

Panel Discussion

Inflation Targeting

Ben S. Bernanke

Should the Federal Reserve announce a quantitative inflation objective? Those opposed to the idea have noted, correctly, that the Fed has built strong credibility as an inflation-fighter without taking that step and that this credibility has allowed the Fed to be relatively flexible in responding to short-run disturbances to output and employment without destabilizing inflation expectations. So, the opponents argue, why reduce this flexibility unnecessarily by announcing an explicit target for inflation?

It would be foolish to deny that the Fed has been quite successful on the whole over the past two decades. Whether the U.S. central bank would have been even more successful, had it announced an explicit objective for inflation at some point, is impossible to say. We just don't know. We can't re-run history; and although empirical cross-country comparisons can be useful, they are far from being controlled experiments.

However, the relevant question at this point is not the unknowable outcome of the historical counterfactual but whether, given the initial conditions we face today, the adoption of an explicit inflation objective might not improve U.S. monetary policy in the future. The Fed's environment today is different from that of the 1980s and 1990s in at least one important respect: Price stability is no longer just over the horizon, but has been achieved—core inflation rates are currently not much above 1 percent. Thus, in contrast to the experience of the past 35 years or so, in which there could be little doubt about the Fed's desired direction for inflation, today the risks to inflation are more nearly symmetrical; that is, inflation can be too low as well as too high.

A case can be made, I believe, that when the economy is operating in the region of price stability, public expectations and beliefs about the central bank's plans and objectives, always important, become even more so. First, because the public can no longer safely assume that the central bank prefers lower to higher inflation, expectations about future policy actions and future inflation may become highly sensitive to what the public perceives to be the Fed's "just right" level of inflation. Uncertainty about this "just right" level of inflation thus may translate, in turn, into broader economic and financial uncertainty. Second, at very low inflation rates, the zero lower bound on the policy interest rate is more likely to become relevant, which increases the potential importance of effective expectations management by monetary policymakers. For example, when interest rates are very low, the best way to ease policy may be to explain to the public that the current low interest rate will be maintained for a longer period, rather than simply lowering the current rate. It seems to me that the enhanced importance of public beliefs and expectations about monetary policy in the region of price stability argues for greater attention by the central bank to its methods of communication when inflation is low.

On the premise that effective communication is even more crucial near price stability, I will focus today on how an incremental move toward inflation targeting, in the form of the announcement of a long-run inflation objective, might help the Fed communicate better and perhaps improve policy decisions as well, *without* the costs feared by those concerned about a potential loss of flexibility. As usual, my views are not to be attributed to my colleagues on the Board of Governors of the Federal Reserve System or the Federal Open Market Committee.

As a preliminary, I need to introduce the idea of the optimal long-run inflation rate, or OLIR for short. (Suggestions for a catchier name are welcome.)

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The OLIR is the long-run (or steady-state) inflation rate that achieves the best average economic performance over time with respect to *both* the inflation and output objectives.

Note that the OLIR is the relevant concept for dual-mandate central banks, like the Federal Reserve. Thus, it is not necessarily equivalent to literal price stability or zero inflation adjusted for the usual measurement error bias. Rather, under a dual mandate, a strong case can be made that, below a certain inflation rate, the benefits of reduced microeconomic distortions gained from price stability are outweighed by the costs of too-frequent encounters of the funds rate with the zero-lower-bound on nominal interest rates. (This argument underlies the common view that there should be a “buffer zone” against deflation.) Hence, in general, the OLIR will be greater than zero inflation, correctly measured. Note also that the OLIR is an average long-run rate; variation of actual inflation around the OLIR over the business cycle would be expected and acceptable (Meyer, 2004).

What is the OLIR for the U.S. economy? A fairly extensive recent literature has attempted to quantify the OLIR. (See, e.g., Coenen, Orphanides, and Wieland, 2003, and references therein.) Because direct measures of the benefits of low inflation are not available, papers in this literature, in practice, estimate the OLIR to be the lowest inflation rate for which the risk of the funds rate hitting the lower bound appears to be “acceptably small.” Interestingly, the results using this approach seem fairly consistent across models and specifications, with several papers (including work using FRBUS, the Federal Reserve’s large econometric model of the U.S. economy; see Reifschneider and Williams, 2000) having concluded that the risk of hitting the zero bound seems to decline sharply once the long-run average inflation rate rises to about 2 percent. In addition, other studies of the costs of very low inflation (such as the supposed effects of downward nominal wage rigidity on the allocation of labor) have found that these costs are also largely eliminated at inflation rates of about 2 percent (Akerlof, Dickens, and Perry, 1996; see also Altig, 2003).

Fortuitously, then, it may be the case that something in the vicinity of 2 percent is the optimal long-run average inflation rate for a variety of assumptions about the costs of inflation, the structure of the economy, the distribution of shocks, etc. However, before we embrace that number, many details remain to be filled in. For example, in practice, much

might depend on the specification of the inflation index, on assumptions made about the steady-state value of the real interest rate, and on other factors. Also important would be getting a better sense of the range of uncertainty around this number. More research on this issue would be highly worthwhile. As the economy seems currently to be moving toward a sustainable expansion path, with a stabilizing rate of inflation, having an estimate of the OLIR likewise seems crucial to making good policy in the next few years. The issue is one that, in my view, the FOMC and the staff should be looking at carefully.

Suppose, as I believe would be feasible, that the FOMC were able to agree on a value or central tendency for the OLIR, based on the results of staff research and discussion among Committee members. Of course, the value of the OLIR would only be a rough approximation to the “truth,” but one cannot avoid making such approximations in policy-making, whether implicitly or explicitly. Should the FOMC then take the next step and announce this number to the public? Some have argued that such an announcement would be unnecessary because the Fed’s implicit inflation objective is already well understood by the market. I am skeptical. Publicly expressed preferences by FOMC members for long-run inflation have ranged considerably, from less than 1 percent to 2.5 percent or more. Long-run inflation expectations implicit in the pricing of inflation-indexed securities vary significantly over time, and the apparently high sensitivity of long-term nominal interest rates to Fed actions suggests some uncertainty about the Fed’s long-run inflation target (Gurkaynak, Sack, and Swanson, 2003). Gavin (2004) points out that the range of private-sector forecasts for inflation is typically higher for the United States than for inflation-targeting countries.

If announcing the OLIR does not constrain short-run policy unduly, I really cannot see any argument against it. To reassure those worried about possible loss of short-run flexibility, my proposal is that the FOMC announce its value for the OLIR to the public *with the following provisos* (not necessarily in these exact words):

- (i) The FOMC believes that the stated inflation rate is the one that best promotes its output, employment, and price stability goals in the long run. Hence, in the long run, the FOMC will try to guide the inflation rate toward the stated value and maintain it near that value on average over the business cycle.

- (ii) However, the FOMC regards this inflation rate as a long-run objective only and sets no fixed time frame for reaching it. In particular, in deciding how quickly to move toward the long-run inflation objective, the FOMC will always take into account the implications for near-term economic and financial stability.

As you can see, stating the OLIR with these provisos places no unwanted constraints on short-run monetary policy, leaving the Committee free to deal with current financial and cyclical conditions as the Committee sees fit. In this respect, the proposal is very similar to one recently advanced by Governor Gramlich (2003).

To be clear, because neither the horizon at which the inflation objective is to be attained nor the expected path of inflation and output is specified under this proposal, what I am suggesting is not equivalent to inflation targeting as commonly understood. Instead, what is being proposed is an incremental step that I believe would provide important benefits in itself and which would leave the door open for further steps later if that seemed appropriate. In the language of Faust and Henderson (2004) at this conference, my objective is to get the mean of inflation right while leaving the determination of the variance open for future discussion and debate.

Without any fixed time frames for reaching the optimal long-run inflation rate, would an announced value for the OLIR carry any credibility? I think it would, for the important reason that the OLIR is not an arbitrarily selected value. In particular, because this inflation rate would have been judged by the Committee to be the one under which the economy operates best in the long run, the FOMC would have an incentive to try to reach it eventually, *even if it were not an announced long-run objective of policy*. Thus, despite the lack of a time frame, the OLIR should have long-run credibility; that is, it should be the best (lowest-forecast-error) answer to the question, What do you expect the average inflation rate in the United States to be over the ten-year period that begins (say) three years from now?

Additional reasons that the announcement would carry weight are the accumulated credibility of the Fed and the fact that we are presumably starting from a point near the optimal inflation rate, so that a period of costly disinflation will not be needed to reach the OLIR. In other words, this relatively unconstrained approach might not work for other central banks, and it might not have worked for the

Fed at other times (e.g., when we were at early stages of the disinflation process); but given the current configuration of circumstances, it should work now.

I have argued that announcing the OLIR would not have significant costs. What are the benefits? In my view, the announcement of the OLIR should serve as a useful clarification of the long-run objective of the Fed and would thereby provide a long-run “anchor” to monetary policy. Among other benefits, the announcement of the OLIR should help participants in financial markets price long-term bonds and other financial assets more efficiently; help to lower inflation risk in financial markets and in other forms of contracting; and tend to stabilize long-term inflation expectations more broadly, which in turn would make short-run stabilization policy more effective (Orphanides and Williams, 2003). Although the announcement of the OLIR would not constrain short-run policymaking in undesirable ways, it would nevertheless also help the market make inferences about the likely timing and extent of tightening and easing cycles, since, all else equal, the FOMC would want the inflation rate to move “asymptotically” toward the long-run desired level. For example, if the current inflation rate were known to be below the OLIR, that fact would convey some information about how long it will likely be before the Fed begins its tightening cycle.

Because some of the principal benefits of announcing the OLIR would arise from the reduction of uncertainty in financial markets and in the economy more broadly, I prefer the announcement of a single number for the OLIR, or at least a number with a surrounding tolerance range that is as narrow as the Committee can live with. I acknowledge that the OLIR cannot be determined precisely. Nevertheless, to the extent that the FOMC is fairly indifferent over a modest range of long-run inflation rates, there would be a positive benefit to choosing a single number within that range and trying to coordinate public expectations on that number.

Agreeing on and announcing a value for the OLIR might improve policymaking more directly, at least on the margin. In particular, the stated inflation objective would help guide policy during periods, like now, in which the economy is (we hope) returning to a sustainable growth path; at all times, it would also serve as a reminder to policymakers to keep one eye on the long run at the same time that they are reacting to current developments in the economy. But, to reiterate, it seems likely that the biggest gains would be in the area of communica-

tions. Sharing the OLIR with the public would address the most important information asymmetry in the system: namely, the public's imperfect knowledge of the FOMC's objectives. I believe this step would help to reduce the reliance of the Fed on complex and easily misinterpreted qualitative language in its communications with the public.

I conclude with a word on the politics of this proposal. One concern frequently expressed about announcing an inflation objective is that the Congress would interpret the introduction of an inflation target as a repudiation of the dual mandate. This would be a misinterpretation, but I understand why some legislators might draw the wrong conclusion.

However, it seems to me that the recent attention to the risk of deflation changes the political calculus. There now exists a broad awareness that an inflation rate that is too low, by raising the probability of deflation and a binding zero bound on the nominal interest rate, poses a threat to output and employment stability. Therefore the connection between the announced OLIR and the real side of the economy will be much more apparent to non-economists. Indeed, the entire rationale for the OLIR can be expressed in terms of jobs and growth. The FOMC might say to Congress: "We don't want long-run inflation to be too high, because low inflation promotes growth and productivity. On the other hand, inflation shouldn't be too low, because we want to have all the room we need to respond to the dangers that deflation poses for output and employment. We pose the objective in terms of inflation only because that is what the Fed can control in the long run." It does not seem to me to be such a difficult case to make in terms of the existing dual mandate. In addition we would have the explicit proviso that important short-run economic and financial goals will not be sacrificed to reach the long-term inflation objective more quickly. Although it would be important to vet these ideas thoroughly with the relevant Congressional committees before proceeding, I am hopeful that a change of the type I am proposing would be acceptable to Congress as being within the spirit of existing legislation.

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Inflation Targeting: A View from the ECB

Otmar Issing

1. INTRODUCTION

What is the ultimate objective of monetary policy? What is the appropriate framework for conducting monetary policy? Central bankers and academics have been asking these critical questions for decades. This conference, in which I was honored to take part, was a milestone in this long-standing debate.

It is a fact that never before in the history of *fiat* money has there been so much consensus on the benefits of a low-inflation environment, and many central banks have achieved results consistent with this conviction. This is a tremendous achievement and one that could easily lead us to think that at last this long-standing debate has been settled once and for all.

However, I do sometimes wonder whether we are not too complacent in believing that the regime of low inflation will be with us “from here to eternity.” There is always a risk that even great achievements, after a while, are taken as given and that their value is only rediscovered when they are in danger of becoming lost. In addition, recent history should tell us that the structure of the economy changes over time in a way that is difficult to anticipate and perceive in real time. This continuous mutation makes the task of monetary policy and its implementation even more challenging. It is the intrinsic nature of the economy that makes the debate on the aims of monetary policy and its appropriate framework so difficult to settle, and I believe that this debate will continue for some time to come.

In the course of the 1990s the inflation-targeting framework for the conduct of monetary policy has become popular among central banks and academics. In this paper I will highlight some of what I think are the distinguishing features and possible pitfalls of this approach. I will then draw comparisons with the European Central Bank’s (ECB) monetary policy strategy, also in the light of the ECB’s clarification of its strategy in May 2003.

Thus, in section 2, I would like to put the current debates on monetary policy into a historical perspective. In section 3, I will discuss what I see as the critical aspects of the inflation-targeting approach. Section 4 outlines the ECB’s monetary policy approach and the ways in which it resembles and differs from the inflation-targeting framework.

2. A HISTORICAL PERSPECTIVE

Following the philosophy of “rules above authorities”—to paraphrase slightly the title of Henry Simons’ famous article (1936)—one strand of research wanted the behavior of central bankers to be strictly constrained by a rule for conducting monetary policy. The most prominent advocate of this was Milton Friedman and his famous *k*-percent rule. The key argument in favor of the adoption of a simple strict rule was the acknowledgment of the economists’ and central bankers’ ignorance of the exact functioning of the economy and the long and variable time lags of monetary policy. It maintains that the actors of monetary policy know too little of the actual functioning of the economy to be able to perform activist policy and their discretionary actions would only exacerbate economic fluctuations instead of smoothing them. Strict rules prevent such problems, eliminating judgmental elements in monetary policy action and avoiding activist policy.

However, during the 1960s, few central bankers were in favor of rules, mostly because the performance of discretionary monetary policy at that time had been quite satisfactory, at least in the United States, and policymakers were increasingly confident of their ability to properly steer the performance of the economy. The 1970s marked the end of that overconfidence. In the period between the first oil shock and the early 1980s, the world’s major economies experienced two recessions while inflation rose to double-digit levels. Although these events were not fully under the control of the monetary authorities, it is clear that the discretionary approach to monetary policy did make a negative contribution by not properly anchoring inflation expectations and instead allowing them to drift.¹

¹ Among others, Orphanides and Williams (2003) show how the interaction of policy errors and endogenous expectation formation contributed to stagflation in the 1970s.

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One of the lessons that economists learned from their experience of the 1970s was that economic agents' expectations cannot be taken as given by policymakers when choosing their policy action. The underlying idea is simple but path-breaking and goes back to at least Marschak (1947), although the strongest case was made by Lucas (1976). In forming their expectations and taking their actions, economic agents will always try to anticipate future policy moves. This makes expectations of future policy relevant for today's consumption and investment decisions and creates the room for strategic interaction among economic agents, a cornerstone of which is the credibility of the policymaker to commit to a given set of actions. In the context of monetary policy, Kydland and Prescott (1977) and Barro and Gordon (1983) proposed models where the desire of the central bank to attain an unemployment rate below the natural rate generates surprise inflation in the economy: This is the "time consistency" problem. Economic agents properly understanding the incentives of the monetary authority and its actions would thus anticipate future inflation. In equilibrium, this would end up generating the well-known "inflation bias." A superior outcome could be achieved if monetary policy authorities took into account the effect their behavior could have on economic agents' action and properly commit not to inflate. The advantage of commitment relative to discretion crucially hinges on the credibility of the monetary authority actually sticking to its promises.

From those original contributions a large strand of literature tried to devise incentive-compatible institutional schemes capable of enforcing a rule-type behavior and thus dealing with the time inconsistency problem. General consensus has emerged that a necessary prerequisite for solving the time inconsistency problem is the establishment of an independent central bank to which the management of monetary policy is then delegated. The institutional arrangement mostly adopted to enforce the commitment accepts that monetary policy should treat the natural rate of unemployment as a given, and not try to push unemployment below its natural rate.²

These results square with another finding of the 1970s, namely, the absence of any long-run trade-off between unemployment and inflation. This point was stressed by Friedman in his 1977 Nobel lecture,

among others. Friedman's argument was that, while it is possible to stimulate the economy in the short run by some form of monetary illusion, workers would see through the illusion in the longer run, demanding higher wages and so bringing employment back to its natural level. Every effort to permanently push employment above its natural level is therefore self-defeating.

These arguments reinforced the original criticism of discretionary monetary policy and were the final nails in the coffin of the theory of an activist monetary policy (and the idea of a monetary policy seeking to push economic activity above its natural level). The focus of monetary policy action had to be price stability.

The awareness of the limitations of monetary policy was also coupled with a better understanding of the possible costs of inflation and the recognition that a low-inflation environment is a necessary precondition for long-run growth and an efficient allocation of resources.³

Taken together, the awareness of the cost of inflation, of the absence of a long-run trade-off between inflation and real activity, and of the relevance of the credibility problem of the monetary authority are some of the motivations underlying the widespread adoption of a culture of price stability among the central banks of the industrialized countries during the 1980s and 1990s. I have no doubt that this new culture has made an important contribution to the disinflation process that we have observed in many countries over the past two decades.⁴

The inflation experience of the 1970s and developments in the theory of monetary policy analysis over the past 20 years have made clear the importance of the monetary authority making a firm commitment. However, contrary to the debate of the 1960s, it is a commitment on an objective rather than on a simple rule. Once an agreement on the objective had been reached, another critical question remained: Which is the best strategy for achieving this final objective? Over the years central bankers and academics around the world have

³ For references on the theoretical and empirical literature on the cost of inflation, see Issing (2001) and Rodriguez-Palenzuela, Camba-Mendez, and Garcia (2003).

⁴ Citing the words of another member of the discussion panel of this conference: "A number of factors have contributed to the reestablishment of price stability, but surely an essential ingredient has been the attention that the Federal Reserve has paid to long-run trends in inflation and inflation expectations since 1979" (Kohn, forthcoming).

² See Walsh (1998) for a survey.

proposed a variety of strategies. Different central banks have adopted strategies that place different emphasis on the various pieces of information, or elements of their decisionmaking process, or different aspects of their communication policies.

Inflation targeting is one of those strategies. Following the pioneering approach of the Reserve Bank of New Zealand in the early 1990s, a large number of central banks have formally adopted an “inflation targeting framework”; and today we can count around 20 central banks that refer to this approach. At the same time the inflation-targeting framework has triggered a large amount of interesting and stimulating theoretical work, as indeed this conference testifies.⁵ Looking back at the experience of those central banks, there is no doubt that it has been a success. This is particularly evident in the case of countries starting from high levels of inflation. These countries needed to implement a disinflationary process, where inflation targeting served to guide inflation expectations and provide an explicit framework and direction to monetary policy. The approach has also turned out to be successful in countries with lower inflation, as, for example, the positive experience of the United Kingdom, Sweden, and Canada shows. In the few cases—limited to some emerging economies—where the experience has been somewhat less successful, it is quite evident that problems originated in other areas—notably, often stemming from misguided fiscal policies.⁶

At the same time, while not adopting an inflation-targeting approach, some major central banks have also achieved and maintained price stability, proving that visible success in the management of monetary policy is not confined to inflation-targeting central banks.

In the rest of this paper I will try to substantiate this claim.

3. INFLATION TARGETING

There is a vast amount of literature on inflation targeting, and the first challenge to some readers’ eyes is to decide upon a proper definition. Different authors have proposed different, and in some cases conflicting, definitions.⁷

The first and broadest definition of inflation targeting is simply a monetary policy framework that accords overriding importance to the maintenance of price stability, typically defined as a low and stable rate of consumer price inflation.⁸ As pointed out in the previous section, given the broad consensus that price stability is the appropriate goal of monetary policy, the strategies pursued by most central banks, including the ECB, would fall under this loose definition. However, this definition suffers from two interrelated weaknesses. First, from the policymaking perspective, it offers no practical guidance for the conduct of monetary policy beyond identifying the primary objective. As such, its practical relevance is rather limited. Second, from a scientific perspective, the definition imposes few empirically testable restrictions on the implementation of monetary policy. As such, it does not allow inflation-targeting strategies to be distinguished from other stability-oriented strategies and their relative merits to be evaluated. Central banks that have pursued strategies other than inflation targeting cannot be meaningfully distinguished on the basis of this definition. For example, Deutsche Bundesbank has been classified as an inflation-targeting central bank by some, despite its long adherence to an intermediate monetary targeting strategy. To put it more provocatively, by this definition all “successful” central banks are inflation targeters, while all “unsuccessful” central banks are not.

Given the problems associated with this broad definition, in the remainder of this paper I will focus on alternative, more restrictive definitions of inflation targeting. Consistent with the existing academic literature on monetary policy, such narrower definitions are typically expressed in terms of a monetary policy framework based on the adoption of a monetary policy rule in which forecasts of future inflation play a central role, either in the form of the so-called instrument rules or of target rules.

An instrument rule expresses the monetary policy instrument—usually a short-term nominal interest rate—as a simple and usually linear function of deviation of a few key macroeconomic variables, generally inflation and the output gap, from their target levels. Usually the literature distinguishes between an outcome-based rule (if the instrument is a function of currently observable variables, as

⁵ For references on inflation targeting, see, among the others, Bernanke et al. (1999) and Svensson (1997, 1999, 2000, 2003).

⁶ See Sims (forthcoming) for an example that a sound fiscal policy is a prerequisite for the performance of an inflation-targeting framework.

⁷ See, for example, the two definitions proposed by Amato and Gerlach (2002) and Svensson (2002) in the same volume of the *European Economic Review*.

⁸ Bernanke and Mishkin (1997, p. 97) write: “[Inflation targeting] is characterized, as the name suggests, by the announcement of official target ranges for the inflation rate...and by explicit acknowledgement that low and stable inflation is the overriding goal of monetary policy.”

in Taylor, 1993) and a forecast-based rule (if the instrument is an explicit function of the current forecast for key variables in the future).

Under a target rule, the appropriate setting for the monetary policy instrument is defined implicitly as the solution to an optimization problem facing the central bank. This optimization problem is defined by two elements: first, an explicit loss function describing the costs associated with deviations of specific goal variable(s) from their target levels; and, second, a structural model of the economy. Minimization of the loss function subject to the constraints imposed by the economy's structure (as captured by the model) implicitly defines a model-specific optimal interest rate reaction function, which determines the interest rate as a function of all relevant state variables. In this context, an inflation-targeting framework is characterized by the adoption of a loss function that focuses on the deviations of forecast inflation from a target level.⁹

There is a natural complementarity between instrument and target rule characterizations of inflation targeting. A target rule implicitly defines an instrument rule—albeit typically one that is complex and therefore difficult to use in presenting policy decisions to the public. Similarly, it is usually possible to derive a loss function and an economic model that would broadly support a specific instrument rule as the solution to an optimization problem facing the central bank.

Here, I do not want to enter the vast debate on the different definitions of and the choice between instrument and target rules.¹⁰ Nor will I address many of the problematic issues identified by the literature and associated with the adoption of those rules, such as the indeterminacy of equilibria, the issue of commitment to the rules, and the important aspect concerning the measurement of key variables, for example, the output gap.¹¹ Instead what I wish to discuss here are two more practical pitfalls associated

with the narrower definition of inflation targeting, namely, the central role of macroeconomic forecasts in inflation targeting, on the one hand, and the robustness of the rules in view of the possible presence of model misspecifications, on the other.

Information Content and Forecasts

As pointed out above, simple outcome-based instrument rules constrain the central bank to respond only to developments in observed inflation and the output gap, and thus not to make use of other available evidence about the state of the economy. However, it is widely recognized that an efficient monetary policy should exploit all relevant information. By imposing an arbitrary partition on the data, simple instrument rules do not adopt such a full-information approach. This raises the issue of whether those rules can be incentive-compatible. If a central bank is aware of information suggesting that the interest rate implied by the rule might be inappropriate (e.g., because of weakness in the financial system), it would have an incentive to deviate from the rule. Given the incentive for such deviations, it is questionable whether central banks would follow such a rule and thus whether the ex ante commitment to this rule can be credible. However, if the rule lacked credibility, it is unlikely to help stabilize private inflation and interest rate expectations.

Forecast-based rules partially overcome the information restrictions imposed by outcome-based Taylor-like rules, making the instrument respond to expectations of future inflation and the output gap. To quote Haldane and Batini (1998): “expected inflation ought to embody all information contained within the myriad indicators that affect the future path of inflation.” Along the same lines, Clarida, Galí, and Gertler (2000) characterize forecast-based rules as making use of “a broad array of information (beyond lagged inflation and output) to form beliefs about the future condition of the economy, a feature that we find highly realistic.”

However, this opens the door to the problem of the complexity of the construction and nature of the forecast. For example, which is the proper model to forecast? What is the proper way of treating the central bank's monetary policy responses in the future projection or of using market participants' forecasts?¹² Instead of tackling these issues, let me

⁹ This definition corresponds to what is now usually labeled as “strict inflation targeting.” In “flexible inflation targeting,” on the other hand, the loss function of the monetary authority focuses on both deviations of inflation and output from their targets.

¹⁰ McCallum (2001b) adds the following disclaimer: “In fact, I believe that my terminology is more consistent with actual practice, in part because actual central banks have thus far not adopted explicit loss functions. In any event, the issue is of little importance, especially since it is always possible to write instrument rules that approximate as closely as desired the instrument settings of a policy regime involving targeting in Svensson's sense.”

¹¹ See Benhabib, Schmitt-Grohé, and Uribe (2001), Svensson (2003), and Svensson and Woodford (2003).

¹² See Bernanke and Woodford (1997) for an exposition of the circularity problem induced by monetary policy mechanically responding to private inflation forecasts.

focus on another main critique by challenging the view that forecasts, particularly inflation forecasts, are sufficient statistics on the state of the economy and for monetary policy.

To exemplify, let us begin by assuming that the only objective of policy is to maintain price stability. If prices move in tandem with the existing tension on employable resources, the policy goal of price stability dictates keeping the economy continuously close to its potential. Under these circumstances, reacting to a pure inflation forecast figure, with no reference to any additional indicator of macroeconomic performance, would be a recipe for policy mismanagement any time the economy is hit by a transitory (say, favorable) supply shock. This type of shock would entail both a downward blip in forecast inflation and an upward movement of output away from its sustainable level. Hence, restricting the central bank's information set solely to the inflation forecast figure—to the exclusion of a broader suite of other indicators, which help discriminate between supply and demand shocks—would, in this situation, call for a policy easing today, which could destabilize the economy by laying the ground for the build-up of inflationary pressures tomorrow.

This is an elementary example of the general proposition that inflation forecasts alone are not sufficient to reveal the nature of the threat to price stability and that it would therefore be misleading to follow a rule that requires setting the policy instrument simply as the function of a forecast. Even in an ideal world in which the models producing the forecast are properly specified, the policymakers are not interested in the result of the forecast per se but instead aim at a consistent economic picture—or, to put it differently, they aim at identifying the relevant shocks underlying the forecasts and how different types of disturbances to the economy imply different kinds of policy responses. The relation between forecasts and underlying shocks is clearly one-to-one in many simple stylized models used in the monetary policy literature, but this relation clearly breaks down once we depart from that simple set-up. So, once again, forecasts of a few macrovariables cannot be sufficient statistics to determine monetary policy action.

Target rules are somehow immune from the above problem, given that they are routinely implemented by producing forecasts of future inflation and output conditional on the path of the policy instrument and searching for the path, which minimizes a proper loss function. Consequently, when

evaluating inflation targeting in the context of target rules, the discussion should primarily focus on the structural model used to define the central bank's constrained optimization problem. In other words, an evaluation of the target rule characterization of inflation targeting is largely equivalent to an evaluation of the economic model employed to derive that rule.¹⁵ One criticism of the models underlying most target rule characterizations of inflation targeting is that they neglect any role that might be played by the monetary aggregate or financial frictions in the determination of price developments. This opens the way to a second set of remarks on the issue of model misspecification and the robustness of the rules.

Robustness and Model Misspecification

The possible presence of model misspecification is something that economists and econometricians have some difficulty in acknowledging. However, every model we write down and estimate contains some form of shortcut and approximation. This uncertainty is worsened since economists have not yet agreed upon a proper, commonly accepted approximating model. This implies that the appropriateness of a monetary policy strategy cannot be evaluated only within a particular class of model—rather a good strategy has to perform well across a variety of empirically plausible models.

However, most advocates of inflation targeting—at least those referring to simple rules for monetary policy decisions—ultimately rely on a view of the economy whose essence can be captured by no more than three equations. The defining characteristics of these equations are (i) staggered pricing, (ii) the centrality of the output gap (or Phillips curve), and (iii) the notion that monetary impulses propagate primarily via a price (interest rate) channel, with monetary quantities playing no role.

The presence of only a market for goods and the absence of a fully formalized market for assets whose supply is inelastic in the short run implies that money has no role other than to facilitate the exchange of goods. Decisions about money holdings are not seen as part of a wider portfolio decision that—at times—may lead households to prefer liquidity over risky assets. For example, a positive change in money demand has no counterpart in

¹⁵ While Svensson (2003, p. 450) says “[forecast targeting] does not imply that forecasts must be exclusively model-based,” I would not tackle the slippery issue of the use of judgmental information in the forecasting process.

an excess supply of some other asset. On the contrary, if truly alternative assets were to exist whose issuance was related to their private issuers' investment decisions and capital formation, then generating a higher (or lower) supply of money—at any given interest rate—could become all but inconsequential.

Quoting McCallum (2001a), there is “nothing fundamentally misguided” about the model used by advocates of inflation targeting. Such a model is internally consistent and elegant. It can also mimic the observed behavior of modern economies in “normal” circumstances. Yet it rests upon what can certainly be regarded as extreme assumptions about the role of money in the economy. A central bank can legitimately question the usefulness of a model for monetary policy-setting in which money has been deprived of its basic liquidity—or, equivalently, its “store-of-value”—function that generations of scholars have recognized and discussed for decades (cf. Hahn, 1990, *inter alia*).

Levin, Wieland, and Williams (1999, 2001) demonstrate that Taylor-like instrument rules perform quite robustly in a particular set of macroeconomic models. However, this robustness does not survive a broadening of the suite of candidate models beyond those considered in these papers. Suitably parameterized Taylor-like rules appear to work well in stabilizing the economy within the confines of the mainstream New Keynesian paradigm, in which money market equilibrium conditions are redundant. This last assumption, in particular, proves to be absolutely crucial. If financial markets are not free of frictions, then Taylor-like rules often do not prove to be robust and yield suboptimal outcomes.

Examples of financial market frictions are prominent in transmission mechanism literature, e.g., in so-called limited participation models (Christiano and Eichenbaum, 1992) or segmented markets models (Alvarez, Lucas, and Weber 2001). Within the class of limited participation models, Christiano and Gust (1999) show that the set of parameters under which a Taylor-like inflation-targeting rule becomes a source of instability is much broader than for mainstream New Keynesian models.

More recently, Alvarez, Lucas, and Weber (2001) presented some experiments on the stabilization properties of simple Taylor rules within a segmented financial markets model. They conclude that central banks pursuing a Taylor-like interest rate instrument rule—by systematically ignoring money market (velocity) shocks—censor the information set available to policymakers and thereby reduce the effec-

tiveness of their responses to economic shocks by arbitrarily excluding relevant monetary information from the policy decision. In a similar vein, but in a different class of model, Christiano and Rostagno (2001) show that a Taylor-like interest rate instrument rule can generate equilibria with undesirable properties; this outcome could be avoided by a policy rule that takes into account the information provided by monetary aggregates.

It should be clear that, from the view point of a central bank, a serious attempt should be made to construct a model where shocks to velocity are treated appropriately within the context of broader portfolio shifts, possibly in the presence of (changing) risk assessments. Unless disturbances in money holdings are formalized in such a way as to reflect financial decisions, then nothing can be said about the role of money in the business cycle and insufficient policy advice can be drawn from analyses of models that do not properly tackle these problems.

4. THE ECB'S MONETARY POLICY STRATEGY

Let me now turn to the ECB's monetary policy strategy. The ECB started to conduct policy in 1999 with the inception of the euro. While taking stock of the experience of the central banks of the Eurosystem, the ECB was at the time facing a major institutional change. Eleven national economies¹⁴ merged into a unified market almost overnight; in this context, past experience and data might turn out not to be particularly informative with regard to the new economic structure.

In the presence of such Knightian uncertainty, in October 1998 the Governing Council of the ECB announced its monetary policy strategy. The designed strategy was a novel one, suited to the special and still partially unknown characteristics of the euro area, and different in a number of respects from other current and past strategies.

Three aspects of the ECB strategy are critical. First, its focus on the price stability objective: Price stability is enshrined in the Treaty on European Union as being the primary objective of the ECB. The ECB Governing Council therefore provided a quantitative definition of price stability as a year-on-year increase of the Harmonized Index of Consumer Prices (HICP) below 2 percent.¹⁵ A second, closely

¹⁴ Twelve from January 2001, when Greece also adopted the euro.

¹⁵ See Issing et al. (2001) and ECB (2001a) for a detailed description of the ECB's monetary policy strategy.

related element, is the medium-term orientation of our policy. Central banks can only affect the price level with “long and uncertain lags”; consequently they cannot be overambitious and try to steer price developments in the short run, nor should they seek to precisely define the horizon of their action. Moreover they need to respond gradually to economic shocks, taking output fluctuations into account. A third element of the strategy relates to the analyses and economic perspectives that ultimately guide policy decisions. The strategy recognizes the need for a comprehensive analysis of economic and financial shocks and dynamics but, at the same time, it attaches a privileged role to indicators based on monetary aggregates. This organization of the information has been labeled the “two-pillar” strategy of the ECB. The ECB’s monetary policy strategy was meant to provide a transparent and consistent conceptual framework: structuring the internal analysis of the economic situation and risks to price stability, facilitating the decisionmaking process in the Governing Council, and communicating policy decisions to the public at large.

In almost five years of experience with the ECB monetary policy, the strategy has served all these functions to a high level of satisfaction. The ECB has pursued its mandate of maintaining price stability with vigor and determination, gaining a high level of credibility from the outset. This achievement is all the more remarkable given that the ECB started without a track record and in an uncertain environment. Testifying to this success, inflation expectations, as measured by survey data and by financial market indicators, have remained consistent with our definition of price stability.¹⁶

In December 2002 the ECB announced the decision to conduct a comprehensive review of its strategy. This decision was sometimes wrongly interpreted by observers as an implicit indication of dissatisfaction with the strategy. In fact, the opposite was true. To ensure the continued satisfactory development of the strategy in a complex and changing environment, it was only natural that, after more than four years of experience, the ECB Governing Council would want to look back and reflect in a systematic way on past experience. The outcome of the strategy review was made public on May 8, 2003, and it aimed primarily at addressing certain

misunderstandings that have emerged in our communication with the public.¹⁷

Regarding the definition of price stability, the Governing Council confirmed the explicit quantitative definition announced back in October 1998. However, in continuing with the past conduct of monetary policy, the Governing Council clarified that in the pursuit of price stability it will aim to maintain inflation rates below but close to 2 percent over the medium term. This clarification emphasizes the need for a sufficient safety margin against the risk of deflation and at the same time is also sufficient to cover the potential presence of a measurement bias in the HICP and the implications of inflation differentials of a structural nature within the euro area.

Regarding the role of money in the strategy framework, the Governing Council confirmed that the strategy’s two-pillar framework is an effective tool for organizing the information used to assess the risks to price stability. As discussed in the previous section, the economic literature confirms that integrating the analysis of monetary aggregates with the analysis of conditions on the goods and labor markets in a unified model remains an elusive challenge. Different types of analysis provide information relevant for price developments at different time horizons. What we labeled as economic analysis focuses on the most proximate causes of inflation, such as cost developments and demand-supply imbalances, and primarily contributes to the assessment of short- to medium-term economic dynamics and the risks to price stability at that horizon. Monetary analysis, on the other hand, focuses instead on the ultimate monetary determinants of inflation, and primarily contains information for assessing price trends at medium- to long-term horizons. The Governing Council clarified that the monetary analysis mainly serves as a means of cross-checking, from a medium- to long-term perspective, the short- to medium-term indications coming from the economic analysis.

Let me emphasize the role of the cross-checking. All the information coming from different sources, such as short-term conjunctural indicators, quarterly macroeconomic forecasts, the analysis of asset prices and monetary aggregates, have to be compared and properly evaluated to come to an overall assessment of the monetary policy stance. This ensures that,

¹⁶ See the evidence provided in Castelnuovo, Nicoletti-Altimari, and Rodriguez-Palenzuela (2003).

¹⁷ The outcome of the strategy review and the background documents can be found at www.ecb.int.

while responding to economic shocks as they manifest themselves, we do not lose sight of the fact that, in the longer term, developments in money need to be consistent with our objective. This helps, in my view, to give a sense of direction and impart a steady course to the conduct of monetary policy.

The Eurosystem staff macroeconomic projections¹⁸ are one important input into the monetary policy decision as a way of organizing a large amount of information and helping to create a consistent picture of possible future developments, but without making them the sole input for the conduct of monetary policy. As discussed in the previous section, forecasts cannot be, *per se*, a sufficient statistic for policy, nor can they contain all relevant information, not least because the models underlying the forecast are inevitably misspecified to some extent.

There are instances that standard macroeconomic models, which, by definition, are constructed to replicate normal conditions and regularities in the economy, are unable to capture and incorporate. This is particularly the case when large shocks or special circumstances arise, such as episodes of financial instability or asset price bubbles. I am merely recalling the developments over the past two to three years, when we faced exceptional uncertainties and major stock market movements followed by large portfolio adjustment. How those past events can be squared with forecasts of inflation and output, based on models in which financial assets do not play any active role, is still an open issue both for central bankers and academics. In such occasions the need of careful judgment, of a broadening of the horizon for the conduct of policy, and of the consideration of non-standard indicators and different interpretations of the evidence become especially relevant.¹⁹

Of course this does not mean that the ECB does not make full use of models. On the contrary, the ECB devotes a lot of time and resources to improving the set of economic models that are used in-house to gain a better understanding of the euro area economy and provide better guidance for monetary

policy decisionmaking. Like many other central banks, we do use quite a large menu of models ranging from simple time-series models, useful in short-term forecasting, up to medium-size structural macroeconomic models in both area-wide and multi-country specifications.²⁰ Compared with purely time-series or reduced-form models, structural models have the advantage of having a well-specified conceptual framework (or a set of identification assumptions) that help to provide some better economic interpretation of the results, *i.e.*, “the story behind the numbers.” Moreover, considerable effort has recently been devoted to the development of “state of the art” medium-sized stochastic dynamic general equilibrium models (SDGE), where the estimated specification is fully micro-founded and consistent with the solution of the optimization problem of economic agents. Those models have proved to combine a solid theoretical grounding with a good ability to replicate many relevant features of the euro area data. Smets and Wouters (2003) proposed an extended version of the standard New Keynesian SDGE closed-economy model with sticky prices and wages. Christiano, Motto, and Rostagno (2003) substantially extended a stylized real-sector SDGE model to include a fully formalized financial sector, where the issuance of assets is related to firms’ need to finance entrepreneurial activity, although there are frictions in the activity of the intermediaries related to the cost paid to monitor firms.

As a central banker but also as an academic, I am looking forward to the results of this line of research given that it provides macro models with both a solid micro-foundation and good empirical properties, and with the potential to bring into the picture phenomena of a monetary and financial nature that are often left out of the more commonly used macro models.

5. CONCLUSION

Let me end by saying that, in practice, probably no central bank follows the strict characterization of inflation targeting and that differences in the practices of central banks oriented to price stability should not be exaggerated. Most of the central banks oriented to price stability share a number of key elements that guide the conduct of their monetary policy, namely, a clear, quantitative definition of the overriding objective, a forward-looking orientation

¹⁸ See ECB (2001b) for a description of the Eurosystem staff macroeconomic projection exercise. Within our framework, we clearly separate the production of projections, as carried out under the responsibility of the staff, from the monetary policy decisions taken under the responsibility of the Governing Council in order to avoid any ambiguity between the assumptions of the projections and the policy implications.

¹⁹ See Issing (2002) for a discussion on the usefulness of information stemming from monetary aggregates in revisiting some historical episodes of financial instability.

²⁰ See Fagan, Henry, and Mestre (2001) for a description of the area-wide model of the euro area.

of their policy, and the awareness of the need to take a broad range of information into account and to communicate with the public in a clear and transparent manner.

There is no clear-cut evidence to suggest that generally, and according to some well-specified criteria, one specific framework should be preferred to all others.²¹ Take, for example, one crucial measure of our success as central bankers: the ability to firmly anchor long-term inflation expectations. These appear to be well anchored, in terms of the very low volatility of expectations as well as the very low correlation with actual inflation developments, in most industrialized countries or currency areas, including those where central banks do not usually consider themselves to be “inflation targeters,” such as the United States and the euro area. This to me is just a confirmation of something that I always believed: that there is no “single” or “best” way to conduct monetary policymaking and that different approaches or frameworks can lead to successful policies and/or be better adapted to different institutional, economic, and social environments.

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²¹ See Ball and Sheridan (2003) for a comparative analysis of the macroeconomic performance of countries adopting an inflation-targeting framework.

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Inflation Targeting

Donald L. Kohn

I should start with two declarations. First, the usual disclaimer holds with particular force today—the views I am about to express are my own and not necessarily those of any other policymaker at the Federal Reserve. Second, this conference has been most interesting and informative, but I remain an inflation targeting (IT) skeptic. I will briefly lay out the reasons for my attitude, then address some topics, such as communication, that frequently arise in the discussion, and conclude by trying to stress-test my skepticism by speculating on whether IT would have been helpful in some recent episodes related to monetary policy.

INFLATION TARGETING FOR THE UNITED STATES

I agree with advocates of IT in several critical areas. Price stability—or its approximation at very low inflation—is the appropriate primary long-term objective of monetary policy, and achieving this objective is the way that policy can best contribute to the long-term welfare of the country. Moreover, in some countries, adopting IT, together with the central bank independence that often accompanies the initiation of IT regimes, has been a major step toward attaining price stability.

The question I would like to address is whether IT would improve economic performance in the United States. That is, would IT be likely to lead to actions by policymakers and private agents that increase the odds on keeping the economy producing at its maximum sustainable level and inflation low and stable. In my view, the verdict on IT for the United States is at least “not proven” and possibly negative—that is, IT might detract from economic performance over time.

I start from the premise that the United States has had a very successful monetary policy over the past two decades. We have achieved price stability, inflation expectations are low and stable, and we have done this with two relatively shallow recessions in 20 years. Many factors have contributed to this economic performance, but monetary policy has been an important element. So, for me, the default option is to keep doing what we have been doing—however hard it might be to model or explain. And that is not inflation targeting. I believe that adopting IT, even in its softer versions, would be a slight shift along the continuum of constrained discretion in the direction of constraint, and the benefits of such a shift are unlikely to outweigh its costs. Consequently, I would stick with the status quo.

On the cost side, I believe that under some circumstances central banks do face short-term trade-offs between economic stability and inflation stability, and I am concerned that IT would result in less-than-optimal attention being paid to stabilizing the economy and financial markets. In its actions,

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the Federal Reserve has put considerable weight on achieving and maintaining price stability, but it has not been “inflation targeting”—not even implicitly. IT implies putting a higher priority on hitting a particular inflation objective over the intermediate run than the Federal Reserve has done.

This point is most obvious from 1983 to 1997, in the so-called opportunistic disinflation period. During this time, the Federal Reserve was well aware that inflation was running above levels consistent with price stability but concentrated on keeping inflation from rising, not on reducing it further.

I believe the Federal Reserve also paid more attention to non-inflation factors than IT would have suggested in the 1997 to 2003 period, even though inflation outcomes were low and stable. Its broader focus was especially evident in the reaction to the threat to financial stability in the fall of 1998 and in the very aggressive easing in early 2001. In the latter case, easing continued through the spring even though inflation expectations looked as though they might be increasing, which would have been very difficult for an IT central bank to ignore. I recognize that such responses would in theory be available under flexible IT, but I wonder what would happen in practice. Most IT frameworks put a priority on inflation control and base their communication and accountability structures on inflation forecasts and outcomes. Under circumstances in which short-run conflicts among various objectives are possible, I ask myself where IT policymakers are likely to take their chances.

Moreover, with its concentration on mean inflation, IT seems to be ill-adapted to the risk-management paradigm that Chairman Greenspan (2003) laid out in Jackson Hole. That mode of operation, which I believe has been an important factor in the Federal Reserve’s success, weighs the skews in the outlook, as well as the central tendencies, and also takes account of the cost of missing on one side or the other—and for more than one objective.

I think that the U.S. economy has benefited from the flexibility that the Federal Reserve has derived by eschewing a formal inflation target. By flexibility I mean not frequent changes in long-term objectives but rather the freedom to deviate from long-term price stability, perhaps for a while. I recognize that such deviations are also possible in models of flexible IT, but I question whether they can occur in practice.

Against these potential costs, I believe that the benefits of IT in the United States relative to the current regime are questionable.

We do not see evidence in IT economies that inflation is lower or more stable or that output is more stable around potential. On the surface, then, IT appears to produce little or no gain in hitting goals. To be sure, the evidence on how well inflation expectations are anchored is more mixed. Levin, Natalucci, and Piger (2004) at this conference, provided some backing for the idea that long-term expectations in IT economies respond less to incoming information on inflation. But I am also aware that the bulk of the studies show that interest rates and inflation are no more predictable in IT economies than in non-IT economies. The IT economies examined in the studies may have been subject to larger shocks than the non-IT economies studied, but the burden of proof should be on the advocates of IT to show that it would improve economic performance in non-IT economies—by providing either greater cyclical stability or better resource allocation.

A frequently used argument for IT in the United States is that it will help to extend the good performance of monetary policy as leadership changes—that is, it will protect against persistent increases or decreases in inflation under a new chairman. In my view, however, considerable safeguards against these outcomes are already in place. The law mandates price stability. Without exception, everyone now on the Federal Open Market Committee (FOMC) agrees with this mandate, and it enjoys wide acceptance in the public and in the Congress as well as in the academic community. Moreover, FOMC members have diverse views and the Committee has been operating in an environment in which members are free to express those views—in sharp contrast to some earlier eras. Any chairman gets deference, but a new chairman would not have the clout of Alan Greenspan, at least initially. A further safeguard is provided by the greater amount of public discussion and media attention to monetary policy currently than in the 1960s and 1970s.

Of course there is a risk, however small, that incompetence or political motivations in a new leader might foster new trends or greater variability in inflation, and IT might help counter any such tendencies. The question is whether insuring against this remote outcome is worth paying the cost. IT prevents some bad results, but it tends to foreclose very good results as well.

SPECIAL TOPICS

Communications and Transparency

IT does provide a clear framework for communicating with the public if communication is framed mostly around the behavior of inflation relative to the target. But does it help produce better policy and economic outcomes? For flexible inflation targeters who are paying attention to other objectives as well as inflation, communication tends to be clear but not especially transparent. Other goals are downgraded. In practice, IT communication does not even mention varying time periods for achieving price stability, much less the reason for those periods to vary. Those other goals are the tough messy stuff that does not fit into the IT framework very well. That they get so little attention is not surprising because accountability is usually framed in terms of inflation and the reports are elements in the accountability framework. But if, in fact, the goals of economic and financial stability are factored into policy decisions, they are often poorly acknowledged in IT communication. There is also a risk that communication will drive policy, and so those goals end up with less-than-optimal attention. For the most part, the manifestations of better transparency—reduced variability and greater predictability of inflation and interest rates—are not readily apparent in IT economies.

I am not arguing that the Federal Reserve cannot communicate better. But I am saying that IT is not a cure-all for communication problems; that it might not even help much in the markets where it really counts; and that, if simplicity of communications drives policy, IT might lead to inferior economic outcomes.

Political Legitimacy

In his paper at this conference, Larry Meyer (2004) was right to emphasize the importance of the Federal Reserve's interactions with the political system. One of the major values of IT is its role in forcing the people and their representatives to think through carefully what they can and cannot expect or demand from a central bank. This benefit would be lost through unilateral adoption of IT by the Federal Reserve.

The Federal Reserve is in a more complex position within the government relative to the central banks of many other countries, and this position both complicates any consultative process and ele-

vates its importance. The checks and balances of our system mean that, unlike most other central banks, which operate in a parliamentary system, we do not have a "government" to interact with. The paradigm of goal dependence/instrument independence so common in IT regimes is effectively blocked for us. If we moved toward setting a goal for ourselves, perhaps even if we just defined price stability, we would need to consult carefully with both houses of the Congress and the Administration and would need to judge what, short of legislation, constituted a veto by any of the people with whom we were consulting. This process would be subtle and difficult—but absolutely essential to protect our independence and preserve our democratic legitimacy.

Defining Price Stability

By "defining price stability," I mean publishing a number or a reference range that makes more concrete our long-term inflation objective, without making a commitment to achieve that objective in any given time frame. Individual FOMC members are increasingly stating their numerical definition of price stability, but the Federal Open Market Committee has not done it. In some respects, such a specification is an appealing idea. In concept, it might allow the United States to realize some of the benefits of inflation targeting without some of the costs. The theory would be that putting a numerical value on long-term price stability could reduce uncertainty about longer-run price tendencies without constraining our actions to stabilize the economy or financial markets over shorter periods.

I am still trying to make up my mind on the balance of costs and benefits of taking this step. As I have already noted, most evidence does not suggest a lot of private uncertainty about longer-term price trends in the United States, and so the benefits, if any, would be limited. Spreads between nominal and indexed 10-year bonds have fluctuated narrowly around 2 percent since 1999, and survey measures of long-term inflation expectations have barely moved in recent years. Nonetheless, further evidence supporting the inference of Levin, Natalucci, and Piger that IT would result in even more firmly anchored expectations would be important in this equation.

The costs, given my views on IT, would arise from any tendency for this definition to morph into a target that unnecessarily constrained actions—that did not effectively permit outcomes outside the range or away from the target under some circum-

stances. Resisting such a tendency would be difficult, I think, once the number was given. And the pressure to elevate price stability over economic stability, even in the short-term, would be accentuated because the latter goal would not have a numerical value. However, ways of mitigating this tendency might be found—for example, by giving a fairly wide range and making it clear that the midpoint had no special meaning and that the edges were soft. Critical to maintaining useful flexibility would be the understanding, believability, and sustainability of the “provisos” that the Federal Reserve would give outlining the circumstances under which it would not seek to achieve its price stability objective.

STRESS-TESTING MY SKEPTICISM— WOULD INFLATION TARGETING HAVE IMPROVED ECONOMIC PERFORMANCE IN RECENT YEARS?

1. Would IT have contributed in any way to damping the boom and bust since the mid-1990s? I have already voiced my opinion that it would not have helped and might even have hurt in the reaction to emerging weakness in 2001. But another part of the question is, Would IT have constrained the previous upswing in a way that also would have lessened the subsequent weakening?

A number of observers believe that a little more policy tightening a little earlier might have damped the fluctuations in financial markets and the economy. Personally, I doubt that, given the strong forces at work. But I also do not think an IT framework would have helped, even if such an outcome were possible. Inflation was edging lower through much of this period. To be sure, forecasts were consistently missing on the high side, so a forecast-based IT framework might have run a slightly tighter policy—but I do not think you want to rest a case for changing policy regimes on persistent forecast misses.

The arguments usually given for tighter Federal Reserve policy in the mid-to-late 1990s reference developments in asset prices—specifically in the equity market—and the judgment that too-low interest rates fostered an intertemporal misallocation of resources in the form of an excessive buildup of capital and, hence, raised the amplitude of longer-term economic fluctuations. IT is especially poorly adapted to deal with these sorts of issues, however, since it tends to emphasize the performance of inflation in consumer goods and services over the succeeding few years. For those, like me, who are

skeptical about the ability of central banks to deal with swings in asset prices or with longer-term resource allocation issues, this aspect of IT is not negative. Nonetheless, it is also evident in speeches and commentary that policymakers in IT countries right now are wrestling with the tension between IT frameworks and the suspicion that economic imbalances and disequilibria in house or other asset prices are developing that could disrupt the economy at some point down the road.

2. Would ongoing IT or even a numerical definition of price stability have damped the bond market volatility of this spring and summer?

Long-term interest rates fell steeply in May and early June and rebounded even more sharply in late June and July. The decline got under way in earnest after the FOMC statement of May 6. What was the news that day? First, the FOMC thought that inflation could be below a level consistent with satisfactory economic performance over time and that the current rate of inflation was close to that excessively low level. Second, the FOMC was worried that the lower limit would be breached—it thought inflation was more likely headed down than headed up from the already low level. In response, 10-year Treasury rates fell 8 basis points the day of the announcement and another 12 basis points the next day as the import of the announcement sank in.

In my view, most of this immediate 20-basis-point decline in longer-term rates came not in response to the clarification of the inflation objective but rather to the revelation that the FOMC was worried about the trend of inflation. Moreover, much of the information on the latter point was quite recent, reflecting what seemed to be a lack of a rebound in the economy after the Iraq war and a steep decline in recent inflation readings. In these circumstances, had we had an inflation target for a while, rates might have been lower before the announcement, but most of that decline would have filtered into the markets only over the preceding few weeks and rates would have been just as low a few days after the meeting.

The next 70 basis points of rate decline occurred by mid-June in response to further indications of weakness in activity and prices and to statements by Federal Reserve officials that they were thinking about how to conduct policy in the remote contingency that a deflation threatened to take hold. I do not see how this response would have been different in an IT framework. My judgment in this regard is reinforced by the fact that rates in many IT coun-

tries over this same period of May and June fell by a similar magnitude. Weakness in the world's most important economy and declines in its exchange rate should lead rates overseas to decline, but the extent and similarity of the decline is surprising. This occurrence has led me to conclude that the rate drop in the United States was caused by the downward shocks to expected prices and activity, not by the policy framework.

The IT countries did experience somewhat smaller rate increases relative to the United States in July and August. They did not have some of the special factors pushing U.S. rates up—revised expectations about bond purchases and mortgage hedging activity. Perhaps more importantly, their economies, though strengthening, did not demonstrate the surprising degree of rebound that seems to be occurring in the United States.

In sum, this is a striking episode in which misunderstandings between the central bank and the markets probably contributed to an extraordinary volatility in financial markets. But these misunderstandings did not stem from the absence of inflation targets in the United States; volatility would have been damped only a little, if at all, under IT.

CONCLUSION

I recognize that I am at risk of being interpreted as saying that something good—the policy regime of the past 20 years—cannot be made better or that

there are not downside risks to highly judgmental, flexible policy with an imprecise price stability objective. That is not what I think. I am open to alternatives that promise improvements or that raise the odds on good policy continuing in the future without incurring much in the way of current costs. But I do believe that those who propose changes from a good system have a high burden of proof. The marginal benefits from improving a good regime, by definition, are not likely to be high. And any change must deal with the uncertainties created by the law of unintended consequences. I have yet to be convinced that for the United States inflation targeting has jumped those hurdles.

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