

# Discussion

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This paper studies three important questions. First, what distinguishes inflation targeting (IT) from the practices of other central banks? Second, how has IT practice evolved? And third, what is the empirical evidence on IT practice and performance? With regards to the third question, Ken Kuttner focuses particular attention on the issue of whether inflation-targeting central banks have been practicing a form of ‘flexible inflation targeting’, meaning that they have sought to stabilise fluctuations in *both* inflation and output.

Ken does an admirable job of describing the distinguishing characteristics of IT relative to other central bank practices and the evolution of inflation targeting, both in terms of changes made by early adopters and the increasing adoption of IT by emerging market economies. Table 2 provides a valuable summary of the characteristics of IT across countries. My one critique of this part of the paper is that it ignores some other important issues regarding the design of monetary policy regimes, including IT, such as institutional structure (independence, size and make-up of the policy-making committee) and accountability procedures.

The remainder of my comments focus on the third issue, that is, the empirical evidence on IT practice and performance. Although I am critical of some aspects of Ken’s analysis, I applaud him for pushing the frontier in terms of formal quantitative research into the benefits of inflation targeting. This is an area of active research by Ken and others that I believe will have a high pay-off down the road in our understanding of alternative monetary policy regimes.

Ken notes that the evidence on the effects of IT on macroeconomic performance has been inconclusive. Although early IT adopters have experienced lower and more stable inflation than in their pre-IT period, the role of IT in this improvement remains controversial, since many non-IT countries also experienced a decline in the mean and variability of inflation over the past 15 years. Indeed, Ball and Sheridan (2003) claim that the improvement in performance among ITers reflects a ‘regression to the mean’ rather than evidence in favour of any benefits of an IT regime. Kuttner and Posen (1999) and Levin, Natalucci and Piger (2004) document that IT countries also have experienced lower inflation persistence than non-IT countries. However, the interpretation of this finding as evidence of a direct benefit of adopting IT is problematic. As stressed by Orphanides and Williams (2004), the persistence of inflation is a function of both the monetary policy regime and policy-maker preferences over inflation and output stabilisation. Thus, the lower inflation persistence observed in IT countries may reflect benefits particular to adopting IT, but may also result from IT central banks tending to place greater weight on inflation stabilisation relative to output stabilisation.

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1. The opinions expressed are those of the author and do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco.

It has long been argued that a key potential benefit of a successful IT strategy is the anchoring of inflation expectations on the part of the public and recent research has sought to identify the effects of IT by directly examining the behaviour of expectations. Orphanides and Williams (2003a, 2003b) illustrate the potential role played by an explicit inflation target in anchoring expectations using a model in which the public must otherwise infer the central bank's objectives from observations of inflation. In this model, successful communication of an explicit numerical inflation target reduces the sensitivity of inflation expectations to movements in actual inflation and thereby helps stabilise *both* inflation and output. In this regard, Kuttner and Posen (1999), Gurkaynak, Sack and Swanson (2003), and Levin *et al* (2004) find that longer-run inflation expectations are in fact less sensitive to economic developments in IT countries than in non-IT countries, thus providing compelling empirical support for the role of IT in anchoring inflation expectations.

In the final part of the paper, Ken examines the evidence for flexibility in stabilising inflation and output by IT countries. He uses two approaches. First, he estimates forecast-based monetary policy feedback rules for three IT countries and finds that the statistically significant coefficients on the output gap and/or forecasts of output growth are positive (Table 4). He interprets this finding as evidence in favour of flexible IT. Second, he examines how IT central banks have responded to apparent adverse supply shocks and again finds some informal evidence of flexibility. Unfortunately, he has few observations of adverse supply shocks over the period for which he has data, so this evidence should be viewed with considerable caution. For this reason, I will concentrate on the use of estimated policy rules to infer the degree of flexibility.

The basic premise of Ken's analysis is that a positive response to the output gap or expected output gap in an estimated policy rule is a sign of a policy-maker's concern for output stabilisation. One basis for this test is that in many empirical models, the optimised coefficient on the output gap and/or expected output growth in an instrument rule will be near zero if output stabilisation is not part of the policy objective, and positive if it is (see, for example, Levin, Wieland and Williams 2003). However, it is important to note that this is not a general result for all models; in particular, in backward-looking models the optimal coefficient on the output gap can be positive even if the policy-maker is unconcerned about output stabilisation.

In a recent paper in which he conducts the same policy rule analysis, Kuttner (2004) finds that his results are sensitive to the specification of the estimated policy rule. He finds that estimates of outcome-based specifications – rules in which policy is set according to the current output gap and observed past inflation, as opposed to the output gap and forecasts of output and inflation – provide no evidence of flexibility among the same three IT countries. This sensitivity to the specification of the policy rule is somewhat surprising to me based on an experiment I ran using a model where Kuttner's test is approximately valid. I solved the model assuming that the policy-maker is following a forecast-based rule using Kuttner's specification and then estimated a misspecified outcome-based policy rule on data generated from the model. I found that if the true output gap and growth coefficients are zero,

then the estimated output gap coefficient based on the outcome-based specification is nearly zero, and if the true coefficients are positive, the estimated output gap coefficient is also positive.

Moreover, the test for flexibility is likely to be invalid if IT central banks are implementing optimal targeting policies as opposed to optimised instrument rules of the type estimated in the present paper and Ken's previous paper. If the central bank is acting optimally, then the policy rule that Ken estimates in this paper is likely to be misspecified and the coefficient estimates are biased. To examine the extent of this bias, I conducted experiments using standard empirical macro models in which the central bank is assumed to follow the optimal policy under commitment. Using the resulting solution to the model economy, I then computed the implied regression coefficients for Ken's specification of the policy rule. In some cases, the output gap and growth coefficients were positive even if the policy-maker places zero weight on output stabilisation; in others, the estimated coefficients are *negative* even though the policy-maker is acting optimally and places a substantial weight on output stabilisation!

Given the limitations of the test for flexibility used in this paper, a potentially better test of flexibility is to estimate the penalty on output gap variability in the objective function directly, as in Dennis (2003). For this approach, one needs to specify a macro model, an objective function, and estimate the model assuming that the monetary policy is set to maximise the objective (itself, a testable hypothesis). For early IT adopters, this approach may now be feasible given the availability of nearly 15 years of data.

## References

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## 2. General Discussion

There was a general consensus among participants that the industrialised world had faced a relatively benign inflation environment over the past decade or so, which had contributed to the success of inflation targeting. A number of participants attributed this to the fact that most shocks of the past decade or so had been demand shocks, for which inflation and output stabilisation concerns were coincident. And while some participants noted that there had been supply shocks, these had generally been conducive to maintaining low inflation. In this respect, one participant highlighted the continued development of China and its production of low-cost manufactured products, the productivity pick-up in countries such as the US and Australia, and increases in global trade in response to a lowering of trade barriers.

This led to a discussion of the ability of inflation-targeting regimes to withstand any future adverse supply shocks. The majority of participants were confident that the inflation-targeting approach could successfully negotiate an adverse supply-side shock, with one participant arguing that it could stand up to these and other challenges as well as, if not better than, other monetary policy regimes. A key reason for this is the benefit of strongly anchored inflation expectations provided by inflation-targeting regimes. In the face of an adverse supply-side shock which pushed the inflation rate substantially above its target range, a central bank could credibly communicate to the public that inflation would return to its target value in time. The challenge of adverse supply shocks served to reinforce the advantages of a flexible approach to inflation targeting, and argued against the presentation of fixed horizons in monetary policy communication. While one participant acknowledged that a fixed horizon of two years, for example, is beneficial from the point of view of simplicity (particularly with regards to communication), it assumes that shocks are relatively small and so will not push inflation too far from the target. Beyond the issue of presentational simplicity, this participant said that a fixed horizon was not consistent with the theory of optimal monetary policy. Numerous participants were sympathetic to this point, arguing that to deal with a large adverse supply shock in the future, central banks may choose to extend the horizon over which they aim to return inflation to its target. In that regard, inflation targeting would continue to gradually evolve.

On the general theme of flexibility, there was a wide-ranging discussion of the experiences of various inflation targeters. One participant argued that inflation targeting in Sweden is not quite as flexible as portrayed by Ken Kuttner's paper,

and that policy decisions could consistently be linked back to forecasts of inflation at two-year horizons. In contrast to this, another participant supported the flexibility of the Swedish approach embodied in the explicitly variable horizon of one to three years, depending on the nature and severity of shocks. In a number of cases, inflation targeters had initially talked tougher than they intended to act; hardly surprising given that inflation performance had been relatively poor prior to the adoption of inflation targeting. For Australia, it was thought that the flexible approach of the RBA – which had acknowledged its concerns about the variability of output – had initially given rise to some scepticism, given that other inflation targeters had adopted a less flexible approach with greater, if not sole, emphasis on inflation goals. Credibility was achieved in Australia nonetheless through a willingness to act tough when necessary. One participant supported Kuttner's view of the UK, agreeing that there is unrecognised flexibility in their system. There followed a brief discussion of the monetary policy framework for the US, including the extent of their commitment to keep inflation low, the role and imminent retirement of Federal Reserve Chairman Alan Greenspan, and the need to generate credibility through institutional frameworks rather than individuals. While one participant thought that the US framework should move closer to inflation targeting, another emphasised concerns still held in the US regarding the need to pick a particular number for the target and choose an appropriate horizon.

The challenges that adverse shocks would pose for central banks led one participant to discuss the different ways of assessing various policy regimes. One method was to consider the performance of a given regime over the particular historical period for which it was in place, such as the performance of inflation targeting over the past decade or so. An alternative approach, albeit significantly more complicated, was to consider how a policy regime would have performed in a different historical period. In other words, how would inflation targeting have performed if it had been in operation in the 1960s, 1970s and 1980s? Such analysis may provide insights as to how inflation targeters might best respond to possible future shocks.