money and credit targets in adjustment programs (see Cottarelli and Giannini, 1998).

The analysis supports the views of several authors who, when assessing the international context of monetary frameworks, reinforce the message of compromise between explicit targets and flexibility. In summarizing the debate between rules and discretion, Guitian reminds us that "there is an exception to every rule." Similarly Bernanke and others (1999) describe inflation targets as "a framework, not a rule" and as "constrained discretion".[29]

6. Inflation Targets, Independence, Accountability, and Transparency

Whichever variable they target, central banks appear to use their targets flexibly. How does this flexibility affect the debate surrounding the choice between money and inflation targets, and how does it affect other framework characteristics? The cross-country cross-correlation matrix of monetary policy framework characteristics shown in table 4 summarizes the broad relations among the categories measured in the survey (see the appendix for a description of the scoring methods). The table covers the ninety-three economies in the sample.[30] The following sections discuss the results from this table in more detail.

The simultaneous use of money and inflation targets appears to indicate that many countries have adapted or rejected the literature that regards targets as alternatives. The literature frames the choice of the explicit target for monetary policy in terms of the controllability of a particular variable and the stability of the relationship between that variable and the final objective.[31] While the premise on which such literature is based appears well grounded, it is hard to explain some countries' choice of targets using such a framework. Why do so many liberalizing countries with unstable velocity use money targets? Why do other countries that have poor data and are vulnerable to supply shocks use explicit inflation targets?[32] Are explicit targets in some cases better described as benchmarks, whose contribution lies in assisting the planning of fiscal and monetary policy, measuring outcomes, and assessing deviations? These questions are addressed below.

29. See Guitian (1994, p. 36); Bernanke and others (1999, pp. 293 and 299).

30. The ECB response, which was received later than the others, is excluded to avoid double-counting.

31. See, for example, Cukierman (1995).

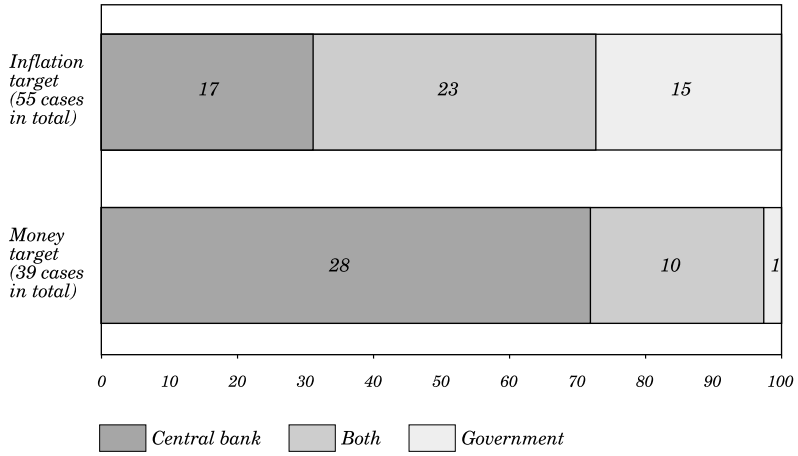
32. See Gerlach (1999).

Table 4. Correlations between Measures of Framework Characteristics in Ninety-three Monetary Frameworks

	Exchange rate	*Money*	*Inflation*	*Discretion*	*Independence*	*Accountability*	*Explanations*	*Inflation expectations*	*Models and forecasts*
Exchange-rate focus	1.00	–0.54	–0.68	–0.46	–0.09	0.03	–0.26	–0.29	–0.07
Money focus	–0.54	1.00	0.07	0.41	–0.05	–0.08	–0.12	–0.06	–0.14
Inflation focus	–0.68	0.07	1.00	0.18	0.15	0.09	0.30	0.43	0.15
Discretion[a]	–0.46	0.41	0.18	1.00	–0.09	–0.25	–0.10	0.06	–0.18
Independence	–0.09	–0.05	0.15	–0.09	1.00	0.06	0.42	0.32	0.47
Parliamentary accountability	0.03	–0.08	0.09	–0.25	0.06	1.00	0.14	0.21	0.11
Policy explanations	–0.26	–0.12	0.30	–0.10	0.42	0.14	1.00	0.47	0.50
Analysis of inflation expectations	–0.29	–0.06	0.43	0.06	0.32	0.21	0.47	1.00	0.49
Analysis using models and forecasts	–0.07	–0.14	0.15	–0.18	0.47	0.11	0.50	0.49	1.00
Inflation[b]	0.04	0.00	–0.01	0.00	–0.16	0.09	–0.17	–0.02	–0.08
Inflation rank[c]	–0.30	0.31	0.23	0.18	–0.09	0.04	–0.23	–0.12	–0.19

Source: Bank of England Survey of Monetary Frameworks.
a. A high score implies greater discretion.
b. Average of 1997 and 1998; includes estimates.
c. The lowest inflation rate in the sample is ranked as 1.

Figure 6. Who Sets Explicit Targets and Monitoring Ranges for the Exchange Rate, Money, and Inflation?[a]



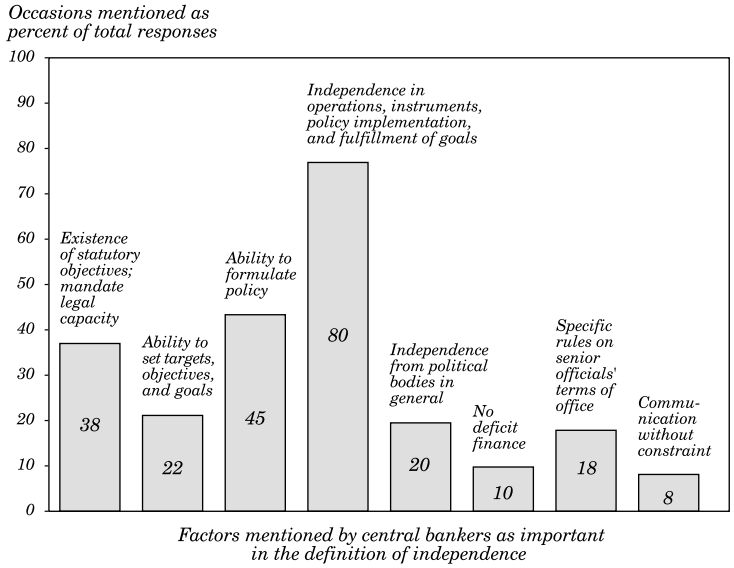
Source: Bank of England Survey of Monetary Frameworks.
a. From a sample of ninety-three central banks describing their practices in late 1998 (with some revisions for changes made in 1999, but not including changes in EMU countries). The figures in the bars indicate the number of economies with this arrangement; the length of the bars indicate the percentage set under different arrangements.

6.1 The Role of Targets in Defining a Relationship with Government

One of the most important contributions of inflation targets may be in terms of providing both government and the central bank with a clearly defined stake in the monetary strategy (see the discussion in section 2 above). This section verifies this assertion by examining global trends in money and inflation targets and how they relate to the nature of perceived central bank independence.

The global experience offers a variety of approaches to setting targets, ranging from demarcation of responsibilities to drawing together institutions to formulate targets. Figure 6 represents the responses of ninety-three central banks when asked whether they or the government set the explicit target in 1998, or whether the target was set jointly. The target-setting arrangements for money and inflation targets are strikingly different. Central banks have a comparative advantage in researching monetary and banking developments that may cause changes in velocity. They, after all, play a pivotal role in the banking system and

Figure 7. How Central Bankers Define Independence[a]



a. The responses are the author's categorisation of answers to the question "How would you define central bank independence?" There were sixty usable responses (twenty-three from industrialized economies and thirty-seven from developing and transitional economies). Respondents cited an average of 2.9 categories in industrialized economies and 2.2 in developing and transitional economies.

produce monetary data. It is natural, therefore, that central banks use money targets to monitor performance. Yet a central bank's comparative advantage in understanding monetary developments may be detrimental to the capacity of money to provide a vehicle for engaging government in setting policy strategy and in influencing public expectations. As argued by King, "It is easier, I think, to explain if you can relate the decisions to something that is visible and comprehensible, and an inflation target has that great advantage" (Mahadeva and Sterne, 2000, p. 183). Figure 6 confirms that central banks are more likely to have a dominant role in setting money targets than inflation targets.

The survey responses indicate that central banks regard independence as the most important aspect of their monetary framework. Figure 7 summarizes responses to the direct question, "How would you define central bank independence?" The general responses were translated into the categories shown in the chart, which is ordered with categories representing goal independence on the left, instrument independence in the center, and other aspects that may affect policy setting

on the right. The chart incorporates sixty responses with each country represented in at least one and, as it turned out, at most seven categories.[33] Most of the responses reflect the country's own experience, and it is under this premise that the responses are interpreted here.

The literature on independence centers on goal independence, which is represented by the clarity with which statutory objectives focus on price stability (see, for example, Cukierman, 1992). Extensive recent academic literature, prompted in part by Walsh (1995), stresses the difference between goal and instrument independence. Almost all central banks consider instrument independence to be an important aspect of independence. In practice, the effectiveness of formal arrangements providing central banks with instrument independence may, however, be undermined by a number of factors, which are represented by the bars on the right-hand side of the graph.

In contrast, goal independence tends to be important to central banks only in particular circumstances that are closely related to the target-setting capacity discussed above. Only 22 percent of respondents defined independence as the ability to set targets, objectives, or goals, while 38 percent mentioned the importance of legal objectives. The relative importance of these two measures of goal independence depends, as usual, on circumstances.

The 38 percent of respondents who defined independence by relating it to the central bank's statutory objectives generally fall into two categories.[34] The first group encompasses central banks whose mandate and statutory objectives have been revised in recent years, suggesting that governments and central banks are more likely to focus on legal objectives when these objectives are fresh and pertinent. The second group is made up of countries with money and exchange rate targets. Clear statutory objectives, coupled with instrument independence and numerical money targets set by the central bank, have helped a number of countries progress toward price stability, including Germany, Slovenia, and Switzerland.

Central banks that base their framework on inflation targets rarely define independence with reference to statutory objectives. For these

33. Only sixty responses are included because some central banks in the questionnaire did not complete this question and some answers were excluded because they explicitly referred only to the independence of their own central bank.

34. Typical responses included the extent to which the central bank can act effectively to fulfil its statutory objectives without political interference and the ability of the central bank to pursue statutory objectives without undue influence from other government officials or private parties.

countries, the target-setting arrangements are apparently much more important than in the case of money targets. In a contractual approach to monetary policy, the government may set a target and provide the central bank with operational independence to pursue the target. Perspectives on important ingredients of independence split the inflation target users into two groups, whose views on independence differ according to whether they are close to stable inflation.

Of the countries that describe themselves as inflation-targeting, only Israel and the United Kingdom have adopted a framework in which the government alone sets the target. Government sets the inflation target in thirteen other cases, but none of these arrangements were described by the central bank as inflation targeting frameworks. The responses from inflation-targeting central banks reflect how the relationship between government and central bank is strongly influenced by whether or not inflation is already acceptably low. Central banks in inflation-targeting countries with low inflation did not generally regard the ability to set the target as important in assessing their own independence. This suggests that when inflation is low, there is little scope for disagreement about what the target should be. Indeed, three inflation-targeting central banks in low-inflation economies explicitly stated that independence could be defined in terms of the central bank's capacity to meet a mutually agreed target. Such arrangements may allow government to control the long-run direction of policy, but they can also help to remove any incentive for the government to create surprise inflation (Goodhart, 2000). If government attempts to boost output in the short run by increasing the inflation target, the blatant opportunism of such an act is likely to remove the surprise from surprise inflation. This, in turn, may reduce any output effects and make such a policy ineffective.

This degree of comfort with target-setting arrangements in Canada, New Zealand, and the United Kingdom contrasts starkly with that expressed by countries using inflation targets on a disinflation path. Over 80 percent of countries using explicit inflation targets in 2000 were doing so as part of a disinflation process. Mahadeva and Sterne (2002) develop a theoretical model that shows that annual revisions to short-run targets are endogenous to outcomes during disinflation, since the chosen target depends on the last period's miss from each of the short- and long-run target. This result is confirmed using cross-country panel estimates of inflation target misses in sixty countries in the 1990s.

Short-term targets on a disinflation path are therefore inherently more akin to conditional forecasts than policy rules. Their publication

can increase transparency and hence credibility but in the context of Walsh-type models, (see Walsh, 1995), multi-year contracts may be difficult to define. A high degree of shocks may give rise to the temptation to revise the contract ex post, thus negating the contract's benefits. What should happen, for example, if inflation falls below the annual target, but remains above the long-run target for inflation (as happened in 1998 in the Czech Republic, Israel, Poland, and, to a lesser extent, Chile)? Hrncír and Smídková (2000) (for the Czech Republic), Landerretche, Morandé, and Schmidt-Hebbel (2000) (for Chile), and Bufman and Leiderman (2000) (for Israel) show how each of these economies have approached this issue. The optimal response to inflation falling between a short and long-run target may depend on the source of the shock that caused the inflation target to be missed, and in some circumstances an option might be to permit inflation to fall below its short-run target so that it can reach its long-run target more quickly.[35]

In the light of this discussion, it is not surprising that a number of respondents in disinflating countries defined independence according to the capacity to set their own targets or objectives. This is illustrated vividly by one such respondent who posed the rhetorical question, What good is instrument independence if the Parliament or Cabinet sets politically motivated goals that are binding?

An alternative to a contracting approach to target-setting may be for the government and the central bank to agree on an explicit target, in order to emphasize joint ownership of the monetary strategy. In twenty-three out of fifty-five cases (42 percent of central banks with explicit inflation targets), the government and the central bank jointly set the inflation target. These include seven central banks that describe their framework as inflation targeting (Armenia, Australia, Canada, Jamaica, Mexico, Mongolia, and New Zealand). Joint responsibility for the monetary strategy has been important in improving monetary and fiscal coordination in New Zealand and Canada, for example.

6.2 Inflation Targets and Policy Explanation

Targets have the potential to communicate both long-term preferences and the desired adjustment path in the face of economic shocks. Targets do not usually fulfil both roles in practice, however. Globally, the most common occurrence in setting either money or inflation targets is for the central bank or ministry of finance to announce, once a year, a

35. This is often called opportunistic disinflation, a term used by Blinder (1994).

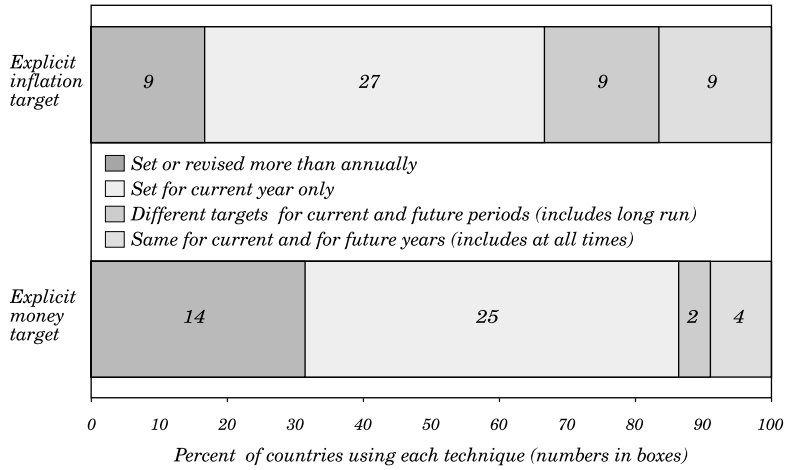
single number for the forthcoming year (see figure 8). This does not always square with the desire to use targets both to anchor long-term expectations and to steer expectations through what may be a bumpy ride toward price stability. Nor is an annual process necessarily consistent with the transmission lags of monetary policy, which appear to vary greatly from country to country (figure 9). The use of targets alone may therefore open a transparency gap, which can be filled using other instruments of communication. This section assesses the extent of such transparency gaps in different countries, the degree to which central banks have used published forecasts to close such gaps, and the effect of increased provision of information on inflation performance.

When inflation is low and relatively stable, governments or central banks may enjoy the luxury of setting targets that do not change much over time. In these countries, a constant target of, say, 2 percent inflation represents an attempt to anchor long-run expectations even when a shock to the economy temporarily diverts a variable from its long-term path. Only 17 percent of inflation targets (including those of Australia, Canada, Finland, Sweden and the United Kingdom) and 9 percent of money growth targets (including those of France and Switzerland) set the same target number year after year. Such targets may provide information about long-term preferences, rather than a planned adjustment path. In the event that shocks move inflation or money away from the target, the long transmission lags imply that the target by itself is insufficient to provide an indication of how quickly policy will restore inflation or money to the target. Additional instruments of communication, such as forecasts, are frequently used to fill this transparency gap.[36]

Two-thirds of inflation targets and 87 percent of money targets are set or revised at least annually and are not specified for more than one year ahead (see figure 8). In determining the nature of any potential transparency gap left open by targets in these economies, it helps to consider roughly how long it takes for policy instruments to have an impact on the target variable. Perceived transmission lags demonstrate enormous diversity across the different economies. Figure 9 represents the relation between changes in the operating instrument (for example, interest rates), the operating target (for example, base money), and the final objective (for example, inflation). Specifically, the figure indicates respondents' estimates of the full impact on inflation and the time taken for that impact to be felt.

36. Goodhart (2000) provides a vivid description of remaining sources of ambiguity, including the relative benefits of targeting the mean, median, or mode of inflation forecasts.

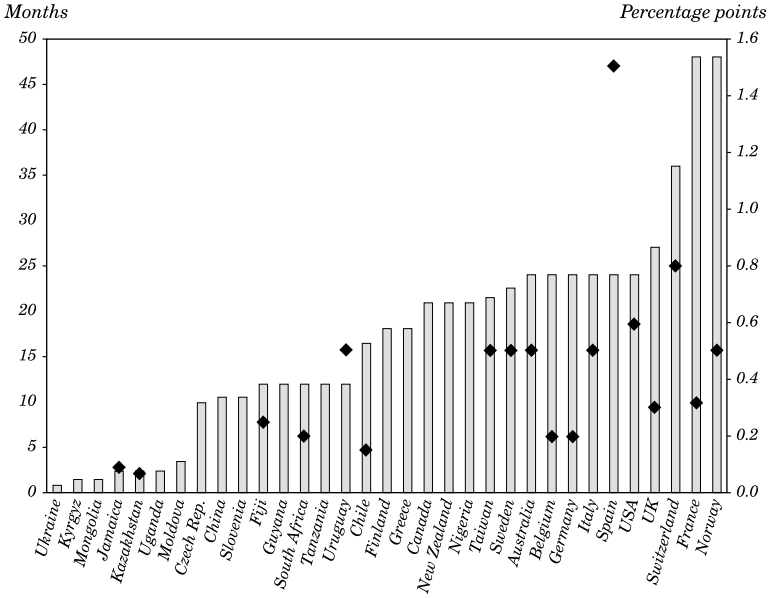
Figure 8. Time Horizon of Inflation and Money Targets[a]



Source: Bank of England Survey of Monetary Frameworks.

a. Shorter-term arrangments are represented by boxes on the left. Numbers of frameworks in the boxes, percentage of each target set according to a particular time horizon measured on the axis.

Figure 9. Estimated Average Length and Strength of Transmission



Source: Bank of England Survey of Monetary Frameworks.

a. Bars (left-hand scale) represent estimated average time for full impact of change in policy instrument to affect inflation; points (right-hand scale) represent estimated average strength of full impact of change in interest rates on inflation.

The bars in figure 9 represent the average transmission length; the points illustrate the average strength of the relation. The results provide a loose but illuminating means of cross-country comparison. A strong caveat is that although the results represent central bank views about the transmission mechanism in their economies, no attempts are made to ensure consistency across countries, either in terms of the model used or the approach to the experiment.[37] Differences may reflect several factors, including (i) structural differences between economies, (ii) differences in framework,[38] and (iii) differences in estimation and simulation procedures. Furthermore, not all respondents reported the strength of the effect on inflation of changes in instruments. To allow comparability across countries, results are reported only for those that specified the strength in terms of a relation between a short-term interest rate and inflation. The figure illustrates that the perceived average length of time taken for instruments to affect inflation ranges from one to fifty months in different economies.

The wide dispersion of lags in transmission mechanisms contrasts sharply with the relative homogeneity of the frequencies and time horizons over which targets are set. This indicates that targets communicate different aspects of short-run and long-run policy intentions in the various economies. It is not possible, however, to specify targets in such a way that they provide precise guidance on how policy should react to shocks and the time horizon over which price stability should be restored.

Target specification thus leaves open different forms of transparency gaps. When transmission lags are longer than the target-horizon, targets may need to be accompanied by a forecast that can indicate expected progress in bringing inflation back to target. When transmission lags are much shorter than the target horizon, the target may not necessarily bind policy in either the very short or long run. Once again, published forecasts may help to provide information on both central bank preferences and reactions to shocks.

Several recent papers highlight the importance of forward-looking policy in minimizing instabilities arising from any mismatch between the transmission mechanism length and the time horizon of targets. Batini and Haldane (1999), for example, explore this issue for the United Kingdom, while Mahadeva and Smídková (2000) use a similar approach for the Czech Republic. These papers address how far forward policy

37. For example, the policy simulation did not specify for how long instruments were to be changed.

38. The exchange rate channel is fast in many economies. If the exchange rate is fixed, the transmission mechanism may be longer.

should look, together with the costs of looking either too far forward or not far enough. They use small macroeconometric models to observe what happens to output and inflation volatility in response to shocks, when policy tries to bring inflation back to target relatively quickly or relatively slowly. Mahadeva and Smídková's results for the Czech Republic illustrate that to minimize the volatility in output and inflation, it is optimal for policy to react to forecasts for inflation between three and five quarters ahead in the Czech Republic.[39] The reaction time is longer in the United Kingdom.

The literature on transparency has grown rapidly in recent years.[40] It examines the effect of a central bank revealing its objectives and its knowledge of shocks, thereby reducing informational asymmetries between the central bank and the public. The motivation for providing such information to the public, which is similar in spirit in many central banks, is to fast-track the process of acquiring credibility.

Faust and Svensson (2000) develop a model in which increased transparency makes the intentions of the central bank observable, so the central bank sacrifices more credibility should it choose to pursue its undeclared employment objectives rather than its explicitly stated inflation objectives. Increased transparency generally reduces average inflation in their model. Jensen (2000) obtains a similar result. He focuses on the effect of a central bank revealing its preferences, which disciplines central bank actions, increases its credibility, and reduces inflation. Jensen points out an important proviso to this conclusion, however. When central bank preferences are already fully known, transparency neither increases credibility nor reduces inflation, but it does have a cost in terms of handicapping the central bank's capacity to influence the economy and pursue output stabilization.

The theoretical literature thus suggests that where reputation is important, increased transparency should lead to lower inflation by making credibility more sensitive to its actions, but that the effect is reduced or eliminated when the credibility is already high. In practice, the great majority of central banks are unlikely to have reached the stage at which they perceive their credibility to be so strong that the costs of transparency in terms of reduced capacity to stabilize output

39. The differences may reflect differing strengths of particular shocks, different forms of nominal and real rigidities, and the relative importance of the various transmission channels. In the Czech Republic, the exchange rate channel is particularly important.

40. Chortareas, Stasavage, and Sterne (2001) provide a review of the recent theoretical literature on transparency.

outweigh the benefits in terms of improved credibility. In the ninety-one economies analyzed in section 1, for example, median inflation was above 8.5 percent as recently as 1990. Most countries remain on a disinflationary path or have only recently achieved low, stable inflation. Any reluctance to pursue transparency likely stems from nervousness about exposing the central bank to external scrutiny, particularly if forecasting capacity is weak and if relationships with the government are less than fully clear.

Chortareas, Stasavage, and Sterne (2001) use data from the survey described in Fry and others to provide the first cross-sectional empirical evidence that transparency in terms of publishing central bank forecasts is associated with low inflation.[41] In the case of a country with a floating exchange rate, the central bank's decision to begin publishing a regular inflation forecast is associated with a significant reduction in inflation, particularly when the forecast is reinforced by a discussion of risks and past forecast errors. The effect of transparency on inflation is similar, irrespective of whether policy is based more upon a money or inflation target. Furthermore, for a small group of countries, Chortareas, Stasavage and Sterne (2002) also find that transparency is associated with lower costs of disinflation. Nevertheless, the results tend to support the view of Posen (2000), whose analysis suggests that the Bundesbank's success in maintaining low inflation stems partly from its thorough explanations of its policy decisions. Posen concludes that "when it comes to transparency, more is more."

6.3 The Relation between Measures of Analysis Conducted and Inflation Targets

The success of a monetary framework that retains any degree of exchange-rate flexibility depends on the analysis that supports it. The questionnaire therefore asked about the analysis of three separate issues. The first is the extent to which central banks monitor and use various measures of inflation expectations (such as financial markets, surveys, and outside forecasts). The second relates to the different methods used to forecast economic variables (for example, off-model forecasts, vector autoregressions, structural models, and theoretical models). The third area involves the importance of money-demand equa-

41. The authors define transparency in forecasting using data on the frequency of the forecast, its format, whether past forecast errors are discussed in bulletins, and whether risks to the forecasts are discussed.

tions and other means of analyzing the role of the financial sector in the transmission mechanism.

A summary of the results are shown in the appendix (tables A2 to A7), and the extent to which some of these characteristics are correlated with other aspects of monetary frameworks is shown in table 4. Some of the correlations in the table are as expected: the more important inflation objectives are, the greater the score for analysis of inflation expectations. The use of models and forecasts, however, is not significantly related to the choice of monetary framework. Knowledge of how policy actions affect the economy is always useful, irrespective of the policy target. Model-based forecasts tend to indicate much greater uncertainty in inflation and money outcomes than is actually the case, such that the purpose of modeling must be merely to forecast. The table provides a strong indication that such a purpose is related to transparency. The correlation between analysis using models and policy explanations is very strong, which is consistent with the view that models are used more to help understand the transmission mechanism than to provide a sharp increase in forecast accuracy. It is easier for central banks to explain why outcomes are deviating from target when they have access to analysis that makes them confident in their explanations.

The survey sought to measure the extent to which central banks focus on particular areas of analysis by asking about their research on particular subjects. The questionnaire set out a list of subjects and asked each respondent if their central bank had (i) published research in that area; (ii) considered it in detail; (iii) considered it; or (iv) not considered it to any great degree. The results, which are summarized in table 5, illustrate some marked differences between industrialized economies and developing and transitional economies.[42] Two of the main difference are as follows. First, in the past five years, central banks in industrialized-economy have, on average, published work in 59 percent of the categories identified in the table, compared to 26 percent in developing and transitional economies.[43] The difference is probably attributable both to a higher concentration of research resources in industrialized economies and to the availability of significantly more and better data. While industrialized economies have researched a broad

42. Central banks show much greater variation in research focus when categorized by economy type than by type of framework. This in part reflects the breadth of the research categories. Several central banks have published in almost all of these areas, irrespective of their framework.

43. Published works here include central bank working papers and bulletins, as well as external publications by central bank staff.

range of subjects, analysis in developing and transitional economies has focused on some core areas of the economy, including money, banking, the balance of payments, the exchange rate, and fiscal policy.[44] A third to a half of respondents in developing and transitional economies report having published research in these areas.

There appear to be large gaps in the analysis of the real sector in developing and transitional economies. Only 8 percent of respondent banks have published research on labor markets, and similarly little analysis has been conducted on consumption and investment. This largely reflects lack of data. For example, the September 1999 edition of the IMF's *International Financial Statistics* includes no recent quarterly data[45] at all for any item in the national accounts for 80 percent of the developing and transitional economies included in the survey, compared with only 15 percent of the industrialized economies.

These results may help to explain why so many developing economies describe themselves as money targeting rather than inflation targeting. Inflation-targeting central banks generally forecast inflation by assessing the impact of real disequilibria in domestic goods markets (through the output gap) and labor markets (through the nonaccelerating inflation rate of unemployment, or NAIRU).[46] These assessments are often supported by a variety of theoretical and econometric models. For example, all the industrialized economies that classify themselves as inflation targeting have published research on the Phillips curve and the output gap, whereas only 6 percent of developing and transitional economies report having published such research. Finally, the inflation reports of central banks from economies such as the Czech Republic, Hungary, Israel, Poland, Sweden, and the United Kingdom all give prominence to assessing the relative strength of demand and supply.[47]

Thus the weight placed on analyzing the various aspects of the transmission mechanism differs sharply across economies. In a developing country with limited data on the real economy and much more frequent and reliable data on the exchange rate and money supply, these latter variables are more likely to remain permanently close to the top of the hierarchy of indicators, even if neither is targeted directly. It makes sense for these countries to use annual data for real

44. The balance of payments is the only category in which greater proportions of developing and transitional economies have published research relative to industrialized economies.

45. For any of the previous four quarters.

46. See, for example, Bank of England (1999, p. 32).

47. Other central banks publish very similar documents that are not entitled inflation reports.

Table 5. Focus of Research in Central Banks

Percent, except where indicated

To what extent have researchers in each central bank considered the following issues in the last five years?	Level of research activity			Banks that have published			Overall ranking of priorities[a]		
	Published	*Considered in detail*	*Considered*	*Not considered*	*Industrialized*	*Developing and transitional*	*All countries*	*Industrialized*	*Developing and transitional*
Monetary policy framework	59	24	10	7	93	44	1	1	2
Behaviour of banks	43	30	24	2	59	37	2	7	3
Balance of payments (incl. Capital flows)	46	28	20	7	41	48	3	14	1
Analysis of financial instruments	44	29	18	9	67	35	4	2	6
Money-demand equation	49	17	24	10	74	38	5	4	7
Exchange rate and regime	40	29	24	7	52	35	6	10	4
Financial fragility issues	39	28	29	4	52	33	7	11	4
Fiscal sector	32	28	28	12	41	29	8	13	8
Transmission mechanism	39	17	30	14	63	29	9	6	9
Modelling and econometrics	37	22	23	18	70	22	10	2	10
Price specification	30	17	34	19	59	17	11	8	11
Commodity prices and terms of trade	24	19	33	23	48	14	12	16	12
Investment and corporate sector	23	19	30	28	48	13	13	14	13
Consumption and personal sector	23	16	30	31	56	10	14	12	14
Philips curve and output gap	24	18	16	42	67	6	15	4	16
Labor market	24	9	31	36	63	8	16	9	15
Total for all issues	36	22	25	17	59	26			

Source: Bank of England Survey of Monetary Frameworks.

a. The rankings are based on a weighted sum average score of the three columns given by the following equation:
Priority of research topic = (number of countries in column 1) * 3 + (column 2) * 2 + (column 3) * 1.
The overall rankings are strongly influenced by the results for developing and transitional economies because there was considerably more variance across categories in their analytical focus. In industrialized economies, for example, no category had been at least considered in detail by more than 70 percent of economies.

and nominal output to derive quarterly or monthly forecasts and targets for variables such as money. This approach may be appropriate regardless of whether the central bank (or IMF) takes a monetarist view of the economy.

7. Interpretation and Conclusions

The 1990s saw some convergence in global monetary strategies. An increasing number of central banks use precisely defined medium-term objectives that are consistent with their statutory objectives of price and monetary stability. More generally, strategies have evolved by fusing successful practices from different types of frameworks. The Bundesbank pioneered the strategy of anchoring expectations though targets and communication, and more recently inflation-targeting countries have taken on the mantle. Similarly, the U.S. Federal Reserve was a pioneer of forward-looking policy, yet forecasts have become increasingly important in inflation-targeting countries and elsewhere. Inflation targets are now used far more widely than in the small group of industrialized economies that first made them the centerpiece of their monetary frameworks: of the ninety-four central banks included in the survey used in this study, well over half used inflation targets in 1998.

The adoption of explicit domestic targets has provided the momentum for a heightened role for explanation in monetary strategy. In the long run, credibility is built primarily through actions and achievements, but policymakers throughout the world have recently accelerated the process by defining objectives more narrowly and more clearly explaining the outcome of targeted variables. Whichever target is adopted, it is highly unlikely that the optimal strategy will always be to maintain policy exactly on target. A target miss coupled with a convincing explanation for the miss is unlikely to significantly undermine credibility.

An important explanation behind the increased use of inflation targets relative to money targets is the capacity of inflation targets to provide the most visible vehicle available for guiding private sector expectations and for communicating with the government. The value of inflation targets relative to money targets may lie in providing a medium-term focal point for macroeconomic policymakers.

As long as the commitment to a target carries some weight in affecting fiscal and monetary policy decisions, inflation targets may improve long-run macroeconomic outcomes even when subsequent shocks

cause them to be missed in the short term. An early reservation regarding the use of inflation targets stemmed from the relatively benign conditions in which they were used in industrialized economies up to the mid-1990s. Practitioners now have much more experience with their use: of the 269 annual inflation targets assessed here, there is no example of a country dropping its inflation target because it deemed the miss to be excessive or because meeting the target led to an unsatisfactory macroeconomic outcome.

Differences have emerged between the theory and practice of monetary policy, partly as a result of strategy fusion. Much of the literature identifies the circumstances under which policymakers might achieve alternative economic outcomes from the choice of either inflation or money targets, yet in practice policy regimes have converged toward a flexible use of targets. One of the most popular target combinations is to declare numerical targets for both money and inflation. The increasingly widespread use of explicit targets over the past decade reflects the progress of the debate between rules and discretion. Explicit domestic targets can be used to demonstrate that a particular variable ranks high on the hierarchy of indicators, even if it is acceptable to miss the target.

Central banks continue to exhibit important differences in the institutional arrangements and practice of monetary policy. One such difference lies in the trend of bipolar convergence, whereby countries with similar structures have moved toward either rigidly fixed or floating exchange rates. Even within the group of countries sharing the same explicit target, however, policy practices differ considerably. Some of this variability may reflect the fact that central banks in emerging economy may yet have some catching up to do as regards transparency and the analysis that is needed to support transparency. Developing and transitional economies, for example, demonstrate large gaps in the analysis of the real sector, and they do not generally publish research in this area. Other differences may reflect divergence in institutional preferences: for example, who should set the money or inflation target?

Thus, while the labels of inflation targeting, money targeting, and exchange rate targeting are a convenient means by which to distinguish broad differences among framework types, monetary policy frameworks are better thought of in terms of a wide array of underlying characteristics. After all, the use of flexible strategies to improve credibility in particular economic and political circumstances contributed to reducing inflation to historically low levels at the end of the 1990s.

APPENDIX
Survey Questions and Distribution of Scores

Table A1. Economies Included in the Bank of England Survey

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

APPENDIX (continued)

Table A2. Measure of Policy Focus on Exchange Rate Objectives

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
If you were to categorise your framework as one of the following, which would it be?	1	100	Mentioned exchange rate only	26	11	7	8
		50	Not categorised as one target but mentioned exchange rate targeting with one other objective	6	2	1	3
		33	Not categorised as exchange rate targeting but mentioned in the context of two other objectives	3	1	1	1
		0	Did not mention exchange rate	59	14	13	32
To what extent is the exchange rate fixed to another currency?	1	100	Explicit point target or described by IMF as fixed to another currency	18	1	6	11
		75	Explicit band narrower than 6%, or described by IMF as limited flexibility	13	3	1	9
		50	Explicit band of 30% or less	15	11	2	2
		25	No explicit target (but public knowledge that target exists) or described by IMF as managed floating	21	3	10	8
		0	Freely floating	27	10	3	14
Rank the monetary policy objectives (other than price or monetary stability) that the central bank pursues; indicate if there is no fixed target.	1	100	Exchange rate first objective	33	13	7	13
		50	Exchange rate mentioned as an objective	35	5	11	19
		0	Other	26	10	4	12
In your current monetary framework, is there scope for other variables to prevail over the target in the event of policy conflicts?	1	100	Exchange rate always prevails over all other objectives	17	6	5	6
		75	Exchange rate always prevails over money and inflation objectives	6	1	1	4
		50	Exchange rate usually prevails	12	8	1	3
		25	Exchange rate sometimes prevails	38	6	10	22
		0	Exchange rate rarely or never prevails	21	7	5	9

APPENDIX (continued)

Table A3. Measure of Policy Focus on Money Objectives

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
If you were to categorize your framework as one of the following, which would it be?	1	100	Money targeting	23	4	5	14
		50	Could not categorize as one target but mentioned money targeting with one other objective	6	1	1	4
		33	Mentioned in context of two other objectives	2	1	1	0
		0	Other	63	22	15	26
Do you have a specific, numerical, publicly announced target or monitoring range for money or credit?	1	100	Yes	39	8	12	19
		0	No	55	20	10	25
Rank the monetary policy objectives (other than price or monetary stability) that the central bank pursues; indicate if there is no fixed target.	1	100	Money is first objective	14	2	5	7
		50	Money mentioned as an objective	26	5	7	14
		0	Other	54	21	10	23
In your current monetary framework, is there scope for other variables to prevail over the target in the event of policy conflicts? If so, how often does money prevail as a target?	1	100	Money always prevails over all other objectives	0	0	0	0
		75	Money always prevails over the exchange rate and inflation objectives	1	0	0	1
		50	Money usually prevails	19	3	4	12
		25	Money sometimes prevails	21	3	5	13
		0	Money rarely or never prevails	53	22	13	18

APPENDIX (continued)

Table A4. Measure of Policy Focus on Inflation Objectives

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
If you were to categorize your framework as one of the following, which would it be?	1	100	Inflation targeting	15	6	4	5
		50	Could not categorize but mentioned inflation in the context of one other objective	8	3	3	2
		33	Mentioned inflation in the context of two other objectives	3	1	1	1
		0	Other	68	18	14	36
Do you have a specific, numerical, publicly announced target or monitoring range for inflation or credit?	1	100	Yes	55	13	16	26
		0	No	39	15	6	18
Rank the monetary policy objectives (other than price or monetary stability) that the central bank pursues; indicate if there is no fixed target.	1	100	Inflation is first objective	30	8	8	14
		50	Inflation mentioned as an objective	33	11	6	16
		0	Other	31	9	8	14
In your current monetary framework, is there scope for other variables to prevail over the target in the event of policy conflicts? If so, how often does inflation prevail as a target?	1	100	Inflation always prevails over all other objectives	4	3	1	0
		75	Inflation always prevails over the exchange rate and inflation objectives	6	2	3	1
		50	Inflation usually prevails	10	4	3	3
		25	Inflation sometimes prevails	40	12	6	22
		0	Inflation rarely or never prevails	32	5	9	18

APPENDIX (continued)

Table A5. Measures of Central Bank Independence

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
To what extent do statutory objectives provide the central bank with a clear focus on price stability?	1	100	Only goal is price, monetary, or currency stability	24	9	9	6
		75	Price stability plus financial stability objectives an nonconflicting monetary stability objectives	54	13	13	28
		50	Price stability plus conflicting objectives	12	4	0	8
		25	No statutory objectives	3	1	0	2
		0	Only goals other than price stability	1	1	0	0
To what extent does the central bank determine the setting of policy targets?	1	100	Only central bank sets an explicit target (for inflation, money, or the exchange rate) or there are no explicit targets	27	7	6	14
		50	Both central bank and government have a role in setting an explicit target (for inflation, money, or the exchange rate)	55	17	14	24
		0	Only government sets a target (for inflation, money, or the exchange rate)	12	4	2	6
To what extent does the central bank determine the adjustment of monetary policy instruments?	2	100	Central bank decides on changes in instruments and no representative of government attends the meeting of monetary policy makers, other than as an observer	63	23	18	22
		65	Central bank decides on changes to instruments and a representative of government attends the meeting of monetary policy makers	15	3	3	9
		33	Central bank and government have a role in setting instruments	12	2	0	10
		0	Central bank role in setting instruments is limited	4	0	1	3

APPENDIX (continued)

Table A5. (continued)

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
To what extent are there limits on central bank financing of the fiscal deficit?	2	100	Prohibited, never used, or amounts so small and for such short periods that independence in no way affected	46	26	11	9
		75	Narrow, well enforced limits exist	15	1	5	9
		50	Limits exist that are usually enforced	25	1	4	20
		25	Wide limits exist and some procedures exist when limits are missed	7	0	2	5
		0	No limits or little enforcement	1	0	0	1
How long is the term of office of the Governor?	0.5	100	8 years or above	5	3	1	1
		86	7 years	11	5	6	0
		71	6 years	21	6	9	6
		57	5 years	37	9	4	24
		43	4 years	6	2	1	3
		29	3 years	5	1	0	4
		14	term can exceed 3 years	9	2	1	6
Can the Central Bank formulate and implement policy without government constraint?[a]	0	100	Independent with no qualification	36	16	10	10
		75	Independent with any qualification	31	10	6	15
		50	Independent with significant qualification	11	1	4	6
		25	Limited independence	14	1	2	11
		0	Not possible or requires sanction of other person/body	2	0	0	2

a. Scores are author's interpretation of general answer provided.

APPENDIX (continued)

Table A6. Accountability of the Central Bank to Government

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
Accountability to a specific target							
Is there a specific published target?	1	100	Yes	83	25	22	36
		0	No	11	3	0	8
Does government have a role in setting any central bank target?	1	100	Yes	67	21	16	30
		0	No	27	7	6	14
Do procedures exist for when the target is missed?	1	100	Recognized formal procedures exist	17	8	4	5
		50	Informal procedures exist, or if central bank reports instruments set in conjunction with government	31	5	6	20
		0	No	46	15	12	19
Accountability to government or in general							
Is central bank subject to monitoring by legislature?	3	100	Yes	70	19	21	30
		50	Irregularly or if instrument independence limitedx	6	4	1	1
		0	No	18	5	0	13
Procedures written when government can overrule	0	100	Formally written down	20	6	2	12
		50	Informally	3	0	0	3
		0	No	71	22	20	29

APPENDIX (continued)

Table A7. Measure of Policy Explanations

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
Explanation of policy decisions[a]							
Does the central bank provide explanations on day policy changed?	1.5	100	Yes	76	25	21	30
		0	No	18	3	1	14
Are explanations provided when policymakers meet and do not change policy?	0.3	100	Yes	15	4	9	2
		50	Sometimes	5	2	1	2
		0	No	74	22	12	40
Are policy decisions discussed in standard bulletins and reports?	2	100	At least twice a year	61	21	15	25
		50	At least annually	12	2	2	8
		0	No	21	5	5	11
Are minutes of policy meetings published?	1	100	Within a month of meeting	12	7	2	3
		50	More than a month after	5	2	2	1
		0	No	77	19	18	40
Are voting patterns published?	0.5	100	Yes	6	5	1	0
		0	No	88	23	21	44
Published forward-looking analysis							
Forward-looking analysis in standard bulletins and reports	2	100	More than annually	39	18	7	14
		50	At least annually	24	4	4	16
		25	Unspecified	10	2	4	4
		0	Other	21	4	7	10
Form of publication	1.5	100	Words plus numbers or graphs	35	16	5	14
		50	Words, numbers, or graphs	25	8	6	11
		25	Unspecified	13	0	4	9
		0	None	21	4	7	10
Risks to forecast published	1	100	Words plus numbers or graphs	9	7	2	0
		50	Words, numbers, or graphs	23	9	4	10
		0	None	62	12	16	34
Discussion of past forecast errors	1	100	Yes	21	8	3	10
		50	Sometimes	9	7	2	0
		0	None	64	13	17	34
Assessment and analysis							
Analysis in standard bulletins and reports	2	100	More than annually	86	28	20	38
		50	At least annually	7	0	2	5
		0	Other	1	0	0	1

APPENDIX (continued)

Table A7. (continued)

Question	*Weight*	*Score*	*Category of answers and distribution of results*	*All economies*	*Industrialized*	*Transitional*	*Developing*
Frequency of speeches	1.5	100	At least monthly	39	20	11	8
		66	At least quarterly	26	6	5	15
		33	Less than quarterly or occasionally	29	2	6	21
		0	Never, almost never	0	0	0	0
Working papers and other research publications	1	100	More than 10 each year	35	18	5	12
		66	More than 5 each year	19	9	3	7
		33	More than 2 or occasional	18	1	8	9
		0	Never	22	0	6	16

a. Weights refer to sub-total: each question has a weight of one-third in total score for policy explanations.

APPENDIX (continued)

Table A8. Explicit Targets as of late 1998 and Dates Adopted

Type of economy	*Exchange rate target*	*Money target*	*Inflation target*
Total	50	50	54
Developing			
No. of countries	22	18	25
Country and date target adopted	Cyprus, 1960s Fiji, 1960s Tonga, 1960s W. African States, 1960s Malta, 1971 Bahamas, 1973 Barbados, 1975 Jordan, 1975 Bahrain, 1980 Belize, 1980s Kuwait, 1980s E. Caribbean, 1983 Hong Kong, 1983 Chile, 1986 Argentina, 1991 Lebanon, 1993 Namibia, 1993 Ecuador, 1994 Vietnam, 1994 Uruguay, 1995 Malaysia, 1998 Turkey, 1998	India, 1985 South Africa, 1986 Mozambique, 1987 Nigeria, 1987 Kenya, 1990 Guyana, 1990 Ghana, 1992 Jordan, 1992 Uganda, 1992 Indonesia, 1993 Bangladesh, 1994 China, 1994 Malta, 1994 Mauritius, 1994 Vietnam, 1994 Tanzania 1995 Zambia 1995 Jamaica, 1996	Malaysia, 1970s Tanzania, 1980s Mozambique 1987 Chile, 1991 Egypt, 1991 India, 1991 Uganda, 1992 Indonesia, 1992 Guyana, 1993 Nigeria, 1993 Vietnam, 1993 Bangladesh, 1994 Ecuador, 1994 Mexico, 1994 Peru, 1994 Uruguay, 1995 Zambia, 1995 Jamaica, 1996 Mauritius, 1996 Sierra Leone, 1996 W. African States, 1997 China, 1998 Kenya, 1998? Lebanon, 1998 Turkey, 1998
Transitional			
No. of countries	13	14	16
Country and date target adopted	Poland, 1990 Estonia, 1992 Slovakia, 1993 Latvia, 1994 Lithuania, 1994 Hungary, 1995 Russia, 1995 Macedonia, 1996 Bosnia-Herz., 1997 Bulgaria, 1997 Turkmenistan, 1997 Mongolia, 1998 Ukraine, 1998	Ukraine, 1991 Macedonia, 1992–95 Mongolia, 1992 Albania, 1993 Kyrgyz, 1993 Russia, 1993 Slovakia, 1993 Moldova, 1994 Georgia, 1995 Kazakhstan, 1997 Romania, 1997 Slovenia, 1997 Turkmenistan, 1997	Armenia, 1998 Poland, 1992 Albania, 1993 Macedonia, 1993 Russia, 1993 Slovakia, 1993 Croatia, 1994 Armenia, 1995 Moldova, 1996 Georgia, 1996 Kazakhstan, 1997 Kyrgyz, 1996 Mongolia, 1997 Romania, 1997 Slovenia, 1997 Turkmenistan, 1997 Czech Rep., 1998

APPENDIX (continued)

Table A8. (continued)

Type of economy	*Exchange rate target*	*Money target*	*Inflation target*
Industrialized			
No. of countries	15	8	13
Country and date target adopted	Norway, 1960s, 1994 Belgium, 1971 Netherlands, 1971 Ireland, 1972 Denmark, 1997 Portugal, 1978 Finland, 1978, 1996 Italy, 1979, 1996 France, 1979 Austria, 1981 Taiwan, 1985 Israel, 1986 Spain, 1989 Iceland, 1989 Greece, 1995	Greece, 1950s Germany, 1975 Switzerland, 1975 France, 1977 Korea, 1979 United States, late 1970s Italy, 1984 Taiwan, 1989	New Zealand, 1988 Greece, 1990? Taiwan, 1990? Canada, 1991 Israel, 1991 United Kingdom, 1992 Australia, 1993 Finland, 1993 Sweden, 1993 France, 1994 Italy, 1995 Spain, 1994 Korea, 1998

Source: Bank of England Survey of Monetary Frameworks; Cottarelli and Giannini (1997).

a. Data from 92 responses to the Bank of England Survey of Monetary Frameworks. A full list of the economies in the sample is given in table A1. In 1998, the only economies in the sample that reported no explicit targets or monitoring ranges were Botswana, Japan, Singapore, Sri Lanka, and Thailand. Cyprus, Fiji, Norway, and Tonga were defined as having explicit exchange rate targets because while no particular number is announced, the targets are either legal ones or they are sufficiently strong to be defined by the IMF as fixed to another currency. In the case of exchange rate pegs, years in which devaluations took place are included, as are years in which the targeted currency was changed. Germany and Switzerland have explicit long-term objectives for inflation, but these are not included in the Table. A question mark is included for Greece and Taiwan because it is unclear whether inflation targets were used before 1990.

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