Volume Title: The Inflation-Targeting Debate

Volume Author/Editor: Ben S. Bernanke and Michael Woodford, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-04471-8

Volume URL: http://www.nber.org/books/bern04-1

Conference Date: January 23-26, 2003

Publication Date: December 2004

Title: Introduction to "The Inflation-Targeting Debate"

Author: Ben S. Bernanke, Michael Woodford

URL: http://www.nber.org/chapters/c9553

Introduction

Ben S. Bernanke and Michael Woodford

Since about 1990, a significant number of industrialized and middle-income countries have adopted inflation targeting as their framework for making monetary policy. As the name suggests, in an inflation-targeting regime the central bank is responsible for achieving a publicly announced objective for the inflation rate, typically at a medium-term horizon of one to three years. Under "flexible" inflation-targeting regimes, now the norm in practice, central banks are able to pursue other objectives as well, such as output stabilization, as long as the inflation objective is achieved in the long run. Inflation-targeting central banks have also typically placed a heavy emphasis on communication, transparency, and accountability; indeed, the announcement of the inflation target is itself motivated in large part as a means of clarifying the central bank's objectives and plans for the public.

Countries that have adopted inflation targeting have generally experienced good macroeconomic outcomes, including low inflation and stable economic growth; and, as already noted, this approach has diffused around the globe. However, despite more than a decade of experience, important questions about inflation targeting remain unanswered. Among these are the following:

1. To what extent does inflation targeting, as practiced, correspond to an optimal form of monetary policy? Or, to put the question another way, could the framework of inflation targeting be redesigned in ways that

Ben S. Bernanke is the Howard Harrison and Gabrielle Snyder Beck Professor of Economics and Public Affairs at Princeton University and a member of the Board of Governors of the Federal Reserve System. Michael Woodford is professor of economics at Columbia University and a research associate of the National Bureau of Economic Research.

would provide better results? For example, should inflation targeting be strictly forward looking—that is, should it be interpreted as inflation-*forecast* targeting—or should current and lagged values of inflation and other variables affect the policy setting? Should central banks attempt to target inflation or the price level? Is there any theoretical reason to expect the enhanced communication aspect of inflation targeting to improve policy outcomes?

2. To what extent are the improvements in performance observed in countries that have adopted inflation targeting the direct result of the change in policy regime, as opposed to other causes? For example, many countries that did not adopt inflation targeting, or adopted only parts of the approach, also experienced substantial improvements in macroeconomic performance in the 1990s. Would these countries have done better if they had adopted full-fledged inflation targeting? Would the inflation-targeting countries have done as well if they had not gone the inflation-targeting route? Are there certain preconditions for inflation targeting to be helpful? Are there institutional or economic circumstances under which adopting inflation targeting can be counterproductive?

3. The early adopters of inflation targeting, such as New Zealand, the United Kingdom, Canada, and Sweden, were for the most part industrialized countries. More recently, both middle-income developing countries and transition economies have begun to experiment with this approach. Are these countries "ready" for inflation targeting, or would they be better advised to adopt some other type of monetary regime? What special issues does inflation targeting raise for developing and transition economies?

To try to answer these and other questions about inflation targeting, the National Bureau of Economic Research convened a conference in Miami, Florida, in January 2003, attended by academics, central bankers, and other experts in monetary policy. The proceedings of this highly stimulating conference are contained in this volume. In the rest of this introduction we give a brief overview of the keynote address and the papers that were presented.

The volume begins with remarks delivered by Mervyn King, the incoming governor of the Bank of England and longtime member of the Bank's Monetary Policy Committee, to open the conference. King reflects on the experience with inflation targeting in the United Kingdom. Although he acknowledges that the adoption of an inflation-targeting framework may not have been essential to the great improvement in macroeconomic performance in the United Kingdom since 1992, King argues that this framework at least made making the right decisions easier. He reviews the implementation of inflation targeting at the Bank of England and discusses what he sees as the important advantages of the approach. These include both a substantial increase in the professionalism of decision making and increased political acceptance of the delegation of technical judgments about the month-to-month conduct of policy to the Bank. Finally, he argues that inflation targeting should be viewed as "a way of thinking about policy" rather than as "an automatic answer to all the difficult policy questions." This insight proves to be a recurrent theme of the papers in this volume.

The papers from the conference fall naturally into three groups. The first set of papers considers the optimal formulation of an inflation-targeting policy. Indeed, King argues in his opening remarks that inflation targeting should be conceived of as "a way of implementing the optimal policy reaction function." Taking this charge seriously, the first group of papers examines how an inflation-targeting policy might be implemented in order to approach this ideal.

Lars E. O. Svensson and Michael Woodford (chap. 2) present a theoretical case for the view that inflation-forecast targeting, if conducted in an ideal manner, is an optimal monetary policy. Their paper is concerned not so much with the way in which inflation and other variables should evolve under an optimal policy—although a position on that question is a necessary starting point for their analysis—but rather with the question of the *implementation* of optimal policy, by which they mean the design of a decision procedure for policy that can be expected to bring about the desired equilibrium. They argue that an inflation-forecast targeting procedure can be designed that not only is consistent with an optimal equilibrium but also represents a desirable approach to implementation. Under such a procedure, the central bank considers in each decision cycle how its instrument must be set in order for the central bank's current projections regarding the future evolution of inflation and other variables to satisfy a certain *target criterion,* which defines what it means for policy to be "on track."

The authors judge alternative approaches to implementation according to several criteria. These include the transparency of the connection between the public description of the policy rule and ultimate policy goals; the robustness of the policy rule to model perturbations; and the degree to which a given policy rule excludes the possibility of alternative, much less desirable equilibria that arise as a result of self-fulfilling expectations. They argue that forecast-targeting procedures are especially desirable approaches to the implementation of optimal policy on the first two grounds. Determinacy of equilibrium is less easily ensured under such procedures than under commitment to a backward-looking instrument rule in the spirit of the Taylor rule; however, Svensson and Woodford argue that it is possible to design a "hybrid" procedure—under which the central bank commits itself to respond in a backward-looking way to departures of the economy's actual evolution from the desired equilibrium but follows a forecast-targeting procedure otherwise—that retains the transparency and robustness of a targeting procedure while ensuring determinacy of equilibrium as well.

Svensson and Woodford compare alternative approaches to the implementation of optimal policy in the context of a relatively simple "New Keynesian" model of the monetary transmission mechanism. Marc P. Giannoni and Michael Woodford (chap. 3) complement their analysis by discussing the form of the optimal target criterion in a range of more complicated models that introduce features found in many estimated models of the monetary transmission mechanism with optimizing foundations. They consider the question of which variables should be taken into account (in addition to the inflation projection) in an optimal target criterion. They also show what determines the appropriate relative weights that should be placed on various variables, the relative weights that should be placed on projections for different future horizons, and the degree to which the optimal target criterion should be history dependent. The main point of their paper is to show how the nature of the optimal target criterion varies depending on one's beliefs about the correct structural model of the monetary transmission mechanism, and on the numerical values assigned to the parameters of one's model.

Giannoni and Woodford illustrate their approach by estimating a small quantitative model of the U.S. monetary transmission mechanism and computing an optimal targeting procedure for the estimated model. Like a number of other recent empirical models, their estimated model incorporates staggering of both wages and prices; indexation of both wages and prices to a lagged price index; predetermined wages, prices, and real private expenditure for one quarter following an unexpected change in monetary policy; and habit persistence. The optimal policy rule is found to correspond to a multistage inflation-forecast targeting procedure. Under the optimal procedure, the degree of projected future inflation that should be acceptable depends on the central bank's current projections for future real wages and real activity (relative to a time-varying natural rate of output) and also on past projections. The degree to which actual U.S. policy over the past two decades would have conformed to the optimal target criteria is considered, on the assumption that projections at each point in time would have corresponded to the forecasts implied by a small, unrestricted vector autoregression (VAR) model. Some systematic departures of actual policy from the optimal criteria are identified, but these seem to have been relatively modest over the period in question.

Steven G. Cecchetti and Junhan Kim (chap. 4) consider a particular issue in the design of an optimal targeting regime, namely, the degree to which overshoots of the long-run target inflation rate should be followed by intentional undershoots, in order to "undo" part or all of the undesired increase in prices. Under a simple (purely forward-looking) inflation target of the kind presumed in much theoretical discussion of inflation targeting, as well as typically used in practice, the central bank "lets bygones be bygones" by setting an inflation target that is independent of past successes or failures in hitting the target. Under a "price-path target," by contrast, the central bank would seek to keep the price level near some preannounced target path that rises deterministically at the long-run target inflation rate. The latter approach would require that excess inflation eventually be completely reversed, in order for the price level not to remain permanently away from the target path.

Cecchetti and Kim define a class of "hybrid" targeting rules that nests the extremes of pure inflation targeting and pure price-path targeting as polar cases. They assume that the central bank is assigned a quadratic loss function that it is expected to seek to minimize in a discretionary fashion. The loss function includes both an output-gap stabilization objective and a term proportional to squared deviations of the actual price level from a time-varying target, which is a weighted average of the previous actual price level and the previous target, increased by the long-run inflation target. Cecchetti and Kim consider which objective in this family would be best to assign to a central bank, from the point of view of minimizing a true social welfare function that penalizes both inflation and output-gap variability but assigns no intrinsic significance to the stationarity of the absolute price level. A stabilization objective other than pure inflation targeting may nonetheless be optimal because of the suboptimality of the discretionary equilibrium from the point of view of the loss function assigned to the central bank.

Cecchetti and Kim characterize the optimal hybrid central-bank objective as a function of model parameters and then estimate the relevant parameters for twenty-three countries. They conclude that a hybrid rule that is fairly close to price-path targeting would be optimal for most of the countries in their sample. As between the simple alternatives of pure inflation targeting and pure price-path targeting, they argue for the desirability of price-path targeting, not only because their estimated parameter values imply that it would be better for most countries but also because their numerical analysis indicates that price-path targeting is a more robust choice against variation in the values of the estimated parameters.

The papers just mentioned all consider the implications of alternative approaches to the conduct of monetary policy under the assumption of rational expectations on the part of the private sector. Athanasios Orphanides and John C. Williams (chap. 5) instead consider the important practical question of the extent to which performance under a given policy rule may deteriorate if people do not have rational expectations but must base their forecasts on extrapolation from the statistical patterns that they have already observed. They then ask how a concern for robustness against this kind of imperfect knowledge should modify the recommendations that are made for the conduct of monetary policy.

In the context of a simple model of the inflation-output trade-off, Orphanides and Williams find not only that the degree to which it is possible for the central bank to stabilize inflation and the output gap is reduced in the case of imperfect knowledge on the part of the private sector, but also that the same policies are no longer optimal. In particular, they find that the optimal policy (in the case of particular assumed relative weights on the two stabilization goals) allows less response of inflation to cost-push shocks than would be optimal in the case of rational expectations. When the private sector forms its inflation expectations by estimating a regression model of inflation dynamics using recently observed data, allowing inflation to rise temporarily in response to a cost-push shock runs the risk of being (incorrectly) interpreted by private agents as an indication of a higher long-run average rate of inflation. It is therefore necessary for the central bank to target inflation more tightly than would be optimal under rational expectations, in order to prevent the losses that would result from allowing inflation expectations to drift. A conclusion that can be drawn from this analysis is that "stricter" inflation targeting is more appropriate in the case of economies where central-bank credibility has not yet been established.

The results of Orphanides and Williams also shed light on the question of why a public inflation target is desirable, rather than simply letting the public infer the central bank's policy commitments from its observed behavior. Orphanides and Williams show that when private agents are assumed to know the long-run average inflation rate associated with central bank policy (i.e., the central bank's long-run inflation target), rather than having to estimate it—although they still must estimate the dynamics of transitory departures from this long-run target—a more favorable tradeoff between inflation and output-gap variability becomes attainable. Hence announcement of an inflation target—if it can be made credible to the private sector that the announced target represents the central bank's true goal—can improve macroeconomic performance, by anchoring inflation expectations to a greater extent in the face of short-run fluctuations in inflation due to cost-push shocks. The model of Orphanides and Williams thus provides theoretical results regarding the benefits of an explicit inflation target that are consistent with the experience that Mervyn King emphasizes in his remarks about the United Kingdom.

The second group of papers offers critical evaluations of inflation targeting as a general approach, especially as it has been implemented in practice thus far. Laurence Ball and Niamh Sheridan (chap. 6) compare the macroeconomic performance of inflation-targeting and non-inflation-targeting countries. Specifically, they compare seven OECD countries that adopted inflation targeting in the early 1990s with thirteen that did not, with respect to the behavior of inflation, output, and interest rates. Many commentators have remarked upon the substantial, sustained reductions in both the average level and the volatility of inflation by the inflation-targeting countries during the 1990s, as well as the fact that this improvement was achieved without any evident increase in instability of the real economy, and proposed these achievements as testimony to the benefits of inflation targeting as a monetary policy strategy. Ball and Sheridan, however, find that macroeconomic performance improved along similar dimensions for both targeters and nontargeters over this period of time, leading them to suggest that some of the improvements in macroeconomic stability in the inflation-targeting countries may have been unrelated to the adoption of inflation targeting. In particular, once they control for initial macroeconomic conditions (such as higher inflation, on average, in the countries that adopted inflation targeting), they find little evidence of greater improvement due to the adoption of inflation targeting. To the extent that they find greater absolute improvements in performance in inflation-targeting countries, they ascribe the result to "mean reversion": that is, these countries typically had worse initial conditions and thus were likely to improve more than countries that were in better shape at the beginning of the sample, independent of choice of policy regime.

These results indicate that some caution in interpreting the experience with inflation targeting thus far is appropriate. The proper interpretation of the results of Ball and Sheridan will doubtless be the subject of considerable further debate. As Gertler notes in his comment, it is arguable that a number of the non-inflation-targeting countries also changed their monetary policies in substantial ways in the 1990s, in respects that may have involved important features of inflation targeting, even if these countries did not have official inflation targets. (As argued by Goodfriend in this volume, the United States has adopted a number of features of inflation targeting in recent years.) Disentangling the different aspects of a given country's monetary policy regime in a way that can clarify which elements are most important in achieving better performance will be an important topic for further study.

Christopher A. Sims (chap. 7) cautions against dangers that may result from prescribing inflation targeting as an approach to monetary policy without regard to a country's fiscal situation and to the degree of independence of the central bank. A monetary policy rule that incorporates a target for inflation, and that commits the central bank to vigorous reaction to departures from the target inflation rate (as under the Taylor rule), will not necessarily result in an equilibrium in which inflation remains near the target rate. Under certain assumptions about fiscal policy and about the connection between the respective balance sheets of the central bank and the government, such a monetary rule may fail to prevent the existence of other equilibria (such as self-fulfilling deflations) or may even require the equilibrium inflation rate to diverge from the target rate (in a hyperinflationary spiral).

Sims argues, as a result, that inflation targeting may be least useful in exactly those countries that have had the greatest difficulties controlling inflation in the past; it should therefore not be oversold as a general solution to the problem of chronic inflation. In drawing attention to the importance of a suitable institutional framework and fiscal position for the success of an inflation-targeting rule, the paper echoes an important theme of the work by Jonas and Mishkin (discussed below) as well. This need not mean that inflation targeting should remain a fashion suited only to countries with few serious problems of macroeconomic stability to begin with. But a complete theory will surely place inflation targeting within the context of a broader program of institutional and policy reform, and the proper target criterion for an inflation-targeting central bank is unlikely to be independent, in this more general theory, of the degree of success that can be anticipated in reforming other aspects of policy.

Marvin Goodfriend (chap. 8) considers the case for adoption of inflation targeting in the United States. He argues that in several important senses the Federal Reserve already practices "implicit inflation targeting." Under Chairman Greenspan, the Fed clearly assigns priority to maintaining a low and stable inflation rate; it has achieved considerable credibility in this regard, and as a result of this credibility the Fed has gained flexibility in stabilizing the real economy without losing control of inflation. Nonetheless, Goodfriend argues that it would be desirable for the Fed to make its commitment to maintaining a low inflation rate more explicit. This would help to ensure that the credibility achieved by the Fed under the leadership of Paul Volcker and Alan Greenspan can be maintained through changes of personnel and improve the democratic accountability of the Fed as well. Finally, Goodfriend considers practical aspects of the way in which inflation targeting could be adopted in the United States given the current legislative mandate of the Fed, and he also addresses practical objections to the adoption of inflation targeting—arguing, for example, that such a commitment would not prevent the Fed from pursuing an efficient countercyclical stabilization policy.

In his comment on Goodfriend's paper, Kohn presents a skeptical view of the need for inflation targeting in the United States at this time. While Kohn agrees that the Fed's accumulation of credibility for maintenance of low inflation has been a very positive development, he denies that current policy is properly characterized as implicit inflation targeting, and he argues that adoption of explicit inflation targeting would substantially restrict the flexibility that has been essential to the success of recent U.S. policy. In his view, the Fed's current approach has already achieved the main benefits of inflation targeting (such as successful anchoring of inflation expectations) without any need for the straitjacket of a formal inflation target, and it would be wise to continue an approach that has worked well thus far.

These contrasting briefs—each presented by one of the most articulate proponents of the position in question—bring into focus a number of central issues that must be addressed in evaluating the potential of inflation targeting. How important are explicit as opposed to implicit commitments on the part of a central bank? How important is flexibility, and can flexibility of the crucial sort be reconciled with the existence of an explicit target for policy, if the nature of the commitment to that target is properly defined? These are critical issues for further analysis, and further reflection upon the experiences of central bankers in the United States and elsewhere will surely play an important role in settling them.

The third and final group of papers concerns the special problems of monetary policy in emerging markets. Jiri Jonas and Frederic S. Mishkin (chap. 9) examine the experiences of three transition economies that have recently adopted inflation targets: the Czech Republic, Poland, and Hungary. Transition economies such as these have a number of unusual features that pose special problems for the conduct of inflation targeting. The economies are in the midst of radical restructuring. They are new democracies, and relations between the government and the central bank in particular are not yet clearly defined. Furthermore, they are about to join the European Union and are thus prospective future members of the European Monetary Union (EMU); the requirements for entry to EMU thus pose additional constraints on the conduct of monetary policy. While these special circumstances make inflation targeting more difficult in these countries, and the three countries have often missed their targets by large margins, Jonas and Mishkin find that the strategy has been relatively successful in bringing about disinflation, and they argue that other possible strategies for inflation control would also be at least as problematic under these circumstances. Hence they remain optimistic about the usefulness of inflation targeting as a strategy for transition economies.

Several lessons are proposed regarding the appropriate conduct of inflation targeting by transition economies. Jonas and Mishkin argue that it is more than usually important in these economies that the central bank avoid undershooting (as well as overshooting) its inflation target, in order not to endanger the fragile political support for the central bank. It is also especially important in these economies that the inflation target be defined as a medium-term objective, allowing room for substantial short-run departures from the medium-term target in response to unforeseen shocks, and that the central bank be able to communicate effectively with the public about the goals of inflation targeting, the limits of what it can achieve, and the reasons for the target misses that occur.

Ricardo J. Caballero and Arvind Krishnamurthy (chap. 10) are concerned with special problems resulting from the vulnerability of emerging-market economies to volatile international capital flows—specifically, to the occurrence of "sudden stops," in which foreign lenders are suddenly unwilling to lend to the country at any interest rate. They present a model of a small open economy in which a central bank that is unable to commit itself in advance will choose to use monetary policy to defend the value of its currency too aggressively when a sudden stop occurs. That is, after the fact, the central bank will exhibit "fear of floating." However, this policy is distinctly suboptimal relative to the best policy under commitment. The optimal state-contingent commitment from an ex ante point of view would instead provide the private sector with a greater incentive to accumulate foreign-currency assets (or reduce foreign-currency borrowing), by allowing foreign-currency assets to increase in value (in terms of the domestic currency) during the crisis.

Caballero and Krishnamurthy show that a central bank operating under discretion can be induced to behave in a more desirable way if it is assigned a state-contingent inflation target (rather than a constant target) or if the inflation target is defined in terms of a measure of inflation that assigns greater weight to the prices of nontraded goods. That is, an appropriate ex ante inflation target may help to ameliorate the effects of sudden stops and steer the economy and the central bank away from the inferior fear-of-floating equilibrium. The paper also contributes to theoretical discussion of the appropriate price index to target in the case of an open economy, an important issue in the theory of inflation targeting for advanced economies as well.

To conclude this introduction, we return to Mervyn King's point that inflation targeting should be viewed as "a way of thinking about policy" rather than "an automatic answer to all the difficult policy questions." Or, as Ben Bernanke and Frederic Mishkin put it in an early essay on the subject, inflation targeting is "a framework, not a rule." Inflation targeting offers a number of the basic elements of a successful monetary policy framework, including a clearly defined nominal anchor, a coherent approach to decision making, the flexibility to respond to unanticipated shocks, and a strategy for communicating with the public and financial markets. However, as in any other framework, making good policy requires sensitivity to the specific economic and institutional environment in which policymakers find themselves, as well as the technical capability to modify and adapt the framework as needed. We hope that the research contained in this volume will be useful to monetary policymakers and their staff in their efforts to achieve economic stability.