

Comments and Discussion

Rajnish Mehra: The authors, whose analysis builds on their earlier work, have produced a thought-provoking paper.¹ They highlight many interesting issues regarding the policy implications of inflation targeting and draw upon the experience of countries that have adopted this framework. I do, however, take issue with the methodology of the study—that of testing an atheoretical model on historical data and then using it for policy analysis. My specific comments on the paper appear at the end of this discussion.

I begin by focusing on some of the issues raised in the paper and by making a distinction between targeting inflation and inflation targeting.

Targeting Inflation

The rationale for targeting inflation is the lesson learned over the past three decades, about which there is broad consensus, that positive expected inflation, above some low rate, is welfare reducing.

There is less agreement on how this low inflation state should be achieved. In the late 1960s, the prevailing view, championed by Paul Samuelson and Robert Solow, advocated the use of control theory for formulating and implementing macroeconomic policy. A minority, notably Milton Friedman, argued against this, claiming that policy acted with long, variable, and unpredictable lags. With the advent of the Lucas Critique and the Time-Inconsistency literature, the later view has gradually prevailed.²

Today, most academics and policymakers accept the view that the economy is complex and that control theory is inappropriate for macroeconomic stabilization. It is also the view, articulated by Friedman and Phelps, that there is no long-run Phillips-curve trade-off.³

I specially thank Henning Bohn, Barry Bosworth (the editor), John Donaldson, and Edward Prescott for their insightful comments. I am grateful to the participants of the India Policy Forum Conference for a stimulating discussion.

1. See, in particular, Chand (1977), McKibbin and Singh (2003), and Singh and Kalirajan (2003).

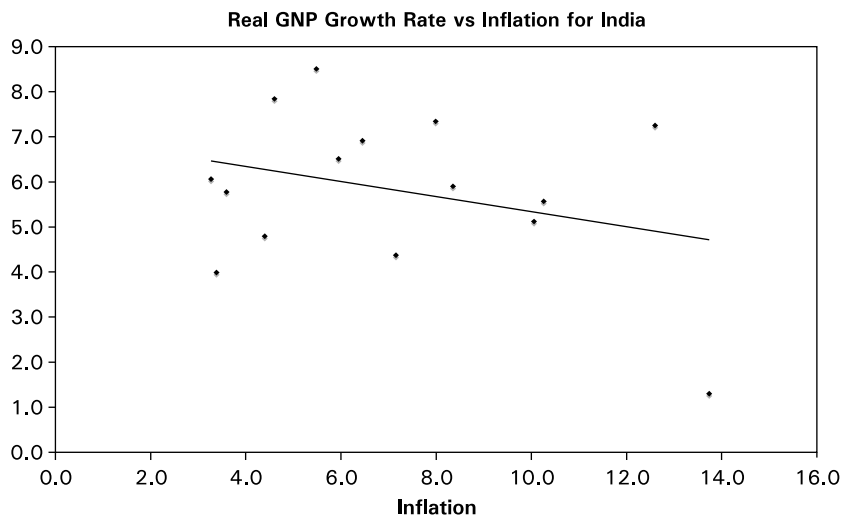
2. Kydland and Prescott (1977).

3. Friedman (1968); Phelps (1968).

Whether there is indeed a short-run Phillips-curve relationship and whether monetary policy can beneficially exploit this short-run trade-off between inflation and the output gap is a long-standing dispute that is still at the center of monetary policy discussions. Friedman and Lucas have argued that given the inherent complexity of the economy and our incomplete knowledge of it, monetary policy should be limited to achieving nominal stability. Their arguments are based on the view that although monetary policy has strong short-run real effects, there is no way to exploit them beneficially. They suggest that a response in the form of a k -percent rule for money growth is the best way to achieve nominal stability. Svensson and Woodford on the other hand, argue that there are (limited) short-run exploitable trade-offs.⁴ In their analysis, they describe a framework involving optimal exploitation of the short-run trade-off.

Irrespective of one's position on the issues discussed above, the rationale for targeting inflation is clear. *Lower inflation rates lead to better operating characteristics for the economy.* See, for example, figure 7, which plots the real growth of gross national product versus inflation for India for the postwar period.

FIGURE 7



4. Svensson (1999); Svensson and Woodford (2004).

Inflation Targeting

What is inflation targeting? This is not an easy question to answer as there are many variations on the theme. As broadly accepted, it is a framework for monetary policy *whereby a short-term interest rate instrument responds to deviations of expected future inflation from the target rate and to deviations of output from its full-employment level*. It explicitly incorporates the type of Phillips-curve trade-off discussed earlier. An important feature of inflation targeting is the articulation of this policy—to clearly communicate to the public the plans and objectives of the monetary authorities. This is intended to serve as a quasi-commitment mechanism.

One variant—“the hard version”—is the original Svensson framework.⁵ It argues that the central bank should concentrate only on inflation to the exclusion of any other objectives. There are a host of other variations—“the soft versions”—with inflation as only one of the targeted variables. The variants differ depending on what is included in the targeted set. Informal conversations with central banking officials in a number of countries lead me to believe that inflation targeting in practice is almost never implemented in its hard version.

Several questions must then be addressed before a soft version can be effectively implemented. The policymaker must not only articulate the relative weights to attach to inflation and output and specify the horizon for expected inflation and output but must also explicitly address the issue of what variables, other than expected inflation and the output gap, are to be targeted. Thus, inflation targeting in practice targets inflation as well as the output gap, interest rate fluctuations and perhaps other macroeconomic variables as well.

Although many of its proponents, including Svensson, call it a rule, in the face of multiple objectives, it is a discretionary policy with the Phillips curve as its *deus ex machina*. Its implementation (especially in the face of multiple objectives) will be plagued by all the issues associated with “the multi-period control problem under uncertainty.”⁶

Crucial to its success is the issue of credibility and managing expectations. The more objectives that are targeted, the less credible will be the commitment to target inflation since some of these objectives may be mutually inconsistent. I revisit this issue in the next section.

5. Svensson (1997). Henning Bohn suggested this “hard version” usage, which is the version “tested” by the authors in the paper.

6. By postulating a specific lag structure, Svensson and others convert the multiperiod problem to a sequence of static problems and circumvent some of these issues and their implications.

There is little doubt that a central bank can control inflation. This control, though not perfect due to macroeconomic shocks (such as oil supply shocks) involves costs, which may not be (politically) acceptable. Economic agents, of course take this into account when forming their expectations.

The United States does not explicitly target inflation; in contrast, Canada and the United Kingdom are explicit inflation targeters.⁷ In all three countries inflation is low, but it is difficult to attribute this categorically to ITF programs. Ball and Sheridan examine a sample of twenty industrialized countries, seven of which are targeters and thirteen nontargeters.⁸ They conclude that on a number of dimensions there is no evidence that inflation targeting improves economic performance. Others, notably Bernanke, King, Mishkin, Svensson and several central bankers (of course!) beg to differ. In the absence of credibility, inflation targeting is just another value-loaded term (with a positive valence).

The Indian Context

Implementing inflation targeting in India raises a number of issues, some technical, others more serious, which address credibility. These include:

- India lacks a comprehensive price index that adjusts for quality and technical innovation. This “measurement issue” could be a major impediment to implementing inflation targeting effectively. Current estimates are most likely upwardly biased.
- What is the evidence on the Phillips curve in India, given the structure of the labor force?
- To what extent will the policy of pegging the rupee to the dollar undermine the credibility of a central bank that promises to inflation target? Pegging the currency and inflation targeting are not in general, mutually consistent. If an inflationary shock mandates high rates in the one country, while low rates persist in the other, capital will flow to the high-rate country, putting pressure on the currency peg. To peg the rupee to the dollar, the Reserve Bank of India has engaged in a classic sterilization policy, buying foreign currency and bonds and offsetting these purchases by selling domestic bonds. Given that the domestic assets of the RBI are rapidly being depleted, it is only a

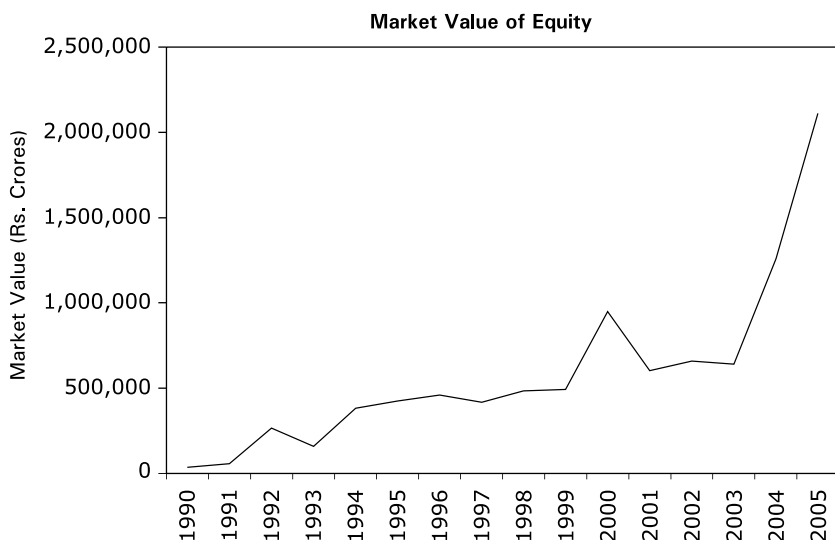
7. With Bernanke’s appointment as the Chairman of the Federal Reserve, this will probably change as, unlike his predecessor, Bernanke has long supported the concept; see, for instance, Bernanke (1999). It should be noted that by law the Federal Reserve is mandated to pursue maximum employment.

8. Ball and Sheridan (2003).

matter of time before the monetary base will be affected—with the concomitant effect on inflation.

- What is the role of current asset valuation levels? Inflation targeting in its hard version also precludes intervening in asset markets in case of a bubble. As Bernanke and Gertler emphasize: “Importantly, it also implies that policy should *not* respond to changes in asset prices, except in so far as they signal changes in expected inflation.”⁹ Asset valuations in India are at an all-time high. The Indian stock market had risen by more than 90 percent between June 2004 and June 2005 and continues to rise. Figure 8 illustrates this dramatic increase in valuation. The 15 percent decline in the stock index on May 17, 2004, surely had information content regarding fundamental valuations! Again this raises the issue of credibility.
- What about taxation. Given a large parallel economy and political considerations that preclude the taxation of certain sectors of the economy such as agriculture, an inflation tax may be a necessary evil. There is always a temptation for governments to let inflation exceed expectations and needless to say the populous is aware of this! Credibility issues once again are at the forefront of concern.

FIGURE 8. Market Value of Equity in the Indian Stock Market



9. Bernanke and Gertler (1999).

Inflation in India is currently running at about 5.6 percent with GDP growth at a healthy 8 percent. The current environment is ideal for embarking on an inflation targeting program. In the absence of a comprehensive price index, the core CPI should be targeted after allowing for a bias in measurement of, say, 1 percent. An advantage of this is that it avoids potentially destabilizing policy responses. The credibility issues raised above would have to be addressed in a transparent manner. The challenge would be to articulate a policy that is credible but not vacuous.

Comments and Quibbles

The paper addresses many, sometimes orthogonal, issues. This is both a strength and a weakness. On the positive side, it alerts the reader to a host of interesting questions; on the other hand, at times it appears to lack a unifying theme.

The paper starts out by “testing” a reduced form of the Svensson model. The authors conclude it does poorly when confronted with Indian data (see table 5). The authors then propose two alternative models: the first focuses on excess demand, where they essentially replace the output gap in the Svensson model with the fiscal deficit. The other is an input-based supply-side model that examines industrial commodities and their price effects on overall inflation. These extensions are completely ad hoc and atheoretical. The authors provide no justification, either empirical or theoretical, for their formulations. In fact the “excess demand” model is a radical change of the Svensson formulation—a change from “levels” to “growth rates.” They find that these alternatives are an improvement in the sense that certain coefficients are “significant.” I disagree with this as a research methodology especially for formulating policy.

Their key conclusion is that in the Indian context, the use of fiscal policy rather than monetary instruments is likely to be more effective in controlling inflation.

I remain skeptical. To quote Friedman, “Inflation is always and everywhere a monetary phenomena.” The effectiveness of policies predicated on using fiscal instruments is an open question. The fiscal deficit is a far more difficult policy instrument to control—quickly and smoothly—than are monetary instruments. While the coordination of fiscal and monetary policy may sound good in theory, it can lead to undesirable outcomes since these policies act with differing lags and over different time intervals. The formulation in the paper implicitly assumes that these time intervals are identical.

The authors emphasize that Indian inflation in recent years appears to be motivated by supply rather than demand shocks. However, there is no evidence in the literature that ITF programs work better under supply-induced inflation than under demand-induced inflation, and I would argue that that this is not a relevant distinction at our current level of understanding. From a practical point of view, as mentioned earlier, the lack of a comprehensive price index in India that adjusts for quality and technical innovation is a major impediment to inflation targeting.

The authors also argue that a supply side model of inflation works best for India and that the lag between an expenditure stimulus and inflation is shorter for India. Unfortunately, they do not offer any cross-country comparison to substantiate this claim or indeed, their observation that the nominal interest rate appears to be a less powerful instrument in India than in other countries.

The paper notes that the ITF has had variable success across countries but does not provide data to support this, nor does it address whether the Indian subcontext resembles the countries for which the policy has been a success or where it has failed. There *are* differences between developed and emerging markets.¹⁰

In closing, I compliment the authors for initiating a serious debate on the relative merits of inflation targeting and its appropriateness as a policy prescription for India. Their paper will undoubtedly be an impetus for further research in this important area.

Kenneth Kletzer: The widespread popularity of inflation targeting as a framework for monetary policy quite naturally raises the question whether India should also adopt an inflation-targeting regime. The reputation of inflation targeting has been bolstered by the recent ability of the central banks of several industrialized countries to maintain low and stable inflation without neglecting real economic performance. Further, the adoption of the inflation rate as the nominal anchor by some emerging market central banks, particularly in Latin America, has met with some apparent success as well as providing useful learning experiences.

In this interesting and well-done paper, Chand and Singh ask whether inflation targeting would be appropriate for adoption by the RBI given the structure of the Indian economy. They emphasize that the analytical arguments for inflation targeting are based on specific models of the dynamics

10. See, for example, tables 1 and 2 in Fraga and others (2003), which highlight these differences.

of inflation and aggregate output fluctuations and that the nominal interest rate takes the central role as the instrument of monetary policy. The primary argument of Chand and Singh is that the basic assumptions of the macroeconomic models used to motivate a monetary policy regime targeting inflation with interest rate instruments fail to match the dynamics of inflation and output growth in India. Certainly, the empirical evidence presented in the paper demonstrates the poor relationship of the inflationary process underlying monetary policy analysis in advanced industrialized countries to the macroeconomic data for the Indian economy.

Much of the analysis and criticism of applying inflation targeting in emerging markets centers on countries with open capital accounts, raising concerns about the conflicting objectives of price level stabilization and nominal exchange rate stabilization, as well as the consequences of inflation stabilization for interest rate volatility. Chand and Singh raise these issues in their argument that India is not a good candidate for an inflation-targeting framework for monetary policy. At the same time, proponents of inflation targeting often emphasize the importance of building credibility around announced inflation goals in emerging market economies as several emerging market governments have adopted inflation-targeting regimes with varying degrees of discretion. Rather than reiterate the credibility question, Chand and Singh concentrate on the modeling issue—how does the inflationary and real growth process work in India.

In contrast with most emerging market economies that are candidates for inflation-targeting monetary regimes, India restricts international capital flows and has not liberalized financial capital outflows to any significant extent. An important and open question concerns the appropriate monetary policy framework for India in anticipation of further liberalization of the economy and integration with international financial markets. The motivating issue for the Chand and Singh paper is the analysis of appropriate choices of monetary policy rules for the Indian economy. In my view, an important challenge for macroeconomists considering India is the design of monetary policy for the transition from an economy that had repressed financial markets to one with an open capital account. That is, how should the monetary policy framework complement the on-going process of economic reform and liberalization in India. I turn to these broader issues after discussing the particulars of the Chand and Singh paper.

Chand and Singh focus their attention on the theoretical analysis of inflation targeting exemplified by the basic model used by Svensson.¹¹

11. Svensson (1997).

A conventional reduced-form model leads to a simple nominal interest rate rule for a central bank that seeks to minimize deviations from a given inflation target. The policy rule derived by Svensson is a strict inflation-targeting version of the Taylor rule that specifies the nominal interest rate as an increasing function of the deviation of current inflation from the inflation target and of the output gap. Chand and Singh question whether such a model is an appropriate empirical representation of the structure of the Indian economy, providing econometric evidence that it is not. They propose an alternate model of the aggregate adjustment process for the Indian economy, derive a policy rule for an inflation-targeting central bank and ask whether a version of an inflation-targeting regime makes sense in this new model.

An important feature of the model given in equations 9–11 is the dependence of inflation on the difference between the nominal growth rates of GDP and potential GDP. This implies a proportional relationship between the expected change in inflation and the expected difference between the growth rate of real GDP and real potential GDP. This is a change in the interpretation of the output gap term in the basic model and implies that inflation remains constant if the growth rate equals the potential growth rate. The innovation in the proposed model appears in equation 11, which relates the growth rate of nominal GDP to the growth of the public sector budget deficit as a share of GDP and the change in the real rate of interest. Relating the real interest rate and real fiscal expansions to nominal output growth seems a bit unusual, although the relationship between fiscal policy growth, real interest rates, and the growth of real output can be disentangled with algebra along with an equation for the change in the inflation rate.

The major implication of the Chand and Singh model of inflation and optimal policy for a central bank that seeks to minimize a conventional loss function around an inflation target is that there are two policy instruments, the nominal interest rate, and the growth of the public sector budget deficit as a share of output. Their main observation about the dynamics of the macroeconomy for India is that fiscal policy is an important driving variable for real output growth and inflation. Their econometric analysis lends support to the inclusion of fiscal expansion in a traditional way in the short-run aggregate supply equation. In the derived optimal policy, the change in the nominal interest rate is increasing in the inflation rate as well as in the deviation of the current inflation rate from the targeted inflation rate given a constant deficit to GDP ratio. The interpretation of this model is that the nominal interest rate can be used to guide monetary policy built around an inflation target if the expansion of the fiscal deficit is exogenous. There are

two instruments and either can be used. If fiscal policy is made autonomously (a reasonable assumption in my view), then the central bank can implement an inflation target using the nominal interest rate. The model is consistent with the claim that perpetual growth in the public sector budget deficit forces tighter monetary policies to contain inflation. The real interest rate rises with the growth of the deficit, although the model does not address policy sustainability. That is, not all the necessary conditions for an optimal policy are in the text; sustainability should restrict the fiscal policy variable so that its inclusion as a policy instrument is not redundant.

The econometrics reveals that the textbook model used as a benchmark does not perform well against Indian data. Introducing supply-side effects such as commodity price inflation and public sector wage growth is reasonable, as is the inclusion of changes in fiscal policy. The results do not really negate the applicability of an inflation-targeting regime until losses other than deviations from the inflation target are included in the derivation of optimal policy. The costs of real interest rate and output growth volatility are not included in the objective function of the central bank.

There are important reasons to think about using a nominal interest rate rule to meet the objectives of price and output growth stability in the case of India. Some of these are common to emerging market economies that have adopted inflation-targeting frameworks, notably Chile and Brazil. Those two experiences may be very useful for considering the applicability of inflation targeting for India. One caveat is that both countries liberalized capital account transactions some time ago. Lessons learned from other emerging market economies might be appropriate for India after the relaxation of controls on capital outflows. However, credibility should be crucial for the success of inflation-stabilizing discretionary monetary policy in any context. The route to achieving credibility is not easy to identify, although current thinking focuses on the importance of strong monetary institutions, a sound fiscal and financial environment, and transparency in central bank governance and policy.

One issue of importance is whether an inflation target that takes account of output growth makes sense before liberalization. A simple answer is that the more credible central bank policy is before international financial integration, the more able are monetary authorities to manage inflation and exchange rate volatility. The broad preconditions for adopting inflation targeting are reviewed by Chand and Singh.¹² These are the same conditions just listed as appropriate starting points for gaining credibility for price

12. Mishkin (2004) elaborates on each.

stability, and they are also reasonable preconditions for a successful liberalization of the capital account. Another issue of importance for an emerging market economy whose central bank is pursuing an inflation target is the need to give the inflation rate precedence over the nominal exchange rate. As Chand and Singh note, resistance to floating is a common feature of monetary policy in emerging markets, creating a conflict in the choice of a nominal anchor. The track record for the rupee and for exchange rate intervention in India suggests that monetary authorities care very much about exchange rate volatility. As a concern for inflation targeting, though, this should not be seen as a primary issue for now because the conflict between these objectives only comes into play with an open capital account.

In the Indian context, the first important barrier to adopting inflation targeting is the continuing growth of outstanding public debt and deficits as a share of GDP. But the debt and deficit of the public sector is a barrier to progress on any macroeconomic front. The potential monetization of deficits and debt interferes with any effort to establish credibility for maintaining low inflation with or without any manner of central bank independence. Financial repression plays a significant role for financing public sector deficits without rising inflation in India. Further financial market liberalization and reform will reduce the capacity of the government to deliver low inflation by issuing long-maturity public debt at modest interest rates, and full capital account liberalization should eliminate the government's ability to do so. A worry should be that any credibility gained by the RBI from its choice of monetary regime in the current fiscal situation with capital controls will be lost immediately at the very time that is needed most, with the liberalization of capital outflows.

The second precondition is a sound domestic financial sector with adequate prudential regulation and supervision. Again, this is also a condition for avoiding financial crises in an economy with free financial capital mobility and for improving the allocation of savings and investment and overall macroeconomic performance in the domestic economy. It may be useful to observe that the adverse conditions faced by the RBI for predicting the successful adoption of an inflation-targeting framework for monetary policy are the same deficiencies that arise in any discussion of macroeconomic policy for India. Indeed, the virtues of each transcend the particular choice of targets and instruments for monetary policy.

A tough question is how the central bank gains or maintains credibility in the environment of Indian fiscal policymaking. The literature on inflation targeting (and similar policies) raises the problem that a targeting regime may be doomed if monetary policy is subordinate to fiscal policy. Questions

that need to be considered include how the RBI should conduct monetary policy when government debt is rising as a share of the economy at the same time that domestic financial reform is under way. Central bankers face the unpleasant task of an increasing prospect of inflating away outstanding domestic currency debt if efforts to improve domestic financial intermediation by reducing financial repression proceed. The critique of inflation targeting in emerging markets concerns countries that do not have effective capital controls, as does India. These countries are, therefore, susceptible to capital account reversals and unable to resist exchange rate fluctuations without sacrificing the inflation rate objective. These are not yet the issues for India; adopting a monetary policy regime to accompany fiscal reform, accommodate financial reform and meet the importance of stability of the inflation rate are major issues.

Partha Sen: This paper seeks to study the appropriateness (or otherwise) of adopting inflation targeting in India. Two sets of issues are addressed: Is inflation targeting the appropriate policy framework in developing countries? What is the process that determines inflation in India? The first issue is addressed rather perfunctorily. The paper's main focus is on the second one.

Here I address both issues but with more emphasis on the first. I shall argue that inflation targeting is not necessarily appropriate in developing economies—a position that Chand and Singh share (see table 1 and figure 1). Given this position, the inflation-generating process in India becomes (somewhat) less important.

Inflation targeting is the flavor of the month for monetary policymakers. Whether it will prove to be more durable, only time will tell. Theoretically, there is a weak case for it.¹³ But as of 2005, about eight developed economies and thirteen emerging market economies are classified as having inflation-targeting regimes. Preliminary evidence suggests that it seems to work well in reducing inflation in both developed and developing countries.¹⁴

What does an inflation-targeting regime entail? Mishkin stipulates five conditions that such a regime must meet:

- “1) The public announcement of medium-term numerical targets for inflation;
- 2) an institutional commitment to price stability as the primary goal of monetary policy, *to which other goals are subordinated* (emphasis added); 3) an information inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate, are used for deciding the setting of policy instruments;

13. See, for example, Buiters (2004).

14. Fraga, Goldfajn, and Minella (2003); Mishkin and Schmid-Hebbel (2005).

4) increased transparency of the monetary policy strategy through communication with the public and the markets about the plans, objectives, and decisions of the monetary authorities; and 5) increased accountability of the central bank for attaining its inflation objectives.”¹⁵

Mishkin also notes the macroeconomic features of developing or emerging market economies that make them different from those with developed capital markets: “These are: 1) Weak fiscal institutions, 2) Weak financial institutions including government prudential regulation and supervision, 3) Low credibility of monetary institutions, 4) Currency substitution and liability dollarization; and 5) Vulnerability to sudden stops (of capital inflows).”¹⁶

Exogenous shocks are magnified in emerging economies because of their underdeveloped markets. Broner and Rigobon look at twenty-three developed and thirty-five emerging market economies and find that capital flows to the emerging market countries are 1.79 times more volatile than those to the developed countries, while the (left) skewness (that is, proneness to crises) is 1.5 times as high.¹⁷ In addition to “fundamentals,” emerging market economies experience more contagion and persistence.

It is important to note that most of the emerging market economies that have embraced inflation targeting have had a (recent) history of high (even hyper-) inflation. Among them, at least the Latin American countries are very open and suffer (more) from dollarization. Building credibility is very important for them because lack of credibility acts as a distortion and could cause reversal of very sensible policies.¹⁸ But because of weak financial markets (and institutions, generally), the central bank cannot ignore fluctuations in interest rates, exchange rates, supply-side variables, and (of course) output. It is very difficult to claim that it is a regime of inflation targeting only—Mervyn King would rather not be an “inflation nutter,” but at least he may have the choice that developing country policymakers often do not.

Thus is there a case for India adopting inflation targeting? Does one size fit all? In the Indian context one does not need to worry too much about low credibility of the central bank and dollarization (points three and four above). India’s fiscal institutions have shown themselves to be very weak in the recent past and that could compromise the credibility of the Reserve

15. Mishkin (2004), p. 3.

16. *Ibid.*, p. 5.

17. Broner and Rigobon (2004). Note that their data is annual (as is Chand and Singh’s) and goes back to 1965. This perhaps understates the volatility in recent times as the emerging market economies have opened up their capital accounts.

18. Calvo has drawn attention to this in a macroeconomic context for over twenty years.

Bank of India in the future. This could be compounded by the further opening up of the capital account. In that scenario capital flow reversals (the fifth point above) could become important, but right now it is not a source of headache. But if credibility of the RBI is not an issue today and if, even with an inflation-targeting regime, we would need to look at “other things” (other than inflation, that is), where is the need for such a regime? This is not to deny that the RBI should be given functional independence and its policies should be less opaque.¹⁹

Let me turn to Chand and Singh’s empirical work. It is motivated by Svensson, who sets up a model for expository reasons and shows what an inflation-targeting regime could achieve.²⁰ Chand and Singh accuse him of looking at only demand variables and neglecting the supply side. While that is literally true, it is not a criticism against inflation-targeting models in general. Fraga, Goldfajn, and Minella discuss both supply shocks and inflation of administratively priced goods—the message seems to be that the original supply shocks should be accommodated (one time only).²¹

Chand and Singh use annual data since 1972 to estimate the inflation process in India. Annual data—that is, what is available—is not very useful for the authorities interested in inflation. This is even more true of a developing economy—the structure has changed so much that to pretend that the data set represents the same “model” is far-fetched. Also the strict distinction between a demand-side and a supply-side variable becomes blurred as the collection of data becomes more infrequent.²²

Chand and Singh’s preferred model (D3) of (a backward-looking) Phillips’ curve has a term representing excess demand, and various terms denoting cost push effects, apart from the lagged endogenous variable. The supply-side variables are wage increases of public sector employees, inflation in world oil prices and the domestic market price of oil, world inflation, and changes in rainfall and foreign exchange reserves. Statistical fit notwithstanding, if this is all we can say about the inflationary process in India, then it is not very much.

Aggregate demand is captured by the lagged fiscal deficit and the nominal interest rate. Now, fiscal deficit is a very poor indicator of the fiscal stance of

19. Chand and Singh discuss monetary targeting and exchange rate targeting. Hence I do not repeat these points.

20. Svensson (1997).

21. Fraga, Goldfajn, and Minella (2004).

22. See their lagged fiscal deficit entering aggregate demand. Even in India, a road can be constructed in a year’s time—is the expenditure on the road demand-side or supply-side?

the government, and the determinants of nominal interest rates have undergone substantial liberalization. Thus from the viewpoint of conduct of monetary policy, these indicators do not add much. Chand and Singh also claim that changes in foreign exchange reserves can be viewed as a supply-side phenomenon! It might have been better to write out a parsimonious model and test the price implications of it, rather than the kitchen-sink approach in the paper.

General Discussion

T. N. Srinivasan expressed frustration that much of the discussion of macroeconomic policy lacked the framework that a strong theoretical model anchored in general equilibrium would provide. At the same time, he agreed that many of the more coherent models, such as real business cycle, appeared to have little to do with reality. But the lack of a clear underlying model made it difficult to evaluate the policy, he said. Others argued that the inflation-targeting framework incorporated many elements of the Keynesian model, something that was thought to be out of fashion. Some participants questioned whether India's nontraditional labor markets precluded a Phillips-curve type analysis.

Participants noted a very large decline in inflation since the 1980s in numerous countries in all parts of the globe. To what extent was that the result of a greater emphasis by policymakers on reducing inflation, or could it be traced to other factors, such as depressed commodity markets and, until recently, low energy prices? Countries that experienced significant declines in inflation relied on a wide range of different monetary policies.

Several participants were concerned about the focus on the interest rate as the primary tool for implementing the inflation-targeting framework. In India the two most important interest rates were the bank loan and deposit rates, neither of which was directly influenced by the Reserve Bank. India did not yet have large financial markets with market-determined rates. There were doubts that financial asset markets in Indian had sufficient depth to absorb large changes in interest rates without the risk of a meltdown.

An additional concern was the adequacy of the price index that would be used. The wholesale price index had the broadest commodity coverage, but it excluded a lot of services. It also lacked adjustments for technological innovations and quality improvements.

Others questioned how the policy would affect the ability to respond to other concerns, such as price bubbles in asset markets or large exchange