

Editors' Introduction

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These conference proceedings consist of extremely thoughtful and provocative papers and discussions on critical and ancillary issues that constitute the essence of the inflation targeting (IT) debate—including a provocative discussion of IT by three of the world's top policymakers. The breadth and depth of the analysis by these conference participants is remarkable—virtually no relevant stone of the IT debate is left unturned. We cannot possibly do justice to the participants' contribution in this introduction. With this proviso, we first discuss several of the most important lessons we learned from the conference papers and discussions and their possible implications for future research. We then discuss what our prominent panel of policymakers has to say about IT, especially with respect to these issues. We emphasize that our brief introduction cannot adequately reflect all of the subtleties and nuances of the positions taken; our summary is a poor substitute for reading the entire conference proceedings.

Nutters, NETers, LETers, Flexible ITers, Super Flexible ITers, etc.

Perhaps the most recurrent theme in the conference proceedings is the extent to which IT provides room for, or alternatively limits, policymakers' discretion to pursue other objectives—most frequently, stabilizing the real economy. Faust and Henderson's thoughtful and systematic analysis of whether IT constitutes "best practice" monetary policy addresses this issue directly. They note that the IT perspective is bolstered by the "now nearly universally accepted" fact that there is "no long-run Phillips curve trade-off of the traditional variety" (p. 120). They then distinguish between those who believe there is no exploitable trade-off between inflation and the output gap in the short run—NETers—and those who believe that there is a "limited" exploitable

trade-off—LETers. While these views are distinct, Faust and Henderson note that "it is sometimes difficult to tell which view various parties take" (p. 122). In part, this is because some LETers believe that the degree of exploitability is "quite low." It is also because "virtually everyone agrees that demand shocks push us toward a *singular economy* perspective" (p. 122). That is, in many standard models, the appropriate policy response to demand shocks for NETers and LETers is isomorphic, or nearly so. The agreement with respect to demand shocks substantially narrows the important difference between NETers and LETers. Faust and Henderson suggest that one's view about how policy should respond to supply shocks provides a "litmus test for deciding whether one is in the NET or LET camp" (p. 122). While they do not address the question directly, their analysis seems to suggest that all NETers are likely to be ITers. On the other hand, not all ITers are NETers. Indeed, they suggest that "many, if not most, advocates of the ITF [inflation-targeting framework] are LETers" (p. 121).

Faust and Henderson note that, in their lexicon, NETers are not what Mervyn King has termed "inflation nutters"—those who consider inflation the sole policy objective—because NETers believe that, given the economic structure, stabilizing prices is "the best we can hope for" (p. 121). In commenting on Faust and Henderson, however, Ben Friedman notes that "for practical purposes...these two positions [NETers and nutters] are isomorphic" (p. 147). From this discussion, we conclude that nutters are LETers who believe that the central bank should pursue other objectives only in rare circumstances—nutters fail the Faust-Henderson's NETer litmus test.

It is clear from these proceedings that the extent to which there is an exploitable short-run trade-off between inflation and the output gap—the extent to which the NETer view of policy is correct—is an important issue of the IT debate. Faust and Henderson

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note that the NETer view can arise in models where the economy is enormously complex—Milton Friedman and Robert Lucas—or “fortuitously” simple—Rotemberg and Woodford (1997), King and Wolman (1999), and Goodfriend and King (2001). While NETers, per se, appear to be rare, theoretical analyses indicate that the “tension” between inflation and output stabilization is much smaller than previously thought. In his survey of the theoretical literature on “optimal monetary policy,” Woodford concludes

recent literature on the welfare consequences of alternative monetary policies finds that there is less tension between inflation stabilization and properly defined real stabilization objectives than traditional (non-welfare-theoretic) literature on monetary stabilization policy has often suggested. It is not a bad first approximation to say that the goal of monetary policy should be price stability. (p. 23)

Woodford notes that there are some instances where deviations from perfect price stability is optimal policy. For example, it is not optimal in instances where complete price stability is infeasible—where the natural rate of interest is temporarily negative or not efficient—e.g., where the existence of frictions make it desirable to have the nominal rate more stable than the natural rate. Woodford notes that while interest rates are smoothed considerably under optimal policy in these circumstances, “this does not require too much variation in inflation” because the variance trade-off is “quite flat near the extreme of full inflation stabilization” (p. 24).

Woodford also notes that full stabilization of prices is not generally optimal in models where prices of different commodities are impacted differentially by economic shocks. He notes, however, that “as long as the price index to be stabilized is appropriately chosen, complete stabilization of a price index is found (in calibrated models) to be nearly optimal” (p. 25). Not surprisingly, an analogous conclusion arises in models where wages are as sticky as or more sticky than prices. Likewise, the existence of market power or the existence of distorting taxes creates situations where “it will not be possible to simultaneously stabilize inflation and the welfare-relevant output gap.” Nevertheless, Woodford notes that even in such circumstances,

the degree of variability of inflation under an optimal policy may be quite modest... because the relative weight that should be placed on the goal of output stabilization, relative to the weight on inflation stabilization, may not be large. (p. 26)

In her discussion of Woodford’s paper, Stephanie Schmitt-Grohé notes that most of the theoretical work that Woodford surveys uses dynamic, stochastic general equilibrium models that require a “simplifying assumption” to obtain “an analytical characterization of optimal policy” (p. 43). She then reports on the findings of some recent work using “recent advances in computational economics... that make it feasible and simple to compute higher-order approximations to the equilibrium conditions of a general class of large stochastic dynamic general equilibrium models” (p. 43). In a model that allows for sticky prices, money demand, distortionary taxes, and a role for fiscal variations in the price level, she finds that, when the model is calibrated to the U.S. economy, the mean and standard deviation of inflation for optimal policy “is close to zero”—the NETer view is approximately correct (p. 44). Moreover, she reports that “the inflation-volatility tax-rate-volatility trade-off is resolved in favor of inflation stability not only for degrees of price stickiness observed in the U.S. economy, but also for much lesser degrees of price stickiness” (p. 44). She then notes that this conclusion is robust to a model with capital accumulation.

Despite the growing theoretical evidence in favor of inflation stabilization, the tension between inflation stabilization and output stabilization remains a central issue in the IT debate. In his excellent discussion of practical problems and obstacles to inflation targeting, Larry Meyer characterizes the issue by making a distinction between what he terms inflation targeting and inflation targets. He notes that inflation-targeting countries generally operate with both an explicit numerical inflation target and a hierarchical mandate, under which “central banks are restricted in pursuing other objectives *unless price stability has been achieved*” (p. 151, emphasis added). In contrast, under a dual mandate “monetary policy is directed at promoting both full employment and price stability, *with no priority expressed*, and with the central bank responsible for balancing these objectives in the short run” (p. 151, emphasis added).

Meyer favors an explicit inflation target as part of a dual mandate, but opposes an inflation-targeting

regime with a hierarchical mandate. Meyer believes that central banks can control the long-run average rate of inflation—“with respect to inflation, the buck literally does stop at the central bank” (p. 152). But his desire for a dual mandate stems from the belief that “at the margin,” central banks “can damp movements in output around its potential level.” It is less clear, however, whether he believes that stabilizing output around its potential level requires a sacrifice of inflation stabilization, or whether he adheres to what he describes as Chairman Greenspan’s “unique vision” of monetary policy. According to Meyer, Greenspan believes that *synergies* exist “between the two objectives for monetary policy—price stability and damping fluctuations around full employment” (p. 153). He notes that Chairman Greenspan “is generally viewed as being a hawk when it comes to containing inflation and a dove when it comes to quickly providing support for a weakening economy” (p. 153). Whatever his belief, Meyer argues that an inflation-targeting regime with a hierarchical mandate is a non-starter for the United States—there is “no chance that the Congress would accept a regime with a hierarchical mandate that raised the profile of price stability and diminished the responsibility of the FOMC for stabilization policy” (p. 154).

In his discussion of Meyer’s paper, Lars Svensson argues that the hierarchical/dual mandate distinction is not useful. He notes that with quadratic loss functions of the type that are frequently used by economists to represent the central bank’s objective function, the inflation target is a choice variable, but the output target is not—“the output target is subject to *estimation*, but it is certainly not subject to *choice*” (p. 161). Consequently, he suggests that there is only a hierarchical mandate for long-run inflation. Consistent with Woodford’s interpretation, he suggests that the dual mandate is reflected in the choice of the weight that policymakers give to inflation stabilization relative to output stabilization:

Since all inflation targeters are flexible inflation targeters, in the sense that they are concerned about stability of the real economy... we can, if we like, talk about inflation targeters as having a dual mandate. But, as long as we know that we are talking about different verbal descriptions of monetary policy loss functions of the kind stated above, I do not find the dual/hierarchical mandate distinction helpful. (p. 162, emphasis added)

Taxonomy aside, the important question in the IT debates is: How much inflation stability are policymakers willing to give up to gain some quantity X in the stability of output? Meyer recognizes that inflation-targeting regimes have become more flexible over time, but he believes that the hierarchical mandate nevertheless imposes an inappropriate and unnecessary constraint on the flexibility of monetary policymakers as they try to balance their objectives of price stability and full employment. From this perspective, this critical issue in the IT debate appears to hinge on the assumption that policymakers must give up one thing to get another. We now turn to this aspect of the conference proceedings.

Transparency, Accountability, Credibility, etc.

There appears to be widespread agreement among the conference participants that the essential elements of IT are (i) an explicit long-run inflation objective and (ii) a commitment to transparency. The latter is closely linked to credibility and, most importantly, the belief that having a credible long-run inflation objective generates a “win-win” situation for the central bank—a commitment to low and stable inflation not only makes conducting monetary policy easier but simultaneously results in better stabilization outcomes.

Woodford notes that, in some models, uncertainty about the long-run inflation rate “worsens the trade-off between inflation variability and output-gap variability that is available to the central bank” (p. 18). Friedman makes the identical point (p. 146). The idea that low and stable inflation has desirable consequences for the real economy seems to be at the heart of the “synergies” that Meyer indicates are a hallmark of Greenspan’s vision of monetary policy. In commenting on Levin, Natalucci, and Piger, Uhlig reaches a similar conclusion. Specifically, he compares 10-year standard deviations of inflation and real output growth for the United States over the period 1940-2002 and concludes that “these figures seem to suggest that an environment of low and stable inflation helps to reduce output volatility and support economic activity” (p. 85).

It is certainly the case that there is some level of inflation variability where the commitment to a long-run inflation objective is not credible. If this is so and if there is a significant improvement in the inflation/output variability trade-off associated with

a credible inflation target, it is reasonable to expect ITers to have a hierarchical mandate, at least, as Meyer defines it. The hierarchical mandate will be a natural consequence of the fact (or at least belief) that thresholds exist for the mean inflation rate and inflation variability, such that a policy which allows these measures to stay consistently above these thresholds generates less-favorable results for things that policymakers and the public care about, e.g., the real economy.

There are, of course, other reasons for transparency. Faust and Henderson note that Lucas pointed out that “what constitutes optimal policy is inextricably linked with public expectations about policy” (p. 122). In addition, noting that the overnight interest rate is of “negligible importance for economic decisionmaking,” Woodford states “not only do expectations about policy matter, but, at least under current conditions, very little *else* matters” (p. 16). Moreover, he notes that “actual changes in overnight rates required to achieve the desired changes in incentives can be much more modest when expected future rates move as well” (p. 17). Hence, according to Woodford the effectiveness of policy depends critically on the central banker’s ability to “manage expectations.”

Transparency and the Practice of IT. Assuming that the hallmark of transparency is honesty, there appears to be concern that some transparent (and hierarchical) central banks are not being honest. Meyer relates a story where he was taken aside by “two of the leading central bankers in the world” and told that “good central bankers never admit they pursue stabilization policy” because “such an admission would reduce the confidence of the public in your commitment to price stability and therefore undermine your credibility and effectiveness as a monetary policymaker” (p. 152). He expressed confusion that the “way to build credibility was to lie...” (p. 152).

Faust and Henderson address this point noting that a “folk wisdom” of central banking is that “central banks should ‘do what they do, but only talk about inflation’ ” (p. 132). Expressing concern analogous to Meyer’s, they suggest that perhaps “we should stop praising the ITF and other central banks for their commitment to transparency; instead we should lament the fact that central banks cannot publicly discuss the pursuit of their multiple mandates” (p. 132).

Friedman underscores this point, but adds a concern. Arguing that “language matters,” Friedman suggests that

it is not too great a leap to conjecture that one consequence of constraining the discussion of monetary policy to be carried out entirely in terms of an optimal inflation trajectory will be that concern for real outcomes will atrophy, or even disappear from policymakers’ consideration altogether. Nor is it unreasonable to suppose that the hope that this eventuality will ensue is, for some advocates, a motivation for favoring inflation targeting in the first place. (p. 148)

While it is possible that there is an ideological battle between the near-NETer-LETers and other LETers, we are inclined to believe that the real issue is a lack of agreement in the profession—and particularly among policymakers—about the circumstances where (i) monetary policy can effectively stabilize output and (ii) the costs of such stabilization actions. To illustrate this point, we note that in his discussion of Meyer’s hierarchical/dual mandate distinction, Svensson argues that it is particularly “misleading to say that inflation targeters have a hierarchical mandate but the Fed does not” (p. 162). Svensson argues that by inserting “sustainable” before “employment” in the mandate as expressed in the Federal Reserve Act—to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates—the Fed’s mandate can be interpreted as describing a loss function where some positive, but unstated weight is given to stabilizing the output gap. He argues that this is not “substantially different” from the Reserve Bank of New Zealand’s Policy Target Agreement, which suggests that in pursuit of its price stability objective, it shall “seek to avoid unnecessary instability in output, interest rates and the exchange rate” (p. 162). We note, however, that Meyer suggests that he believes that Chairman Greenspan “also believes that low, stable inflation contributes to strong productivity growth and hence to a higher maximum sustainable rate of economic growth,” providing yet “another reason why maintaining low stable inflation has significant payoffs for economic performance” (p. 153). From this perspective, the Fed’s mandate need not be inconsistent with that of a central banker who gives no weight to stabilizing output in the loss function. Meyer is quick to point out that he believes “that the other members of the FOMC have less faith in this principle than the Chairman” (p. 153). Our point is not that the FOMC’s stated mandate is hierarchical or dual or that Chairman Greenspan is

a NETER and not a LETER (we simply don't know). Rather, our point is that this example and much of the analysis and discussion by conference participants suggests that a core issue (if not *the* core issue) in the IT debate is the extent to which and the precise circumstances under which central banks can and should stabilize output. Because this requires responses to "supply shocks" rather than demand shocks, it would seem that specific analyses of the types of supply shocks that central bankers should respond to and the potential costs associated with such responses would be a good place to start.

In any event, there is agreement among Bernanke, Faust and Henderson, Meyer, Svensson, Uhlig, and Woodford that, in Woodford's words, "it would be desirable for central banks to commit themselves to the pursuit of explicit target criteria that involves real variables as well as inflation" (p. 27). Woodford notes that this would "increase transparency, facilitating the public's ability to correctly anticipate future policy" and, echoing a point made by Meyer, "help to dispel some of the resistance to the adoption of inflation targeting in countries like the United States" (p. 27).

What's the Advantage of IT?

Faust and Henderson argue that "the first goal of best-practice [monetary policy] is to get mean inflation *right*" (p. 124, emphasis added). They then note that a purpose of IT is to "anchor long-run inflation expectations," by leaving "little room for misunderstanding this objective." That being said, it is natural to ask: Why must the long-run inflation objective be explicit? Why can't it be fuzzy? The unquestionable existence of "control error" suggests that inflation targeting is inherently fuzzy from the public's perspective. This is illustrated in Faust and Henderson's discussion of best-practice monetary policy. They note that many IT central banks have "target ranges" for the IT. Under their interpretation of best-practice monetary policy, "a target range is purely descriptive in that it states that inflation will be within the range $\pi^* \pm \theta$ [the inflation target plus/minus a positive fixed amount] most of the time" (p. 125). They note that "no incident of inflation crossing the boundary is evidence of central bank misbehavior; only excessive frequency of being outside the interval constitutes such evidence" (p. 125). They note too that "excessive frequency of being inside the range is also evidence of misbehavior" for a central bank that professes to have other non-inflation policy objectives (p. 125). The point is that

given such an interpretation, it may take the public some time (with the length of time determined in part by the nature of the control errors, assuming their existence) to determine whether the central bank is in fact attempting to achieve its stated inflation objective or is misbehaving with respect to it.

Meyer suggests that having an explicit inflation objective should (i) "contribute to anchoring inflation expectations," (ii) "improve the coherence of the deliberations and the policy outcomes" by ensuring a consensus among policymakers about the desired long-term inflation rate, and (iii) "enhance the ability of bond market participants to anticipate the future course of monetary policy...thereby improving the effectiveness of policy" along the lines discussed by Woodford (p. 154).

Levin, Natalucci, and Piger (LNP) attempt to assess on empirical grounds whether or not inflation targeting has made a difference for economic performance. In the tradition of the existing literature on this topic, LNP ask whether the economic performance of a group of countries that have adopted IT differs substantially from a group of countries that have not. LNP first investigate whether the data are consistent with the claim that inflation expectations are anchored by inflation targeting. Using private-sector inflation forecasts for industrial countries obtained from surveys, LNP find that the unconditional volatility of these inflation forecasts is not noticeably different between IT and non-IT economies. Digging deeper however, LNP find that the source of volatility does seem to differ. In particular, LNP find that for non-IT economies, long-run inflation forecasts exhibit a highly significant correlation with past realized inflation. In contrast, this correlation is largely absent for the IT countries. LNP argue that this is suggestive evidence that the inflation-targeting central banks have been quite successful in delinking expectations from realized inflation. It is also consistent with the claim that IT anchors inflation expectations.

LNP also investigate whether there is any difference in the dynamics of actual inflation between IT and non-IT economies. Again, they find no evidence that inflation has been unconditionally less volatile in IT vs. non-IT economies. However, they again find evidence that the source of this volatility differs. In particular, shocks to core CPI inflation are substantially less persistent in the group of IT economies than in the non-IT economies. In particular, it is difficult to reject the hypothesis that core CPI inflation follows a random walk in most of the non-

IT economies, whereas this hypothesis can be easily rejected for most of the IT economies. LNP note that this suggests that inflation dynamics in the non-IT economies display a substantial propagation component that augments shocks, whereas inflation dynamics in the IT economies quickly revert to the mean following a shock.

LNP also consider a group of emerging-market economies who have adopted IT more recently. For these recent adopters they confirm the result, found by others for industrial IT economies, that the adoption of inflation targeting does not lead to an immediate reduction in long-term inflation expectations. In this sense, the true benefits of IT may become apparent only after the regime has gained sufficient credibility.

In discussing their work, Harald Uhlig does not question their findings, noting that “The correlations found by the authors seem to be there, and they can be read as a list of interesting differences between countries that have formally adopted inflation targeting and those that have not” (p. 82). He does, however, question their interpretation of these results. He questions LNP’s division of countries into ITers and non-ITers, noting that the Bundesbank is classified as a non-ITer by LNP. He notes that (i) it is widely accepted that the Bundesbank ignored violations of its money growth targets “if it helped in pursuing some other, important goal—most notably price stability,” (ii) the money growth targets were derived in large part to be consistent with the Bundesbank’s “underlying goal regarding the desired rate of inflation,” and (iii) the public debates about monetary policy “were practically always in terms of inflation” (p. 82).

Uhlig then asks, even if IT has anchored inflation expectations, “how helpful has that been for the variables that we ultimately care about?” Noting that the standard deviation of inflation has been higher for ITers than non-ITers and that output growth variability has been essentially the same, Uhlig suggests that “based on these numbers alone, one certainly would not want to make the case that adopting inflation targeting is a good idea” (p. 83). Acknowledging that his unconditional perspective may be misleading because ITers may have been hit by larger shocks or started with less favorable initial conditions, Uhlig concludes “much more work than is in this paper is required before it is possible to conclude that inflation targeters have been more successful in containing shocks hitting the economy than nontargeters have been” (p. 83).

Uhlig also suggests a reinterpretation of LNP’s finding that inflation volatility has been more persistent for non-ITers. Noting that in models of the New Keynesian variety,

low-frequency volatility of inflation is OK, but high-frequency volatility is bad for the economy and leads to an overall lower level of economic activity. If this is what would happen with inflation targeting, which seems to be what the empirical results suggest, then this would be an argument against inflation targeting, not for it. (p. 84)

Finally, Uhlig notes that IT has frequently arisen endogenously—it occurs “when the economic situation was sufficiently bad” (p. 84). He suggests that this not only accounts for the failure to adopt inflation targeting by the United States and the European Monetary Union, but requires that analyses of the effectiveness of IT must account for fiscal considerations and other structural reforms—“The interesting question remains whether inflation targeting has contributed above and beyond fiscal consolidation or general institutional reforms” (p. 84).

IT and the Rules Versus Discretion Debate

Faust and Henderson effectively ask: Is IT best “viewed as a ‘rule’ or the exercise of ‘discretion’”? They note that ITers appear to have different views about that, but that these differences appear to be definitional, so that, in their view, IT is “a typical example of discretion in the classical sense” (p. 119). Nevertheless, it is clear that many if not most ITers consider IT to be a rule in the modern sense of a policy rule, e.g., a Taylor rule. That is, IT is a rule as defined by Woodford,

a rule under which the central bank’s commitment is defined by a *target* for certain variables at a certain distance in the future, together with a commitment to organize deliberations about policy actions around the question of whether the contemplated actions are consistent with the target. (p. 20)

Moreover, many ITers, such as Woodford, argue that a commitment to such a policy rule has important consequences for the effectiveness of monetary policy.

In his careful analysis of “The Role of Policy Rules in Inflation Targeting,” Ken Kuttner notes that the view of IT as “some sort of a monetary policy rule” stems, in large part, from the fact that the adoption of IT by many central banks and the “explosion of research on monetary policy rules” occurred at much the same time. Consistent with Woodford’s definition, Kuttner notes that conditional rules “allow the policymaker to respond in a reasonable (or even optimal) manner to economic conditions” (p. 90).

Before assessing “empirically the extent to which IT can be described in terms of simple monetary policy rules” (p. 89), Kuttner undertakes a detailed and thoughtful analysis of important issues in the policy rule debate—ad hoc versus optimal policy rules, instrument rules versus targeting rules, rules describing outcomes versus rules based on commitment, and mechanical rules versus guidelines.

After a careful analysis of the “connection between various definitions of a policy rule... and IT as it is actually practiced” (p. 92), Kuttner undertakes a careful empirical analysis of “how well the behavior of IT central banks can be characterized by simple policy rules” (p. 94). Specifically, he estimates policy rules for three IT central banks, the Reserve Bank of New Zealand, the Bank of England, and Sweden’s Riksbank, and for the Federal Reserve. The unique twist in Kuttner’s analysis is the “use of the central bank’s own published inflation and output forecasts, rather than econometric proxies for the relevant expectations” (p. 95). Indeed, the three central banks were chosen because they have “the longest track record of published, quantitative forecasts” (p. 95). Kuttner notes that these forecasts (i) reduce the data requirements and alleviate the need for two-stage GMM estimation, (ii) “are likely to be more reliable than those based on simple econometric models, and (iii) should “embody appropriate assumptions about the central banks’ intended policy actions” (p. 95).

After noting some technical differences in the inflation target and forecasting by each of the IT central banks and the fact that “an explicit reaction function or instrument rule does not figure prominently in any of the three central bank’s official publications” (p. 96), Kuttner begins by estimating a standard “Taylor rule” with a lagged interest rate term. Because none of the central banks, save the Reserve Bank of New Zealand, publishes an estimate of the output gap, Kuttner estimates the output gap under some reasonable assumptions. Kuttner finds that the estimates suggest that this simple policy rule “is a poor description of policy for all four central

banks” (p. 99). The coefficient on inflation is significant only for Sweden, while the output gap coefficient was significant for three countries, but had the wrong sign for two—Sweden and the United Kingdom.

Estimates from a forward-looking Taylor rule fared better. All coefficients were correctly signed and statistically significant for New Zealand and the Taylor principle—defined as the long-run response of the nominal rate to inflation being greater than 1—was satisfied for all countries but the United Kingdom.

Because the estimates of the coefficient on the lagged interest rate were large, implying “an extremely high degree of interest rate smoothing,” Kuttner investigates the possibility that this reflected “the omission of highly serially correlated variables from the instrument rule,” possibly corresponding to the unobserved “judgment” terms emphasized in Svensson (2003), “rather than interest rate smoothing per se” (p. 101). He does this by including a variable that captures the “‘news’ contained in the revisions in expectations embodied in the central banks’ inflation and output forecasts” (p. 101). He finds that the results are more encouraging than for either of the previous specifications, but like the previous specifications, the results are best for New Zealand and Sweden. Importantly, Kuttner notes that the estimates support Rudebusch’s (2002) “contention that at least some of the serial correlation in conventionally specified instrument rules represents a response to an omitted variable” (p. 103). He argues that the results demonstrate that IT central banks exercise judgment in setting policy. He notes that this “interpretation is particularly clean in the case of New Zealand,” suggesting that “even the (arguably) most rule oriented of all the IT central banks apparently still exercises a great deal of judgment in setting policy” (p. 104).

Finally, Kuttner investigates the usefulness of the policy-rule framework for analyzing policy by estimating the correlation between the forecast inflation gap and the forecast change in the output gap. Kuttner shows that under pre-commitment (history dependence) this correlation will be positive “under the assumption of a backward-looking inflation process” and negative if the inflation process is forward looking. The correlation is estimated at four-quarter and eight-quarter horizons. In all but one case the correlation is negative, and the positive correlation is not statistically significant. The results under discretion were even less supportive for forward-looking policy. Kuttner notes that his

generally negative results “will come as no surprise to those familiar with the practice of IT.” He also notes that “the lack of a sharp, qualitative difference between the Fed’s behavior and that of the inflation targeters will probably do little to alter the priors of skeptics...who contend the policy makes little practical difference” (p. 107).

In her discussion, Monika Piazzesi applauds Kuttner’s innovative use of central bank forecasts to estimate policy rules. She gives two reasons for being excited about looking at central bank projections that Kuttner did not mention. First, she notes that there is a great deal of uncertainty about the appropriate inflation measure to use. She observes that using central bank projections eliminates this problem and a host of others—if a central bank publishes projections of inflation and output “for different horizons, k , the only question is what horizon k to pick to estimate the policy rule. But picking k seems easy compared with the host of other problems that we run into otherwise” (p. 114). She then notes that if central bank projections of these variables are the “right” measure of the current belief of the central bank about these variables, “we may be able to estimate policy rules that are stable functions of the projection data” (p. 114).

She also suggests that projections might be used to investigate “what a model of the economy that gives rise to these projections would look like.” For example, she suggests that it would be useful to know if these projections are biased, if they can be forecast with macroeconomic variables, if the projection errors are serially correlated, etc. She then suggests that the projection data might be used to distinguish whether the central bank has private information that is used in making policy decisions, and the extent to which central bank information is reflected in financial markets.

Pointing out that the Fed’s Green Book forecasts are not necessarily the FOMC’s forecasts, she cautions that “projection numbers may not be the numbers that ultimately influence policy decisions” (p. 115). Finally, she observes that central banks “may have incentives to distort their projection numbers,” noting that inflation projections for IT central banks may play roles similar “to earnings projections by private firms” (p. 115).

Policymakers’ Views on IT

While our panelists share the view that maintaining low and stable inflation has beneficial consequences for the real economy, they differed

considerably on the desirability of IT. Of our three panelists, the most pro-IT was Ben Bernanke. In an apparent endorsement of Greenspan’s belief in synergies between inflation and economic stabilization, Bernanke argued that “the Fed has built strong credibility as an inflation-fighter...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” (p. 165). Despite these gains, Bernanke suggests “an incremental move toward inflation targeting” that “might help the Fed communicate better and perhaps improve policy decisions as well” (p. 165).

Specifically, Bernanke proposed that the FOMC announce a long-run inflation rate (OLIR)—the inflation rate the FOMC believes “achieves the best average economic performance over time with respect to *both* the inflation and output objectives” (p. 166). Recognizing that one of the impediments to adopting IT by the United States is the concern (expressed by several conference participants) that such a move would reduce the flexibility of policy to pursue other economic stabilization objectives, Bernanke recommends that in introducing the OLIR the FOMC should state that

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. (p. 167)

Arguing that announcing the OLIR would not have “significant costs,” Bernanke addresses the question: What are the benefits? Bernanke suggests five. First, “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.” Second, “the OLIR should help participants in financial markets price long-term bonds and other financial assets more efficiently.” Third, establishing the OLIR should “help to lower inflation risk in financial markets and other forms of contracting.” Fourth, consistent with the synergies vision, it will “tend to stabilize long-term inflation expectations more broadly, which in turn would make short-run stabilization policy more effective.” Finally, Bernanke notes that “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” (p. 167). Bernanke also notes that the OLIR “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” (p. 167).

Noting that “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,” Bernanke suggests that the OLIR be a “single number” and not a range (p. 168).

Finally, addressing the issue of the political feasibility of IT for the United States, Bernanke suggests that “the change of the type I am proposing would be acceptable to Congress as being within the spirit of existing legislation.” To enhance that prospect, Bernanke suggests

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.” (p. 168)

Benanke’s colleague on the Board of Governors, Don Kohn, undertakes a similar analysis, but arrives at a different conclusion. Kohn agrees that “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” (p. 179). Nevertheless, he suggests 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” (p. 179).

Kohn suggests that the adoption of an explicit long-run inflation objective “would result in less-than-optimal attention being paid to stabilizing the economy and financial markets,” because “IT implies putting higher priority on hitting a particular inflation objective over the intermediate run than the

Federal Reserve has done” (p. 180). To illustrate this point, he cites the “opportunistic disinflation period” from 1983 to 1997, a period when “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” (p. 180). He notes that the Fed’s “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” (p. 180). Kohn notes that “such responses would in theory be available under flexible IT,” but wonders “what would happen in practice.”

As for the benefits of IT, Kohn notes that “the bulk of studies show that interest rates and inflation are no more predictable in IT economies,” and suggests that “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” (p. 180).

Echoing concerns raised by Meyer, Friedman, and others, Kohn notes that for flexible ITers “communication tends to be clear but not especially transparent”: “Those other goals are the tough messy stuff that does not fit into the IT framework very well” (p. 181). In apparent agreement with Ben Friedman that “words matter,” Kohn notes “There is also a risk that communication will drive policy, and so those (other) goals end up with less-than-optimal attention” (p. 181). In the end, in contrast with Bernanke, Kohn concludes

IT is not a cure-all for communication problems...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. (p. 181)

As for the politics of IT, Kohn notes that

unlike most other central banks, which operate in a parliamentary system, we do not have a “government” to interact with... 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. (p. 181, emphasis added)

With respect to the idea of defining price stability—“publishing a number or reference range that makes more concrete our long-term inflation objective, without making a commitment to achieve that objective in any given time frame”—Kohn notes that he is still trying to make up his mind “on the balance of costs and benefits of taking this step” (p. 181). Nevertheless, he expresses skepticism of the benefits and suggests that the costs are associated with “any tendency for this definition to morph into a target that unnecessarily constrains actions” and notes that “the pressure to elevate price stability over economic stability... would be accentuated by the fact that the latter goal would not have a numerical value.”

In the final analysis Kohn concludes 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. (p. 183)

Otmar Issing is also skeptical of the benefits of IT. After a careful analysis of the major developments in our understanding of the effectiveness of monetary policy since the 1960s, Issing notes that the “consensus view” is that the management of monetary policy should be delegated to an “independent central bank” and that policymakers should “treat the natural rate of unemployment as a given, and not try to push unemployment below its natural rate” (p. 170). He also notes that

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. (p. 170)

While acknowledging that IT has been successful—particularly “for countries starting from high levels of inflation”—he notes that other central banks have shown that “success in the management of monetary policy is not confined to inflation-targeting

central banks” (p. 171). This stems, in part, from the adoption of the consensus view of the necessity of maintaining a low-inflation environment. Defining IT as a “monetary policy framework that accords overriding importance to the maintenance of price stability,” Issing suggests that IT “offers no practical guidance for the conduct of monetary policy beyond identifying the primary objective” and “from a scientific perspective... imposes few empirically testable restrictions on the implementation of monetary policy” (p. 171).

Consequently, Issing focuses his remarks on a narrower definition of IT consistent with 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” (p. 171). Issing argues a major drawback of instrument rules is that inflation forecasts are not “sufficient statistics on the state of the economy” necessary for the conduct of monetary policy (p. 173). He then notes that

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 as statistics to determine monetary policy action. (p. 173)

Issing notes that target rules are immune from this problem because they generate output and inflation forecasts that are consistent with the minimization of the proper loss function. He notes, however, that models underlying most targeting rules “neglect any role that might be played by the monetary aggregate or financial frictions in the determination of price developments” (p. 173). Moreover, after suggesting that “model misspecification is something that economists and econometricians have some difficulty acknowledging,” Issing notes that “most advocates of inflation targeting...ulti-

mately rely on a view of the economy whose essence can be captured by no more than three equations... with monetary quantities playing no role" (p. 173). While noting that some economists regard such models as "internally consistent and elegant," Issing argues that because "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 [such] a model for monetary policy-setting" (p. 174).

Furthermore, apparently following up on his earlier observation that "the structure of the economy changes over time in a way that is difficult to anticipate and perceive in real time... makes the debate on the aims of monetary policy and its appropriate framework so difficult to settle" (p. 169), Issing notes that "there are instances that standard macroeconomic models, which, by definition, are constructed to replicate normal conditions and regularities in the economy, cannot capture and incorporate" (p. 176). Issing notes that on such occasions, "careful judgment" and "consideration of non-standard indicators and different interpretations of the evidence become especially relevant" (p. 176).

In the end, Issing concludes that "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." He argues that the success of the United States and the euro area confirm "something that I have always believed: there is no 'single' or 'best' way to conduct monetary policy and that different approaches or frameworks can lead to successful policies and/or be better adapted to different institutional, economic, and social environments" (p. 177).

Over the past two decades, a number of central banks have adopted explicit inflation targeting as a framework for conducting monetary policy. Further, there is an active debate, perhaps most notably in the United States, regarding whether non-IT central banks should adopt the practice. The conference proceedings address the core issues surrounding the potential benefits, drawbacks, and feasibility of IT adoption, providing evidence from both a theoretical and empirical perspective. The authors, discussants, and panelists have provided a wealth of useful information to inform the debate over IT.

