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Ashima Goyal

Indira Gandhi Institute of Development Research

2002

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MPRA Paper No. 29200, posted 5 March 2011 19:47 UTC

Reprint of chapter 11 in the India Development Report, 2002, Kirit S. Parikh and R. Radhakrishna (ed.), IGIDR and Oxford University Press, 2002.

Coordinating Monetary and Fiscal Policies: A Role for Rules?

Ashima Goyal

Professor*

Indira Gandhi Institute of Development Research

Gen. Vaidya Marg, Santosh Nagar,

Goregaon (E), Mumbai-400 065

ashima @ igidr.ac.in

Tel.: (022) 8400920 (EPABX), Fax: (022) 8402752

Abstract

The chapter argues for rules to coordinate monetary and fiscal policies. But the rules are rule like only in imposing forward-looking behaviour, while they allow the discretion to respond to shocks. They would serve to anchor expectations, and align private sector actions with desired outcomes. Many countries have used rules, but credible rules have to be suited to a country's circumstances, which include both structure and political economy. These aspects help to explain past policy choices and outcomes in India, such as the relatively low inflation, even though monetary policy was not autonomous. Prices were kept down partly through administrative measures and subsidy schemes. This led to distortions that lowered efficiency and growth. The constraints need to be stricter for fiscal compared to monetary policy, in order to restrain the competitive populism of elected governments. If fiscal-deficit zone targeting restrains government consumption expenditure while protecting essential expenditure on physical and human capital, it would become possible to lower Indian real interest rates closer to world levels. Recent advances in the theory of monetary policy show how the CB can influence the real interest rate in the short- to medium-run, taking account of expected inflation in setting nominal interest rates while smoothing the latter. Exchange rate policy could also be further fine-tuned to fulfil the objectives of stabilising prices, stimulating exports, and preventing a currency crisis. Since accountability, in a democratic polity, forces the CB to keep inflation low, a weak constraint on the CB, such as medium-term inflation zone targeting, is credible. This would allow productivity improvement to decrease inflation, under expanding potential output.

JEL codes: E52, E62

Key words: monetary fiscal policy coordination, rules, constrained discretion

Coordinating Monetary and Fiscal Policies: A Role for Rules?

Ashima Goyal

*The fire restrained in the tree fashions flowers,
Released from bonds, the shameless flame dies in barren ashes.*

----Rabindranath Tagore

INTRODUCTION

Fiscal policy is concerned with government's tax and expenditure, monetary policy with the management of money supply, interest and exchange rate. Both policies influence the national output and interest rate; therefore, they can be coordinated to achieve the better outcomes. This coordination has both short and long-run consequences, including on the financing of government expenditure. However, feasible coordination depends on political forces. This chapter explores how monetary and fiscal policy can complement each other in a developing country such as India.

Exploring this issue acquires new importance because there are lessons to be drawn from recent theoretical ideas and international experience. Countries, which grew rapidly in the 1990s, such as the US, China and Ireland managed to coordinate these policies well. Many countries have used rules to attain desirable combinations, but, in order to work, the chosen rules have to be suited to a country's circumstances. Such institutional change will allow better coordination. Reforms blocked by special interests become feasible with such changes.

India's history, development needs and the political economy influenced past policy coordination. The government did not earn as much as it could have from inflation as a tax on money balances, because of the political imperative of keeping inflation low in a democracy with large numbers below the poverty line. Although before reform the central bank (CB) was not autonomous and monetary policy accommodated fiscal policy, revenue from the creation of money was not maximized. Even so, money growth exceeded the inflation tax. Prices were kept down through administrative measures and subsidy schemes. This led to distortions that lowered efficiency and growth. Especially after the oil shocks, essential expenditure on infrastructure and social capital was compromised. The revenue deficit and government debt rose to unsustainable levels. The long term was sacrificed for short-term populism. It was possible to deceive the electorate because large shocks and poor systems made it difficult to be forward-looking.

How have conditions changed with reforms and opening out? The balance maintained between financial credibility and electoral politics was not sustainable after reforms, since the

Indian macro-variables had to be benchmarked to the world and efficiency had to be improved. Too large a fall in CB financing of the government deficit accompanied liberalization. The rapid accumulation of forex reserves caused a part of this problem, as the CB substituted foreign for domestic securities in its portfolio. Lower inflation and higher real interest rates in the 1990s only increased the burden of government debt. The higher real interest rates also lowered growth. Capital mobility and openness posed new challenges, which could be an opportunity, however, only if real interest rates are lowered and growth rates raised.

Populism, bankrupt Governments and lags in its effects have reduced the effectiveness of fiscal policy, while more openness and financial intermediation have raised sensitivity to interest rates and, therefore, the impact of monetary policy. But in developing countries with huge requirements of physical and social infrastructure, public investment continues to be crucial. Moreover, market segmentation and backward areas put limits on where monetary policy can reach compared to public expenditures. Elected governments in a democracy are more subject to populist pressures, while CBs accountable to a democratic policy cannot allow high inflation. If rules restrain government consumption expenditure while protecting essential capital expenditure, and the CB is bound to keep inflation rates within a band but only over the medium term -- it will have sufficient discretion to bring real interest rates closer to world levels while productivity improvements lower inflation.

We conclude that constraints on discretion can improve both, but the constraints need to be stricter for fiscal policy as compared to monetary policy. The stricter fiscal rule would restrain the competitive populism of elected governments and shift the electorate to a better understanding of the long-term consequences of current policy. A major strength of democracy is the public accountability of domestic institutions; a weakness is populism and neglect of the long-term. The proposed coordination would, therefore, use the strengths but moderate the weakness inherent in a democracy. An effective monetary-fiscal policy combination is possible that can stimulate growth, lower inflation and asset price volatility, safely use foreign inflows and allow India to escape the political economy pressures that have curtailed growth in the past.

The three major ways in which recent developments have changed macroeconomic analysis (Krugman 1998) influence the arguments developed in this paper. First, modern macroeconomics is explicitly dynamic. It builds in agents' strategic decisions, taking account of their own and others' future actions. Rational expectations, or the idea that agents use all relevant information in forming expectations, offer a useful tool to analyse such behaviour consistently. Second, most modern economies are open to trade and financial flows. This puts exchange rate regimes at the centre stage of analysis. Third, the deepening of financial markets has changed the

transmission mechanism and impact of monetary policy. Sensitivity to interest rates has increased.

Ideological battles on extreme postures have give way to focusing on substantive questions about real economies and their performance. Different schools are borrowing from each other's models. Economists who believed in perfect markets have begun to accept price rigidities, in order to explain the data, and Keynesian economists are building-in the implications of forward-looking behaviour. In their models, excess demand and cost-shocks determine inflation and neutrality of money holds only in the long run. Fluctuations in exchange rates and financial markets have made the point that money and financial arrangements do matter.

While most agents may be forward-looking and have rational expectations in asset markets, only a small share of consumers and producers are forward-looking. In developing countries, where modern markets do not cover all sections of the population, this proportion can be quite small but is increasing with reform. Similarly, only a fraction of wages and prices are linked to expected future inflation. The rest respond to past inflation, with a lag. Asset price volatility, therefore, tends to be higher to compensate for these rigidities. To take account of the forward-looking aspects, inter-temporal accounting and budget constraints are necessary in macroeconomic analysis, and explicit arbitrage has to link real and financial rates of return. Changes in expected growth or productivity increase, risk perception and anticipated policy changes would affect current asset prices and have income and wealth effects, while liquidity-constrained agents respond to the induced current-income changes. In an open economy, foreigner's expectations also affect foreign capital movements.

To attempt to discover an optimal context-relevant policy combination, we first outline the theoretical relation between the two in 'The Interaction between Monetary and Fiscal Policies' and then 'Political Economy' explores the political economy of the relationship, in the abstract and as it has developed over the years in India. 'International Experience' draws on international experience in policy coordination and the use of rules. 'Macro-policy and Institutional Change' explores the conceptual categories underlying the new thinking on rules and institutions impinging on macro-policy. The 'Openness and Interest Rate' section analyses the effects of openness, and the 'Conclusion' puts together the lessons for Indian policy.

THE INTERACTION BETWEEN MONETARY AND FISCAL POLICIES IN THEORY

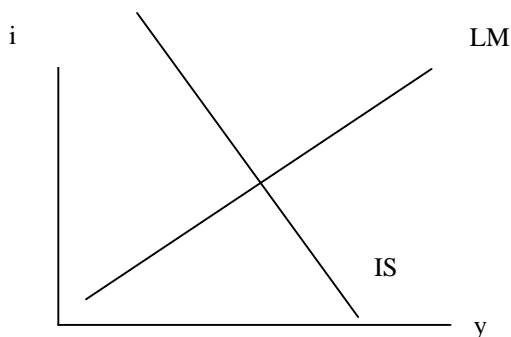
There are different aspects to the relation between fiscal and monetary policy. First, they interact to determine output and interest rate in the short-run. The IS (investment equals saving) and LM

(equating the demand and supply of money) curves show how the two together affect aggregate demand and determine output and interest rates (see Box 1). Monetary policy affects aggregate demand through the short-term real interest rate and fiscal policy acts directly on aggregate demand. Romer (2000) has recently advocated analysing the problem in the real interest-output space rather than the nominal interest-output space as is done in the conventional IS-LM diagram. Since CBs act to directly affect the real interest rate, and this is the variable that influences aggregate demand, the new IS and MP curves are simpler and more realistic. When CB policy is to keep the real interest rate constant-- independent of output-- the LM curve is replaced by a horizontal MP curve. In that case monetary policy is used to achieve the desired real interest rate, while fiscal policy shifts out the IS curve so that output equals potential output.

Box 1

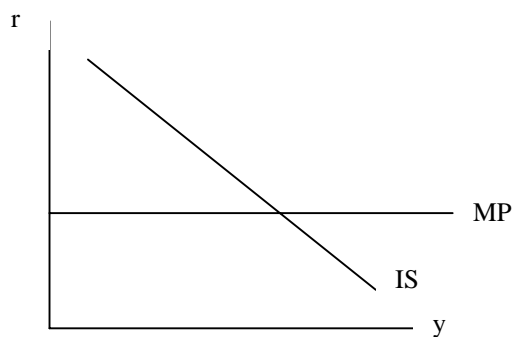
The Apparatus for Analyzing Monetary-Fiscal Policy in the Short Run

The IS curve shows the combination of nominal interest rate (i) and output (y) such that planned spending equals output, that is, investment equals savings. It is downward



sloping since a fall in i stimulates expenditure and therefore raises y . The LM curve shows combinations of i and y such that the demand for money equals its supply. It is upward sloping since money demand rises with output so the interest rate has to rise to clear the money market. The initial impact of fiscal policy is on the goods market. For example, a rise in government expenditure shifts the IS to the right,

raising i and y . Monetary policy acts first on the asset market. An expansionary monetary policy shifts the LM to the right, y rises and i falls. The intersection of the two curves



gives the level of y and i , which simultaneously clear the goods and money market, for a given price level. Romer (2000) advocates replacing the LM curve by an MP (monetary policy) curve. In the simplest version of his model, the CB keeps the real interest rate (r), fixed independent of y . The MP curve is then horizontal. If the CB wants to raise r with y it would be upward-sloping. This approach reflects

CB practice, makes it easier to analyze inflation rather than having to assume fixed prices as in the IS-LM model, and reduces simultaneity and shifts of the curves. It is beginning to be used in modern textbooks.

Second, there are other aspects of coordination. In an open economy, interest rates have an immediate effect on demand, but they have uneven effects on different sectors. If, for example, exchange rates overreact, they put pressure on producers of traded goods. Fiscal policy can target these specific sectors. Lags in fiscal response could be reduced if some fiscal actions are delegated to a body outside the government. For example, a 'regulator' responsible for some such actions has been established in the UK since the 1960s (Wren-Lewis 2000).

The third aspect relates to the financing of government expenditure over time. A government can either print money or borrow to fund an excess of current expenditure over revenue. But either choice has implications for inflation, interest rates and government finances over time.¹ The government can finance an excess of current expenditure over revenue either by borrowing money (issuing bonds) or printing money (seignorage). The CB can change the mix between the two through open market operations (OMOs). That is, if the CB buys (sells) government bonds in exchange for reserve money it issues, it increases (decreases) the stock of reserve money. If the CB prints money and buys government bonds held by the public it monetizes the debt and also increases the stock of money.

In a stationary equilibrium where major ratios are not changing the rate of inflation equals the rate of growth of money. Then the gross fiscal deficit (GFD) which is expenditure plus interest payments minus tax equals seignorage (reserve money balances multiplied by their rate of growth), which in turn equals the inflation tax (money balances multiplied by the rate of inflation). See Box 2 for definitions. Money balances are held by households and satisfy their demand for money. The rate of inflation is the cost of holding money, therefore money balances held fall with inflation.

From this model a number of insights follow. We list the few that later will help us to understand the Indian situation.

1. Zero inflation requires that the value of taxes in excess of expenditure over future successive time periods, discounted to the present, must equal current debt. Although the government need not do so immediately, over time it has to raise taxes to repay borrowings.
2. A given gross of interest deficit can be financed by a high or low rate of inflation, since seignorage revenue can be the same with high inflation and low money balances or vice versa. Under high inflation the cost of holding money is higher, so consumers hold less

¹ The natural dynamic benchmark model (see, for example, Ljungqvist and Sargent, 2000) used to examine this issue is one based on an inter-temporal budget constraint or a sequence of budget constraints over time, for the government. Households maximize lifetime utility from consumption and money balances that lower transaction costs.

money. However, since money facilitates transactions, consumers have higher welfare when inflation is low and money balances held are higher.

Box 2

Fiscal-Monetary Variables

Seignorage: Real revenue that accrues to a Government from newly issued reserve money.

$$\text{Seignorage ratio: } \left(g_M \frac{M}{P} \right) / GDP$$

where

g_M : Rate of growth of reserve money;

$\frac{M}{P}$: Real reserve money balances; P; implicit GDP deflator;

GDP: Real Gross Domestic Product at market prices.

Inflation tax: Total capital loss made by holders of real money balances due to inflation.

$$\text{Inflation tax ratio: } \left(\pi \frac{M}{P} \right) / GDP$$

where

π : inflation rate calculated from P.

Gross Fiscal Deficit: Total expenditure minus total receipts (excluding borrowings) of the Government.

$$\text{or } GFD = G - T + iB$$

where

G: Total expenditure, T: Total revenue, iB : Interest payments on debt, B.

Adjusted Gross Fiscal Deficit: Subtracts change in G debt due to inflation from GFD.

$$\begin{aligned} \text{Or } GFD(a) &= GFD - \pi B \\ &= G - T + (i - \pi) B \\ &= G - T + rB \end{aligned}$$

where

r : realized real rate of interest.

- 3 In standard monetarist theories inflation increases with money supply. In this model, however, a decrease in money financing and an increase in bond financing in the initial period unambiguously increases the inflation rate. This is because the steady-state GFD rises as interest payments accumulate. Sargent and Wallace (1981) derived this 'unpleasant monetarist arithmetic' which gives a fiscal theory of inflation. This result, however, holds only for the case where the government has to borrow to cover the fall in money supply, with fixed expenditures and given initial values of variables. If expenditures can decrease along with money supply, or taxes can be raised to compensate for the fall in money supply, inflation does not rise. If, other things constant, the government commits to the level of seignorage or inflation, the only variable left free to adjust in the model is the initial price level. Then this becomes a fiscal theory of the price level rather than of inflation. Monetarist theories argue that there is nothing to fix prices if money supply is endogenous, but here the price level is determinate even under an endogenous money supply with pegged interest rates.

The analysis of financing leads to the fourth major aspect of the relationship between monetary and fiscal policy, and this is politics. Political pressures may force particular types of fiscal-monetary co-ordination. It is the government that has to face elections in a democracy. Therefore, fiscal policy normally functions as the leader to which monetary policy has to adjust. The government may force the CB to expand money supply to help finance a deficit, thus raising the inflation rate. But high inflation hurts the poor who have more votes. It redistributes income from the poor to the rich. In a populous developing democracy redistribution claims play a large role. Thus, we turn to examining the role of politics on the macro policies chosen in India.

POLITICAL ECONOMY: THE EFFECT OF DEMOCRACY AND POVERTY

Democracies face a tension between financial stability, and the pressures of re-election. CBs are responsible for the first, and governing politicians are subject to electoral pressures. In the literature, the pressures the latter put on CBs have been explored as the 'inflation bias' or dynamically inconsistent behaviour² of the CB. The CBs, influenced by their government, may try to raise output above capacity. Once workers have made their work decisions based on

² Surveys are available in all recent macroeconomic textbooks. *Journal of Economic Surveys* (2000), vol. 14, no.5, is devoted to this issue. See also McCallum (1997). Other literature on which this section draws upon is Alesina and Perotti (1995), Blinder (1997), Bernanke and Mishkin (1997), Goyal (1999), Jensen (1997), Lohmann (1992), Piga (2000), Rodrik (1999), Varshney (2000), and Whitehead (2000).

expected wages the CB has an incentive to create surprise inflation and trick them. This lowers real wages and unemployment since firms are then willing to employ larger numbers. But over time such behaviour becomes anticipated, higher nominal wages adjustments are built in, so there is only excess inflation, with no decrease in unemployment.

In a poor populous democracy, however, without indexation of wages and prices in the large informal sector, inflation hurts the poor who have the most votes. Therefore, democratic accountability also acts to force the CB to keep inflation low. CBs are accountable if they are partially independent. Too much independence can reduce democratic accountability. One way to prevent this is to allow instrument but not goal independence. Thus the government can set the goal (for society) and the CB be left free to implement it using its special professional competence and knowledge. Ultimately institutions cannot be divorced from politics. The CB would be forced to share society's preferences, especially in bad times.³ Empirical evidence on monetary policy also suggests that the importance of CB independence is overstated. Many countries have low inflation without fully independent CBs. Moreover, Central Bankers themselves and many economists who have worked closely with them say that CBs do not want to generate trick inflation. They are worried about their reputation, and are naturally conservative. If excess inflation occurs it is because of an inability to distinguish between shocks or because of imperfect knowledge of the economy.

More than the CB it is the fiscal authority that is tempted into excess populist expenditures. In a democracy with a large number of poor a larger weight is given to the present, and the short-term view prevails⁴. User charges and administered prices are not raised, especially after supply shocks to oil prices, and subsidies rise. The revenue deficit and public debt can balloon, distorting resource allocation and reducing public investment in infrastructure and human capital. Thus in a democracy like India, we would expect to find a CB that accommodates

³ Even strong Central bankers recognise their vulnerability. Thus Paul Volcker, then chairman of the Federal Reserve said, 'the Congress created us and the Congress can uncreate us' (quoted in Furman and Stiglitz 1999). He was echoing a sentiment expressed by Burns in 1976, 'In our democratic system the independence of a governmental agency can never be absolute' (quoted in Whitehead 2000). In 2001 Thailand's respected CB governor Chatu Mongkolkeha was sacked following a public dispute over interest rates. Mongkolkeha had repeatedly refused to raise Thailand's low interest rates, annoying Thai Prime Minister Thaksin Shinawatra. The new CB governor, Pridiyathorn Devakula, outlined another set of monetary measures, including a proposed increase in interest rates (news reports).

⁴ The fiscal illusion view of the 'public choice' school expects public debt to rise in a democracy. Institutional features such as elections based on simple majorities rather than on proportional voting, one major party, absence of coalition governments, a powerful finance and prime minister, and vote on the total budget before voting on its allocation can guard a democracy from such fiscal decay. We argue that these

fiscal needs, but uses administrative measures are used to keep inflation low. More autonomy to the CB can, without changes in the rules of the game and fiscal reform, lead to higher real interest rates that increase the burden of public debt and lower growth. Since a democratically accountable Central Banker in a developing democracy would tend to keep inflation low, stricter rules are required to restrain a populist fiscal authority and allow the CB to stimulate growth.

Democratic voice allows local tacit institutions and interests to develop, as reflected in a wide variety of robust and efficient institutions. Some empirical cross-country exercises suggest that democracy leads to higher quality of growth, survives shocks better, and there is less volatility and inequality. Others find that democracies grow at middling rates; there is neither boom nor bust. Therefore, there is scope for conscious design of institutions that support development better. The monetary and fiscal policy choices made in India show the influence of democracy and poverty.

Events in India

The relatively closed, import substitution and public investment driven model of development followed, allowed macro-policy to be geared towards domestic requirements. The monetary authorities were not independent of the fiscal; there was automatic monetisation of deficits. But India is also a democracy. The mandate of the government was growth with rapid reduction of poverty. Redistribution, or 'who gets what', is a part of the political process in a democracy. Different groups successfully lobbied for subsidies. This should have put pressure on government budgets and led to increasing reliance on seignorage. Inflation is an easy-to-collect tax and it increases savings by redistributing in favour of higher saving classes. But where more than half the population were below the poverty line and an even larger percentage had no social security or other protection against inflation, governments concerned with re-election could not afford high inflation. Thus, even though there was some positive seignorage revenue and automatic monetisation of the deficit, commercial banks' ability to multiply the reserve base and create broad money was partially countered through draconian compulsory reserve and statutory liquidity requirements. This, together with administered prices, restrained inflation to politically-acceptable levels. Although the Reserve Bank was not independent, its democratic accountability forced it to control inflation.

After the cost shocks of the 1970s-- since user charges were not raised for many public services-- revenue deficits rose. There was large public borrowing for consumption. The

features may not be sufficient to prevent public debt accumulation after major supply shocks such as the oil shocks.

Government's ability to fund much-needed infrastructure was seriously compromised. Thus, political business cycles in India largely took the form, not of increased money creation, but of a cut in long-term development expenditures and interventions that distorted allocative efficiency. The future was sacrificed to satisfy populism in the present⁵ (Goyal 1999).

With the reform of the early 1990s the delicate balance achieved between democratic accountability and credibility of the monetary regime was disturbed. Credibility acquires a larger weight in a more open economy. India's inflation rate, although low by developing country standards, was higher than the world rate. It had to be brought in line to reassure mobile global capital. Moreover, the fiscal-monetary combination followed in the past was not sustainable, as public debt had risen. Thus more autonomy was given to the Reserve Bank, the repressed financial regime was dismantled, interest rates became more market determined and the government began to borrow at market rates. The informal nominal money supply targeting, which the Reserve Bank had been following, proved inadequate under these changes; interest rates were volatile in the 1990s, and the Reserve Bank moved towards using the interest rate as an instrument, basing its actions on a number of indicators of monetary conditions (Jalan 2001). The other major change in the 1990s was the higher level of foreign inflows-- these now accounted for a growing share of reserve money. Reserves of foreign currency accumulated, and were sterilized by a contraction of Reserve Bank credit to the government, and OMOs. The latter became possible by the mid-1990s because of the financial liberalisation of the previous decade; the debt market was deepening and government debt could be traded at market-determined rates. But as real interest rates rose and growth rates fluctuated, government debt burden increased. The nominal exchange rate was now managed rather than fixed. Nominal depreciation was allowed in order to prevent real appreciation, but the exchange rate was not allowed to appreciate in nominal terms. There was occasional excess volatility, but a crisis was avoided. Even contagion from the East Asian crisis was averted. However, growth rates were lower than potential. And improvements in policy, rules and institutions are required to enhance growth.

Outcomes of choices

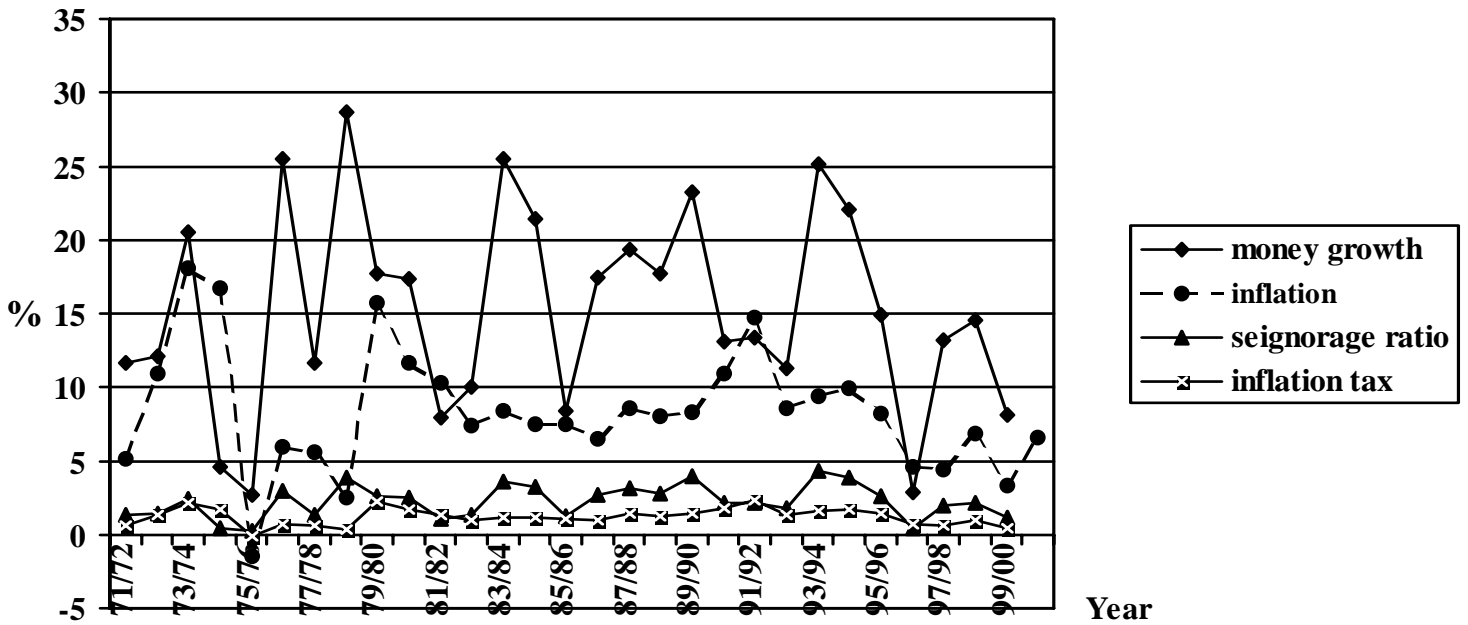
Next we turn to the data. Figure 1 shows the rate of growth of money and inflation, the rate of seignorage and inflation tax from 1970 onwards. Box 2 explains how these are calculated and Table 1 gives the annual averages for the 1980s and 1990s. The main facts are discussed below, and inferences drawn.

⁵ This argument is related to the fiscal illusion view of the 'public choice' school, but unlike the latter it can explain why fiscal decay would intensify after oil shocks. Indian democracy had a number of institutional

Decades	Reserve money growth rate	Inflation (implicit GDP deflator)	Seignorage/GDP %	Inflation tax/GDP %	Real interest rate on G debt	GFD/GDP (%)	GFD (adjusted)/GDP %
1980-1 to 1989-90	16.84	8.4	2.54	1.25	1.44	7.24	2.96
1990-1 to 1999/2000	13.86	8.09	2.25	1.31	4.07	6.15	1.56

Notes: * Implicit GDP deflator from EPWRF (1998), but from 1996-7 calculated from WPI, average of weeks, 1993-4 base.
Source: RBI (2000), EPWRF (1998), Economic Survey (GOI 2001).

Figure 1: Tax from Money



features that succeeded in guarding it from fiscal decay before the shocks.

1. The average seignorage ratio has remained at between 2-3 per cent of GDP, low by developing country standards.

Democracy and sensitivity to inflation ensured that India's ratio is much lower than past ratios in many developing countries. Fischer's (1982) calculation of average seignorage for India in the 1960s and early 1970s was only 1 per cent, compared to 2.3 per cent for other developing countries. In developed countries this ratio is less than 1 per cent. Inflation rates and, therefore, seignorage generally rose after the oil shocks of the 1970s. Peak hyper-inflationary rates of seignorage in Latin American countries have exceeded the rates that would have maximised inflation tax.

2. India's average inflation tax is about half the average seignorage ratio. The inflation rate is also always below the rate of money growth. The volatility of money growth and seignorage exceeds that of inflation and inflation tax.

This points to administered prices and low user charges that have systematically kept the inflation rate below that of money growth. In part, of course, financial deepening and development increases the demand for money balances, allowing them to be absorbed without inflation. The picture of volatility (Figure 1) suggests that reserve money was difficult to control and there was considerable inflation inertia.

3. Policy was able to bring down inflation rates after peaks associated with oil shocks, but seignorage rose in every decade, before falling in the 1990s.

Indian macro-policy was able to lower inflation rates, when many developing country governments could not, perhaps because governments in a poor democracy are forced to control inflation. Average seignorage went up steadily but with considerable annual fluctuations, from 1 per cent in the 1960s, 1.85 per cent in the 1970s, and 2.54 per cent in the 1980s before falling in the 1990s. Massive monetary expansion and inflation were avoided, but administrative controls played a major role in smoothing inflation.

4. Seignorage has been less than the maximum possible.

The curve relating the rate of seignorage to the rate of money growth is called the Laffer curve. It is bell-shaped. Seignorage starts to fall on the downward slope since money balances held fall at high rates of inflation. The rate of money growth, which maximises tax revenue, lies at the peak. Maximum seignorage is inversely related to the inflation elasticity of the demand for money. The scatter points of Indian data all lie on the upward slope of the potential Indian Laffer curve (Figure 2). The inflation tax has been lower than seignorage, but seignorage itself has fallen far short of the maximum revenues that could have been raised by printing money.

5. The average contribution of printing money to government revenues has been 6 per cent of total government revenues including reserve money.

The distortions in relative prices required to keep inflation tax lower than seignorage had a large cost in terms of lower efficiency and slower capital growth. There has also been a large loss of potential government revenue, as user charges of many public goods were kept below cost, although this was partly compensated by higher seignorage. Given India's low tax/GDP ratio and tax base, the 6 per cent contribution of seignorage to government revenues is quite substantial.

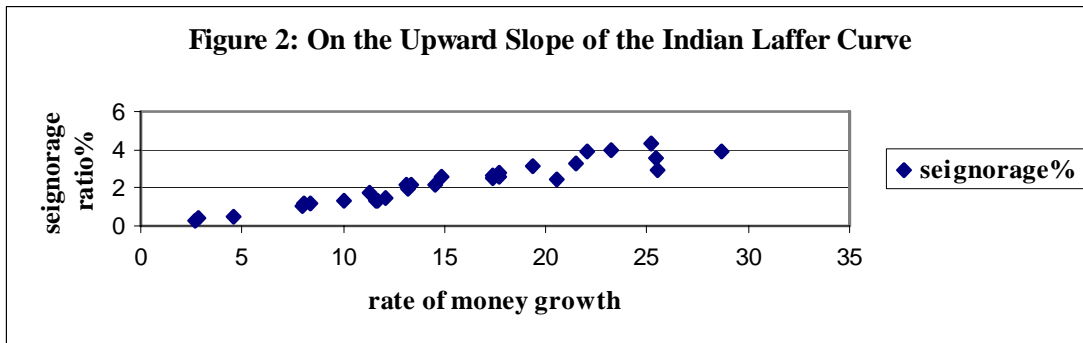
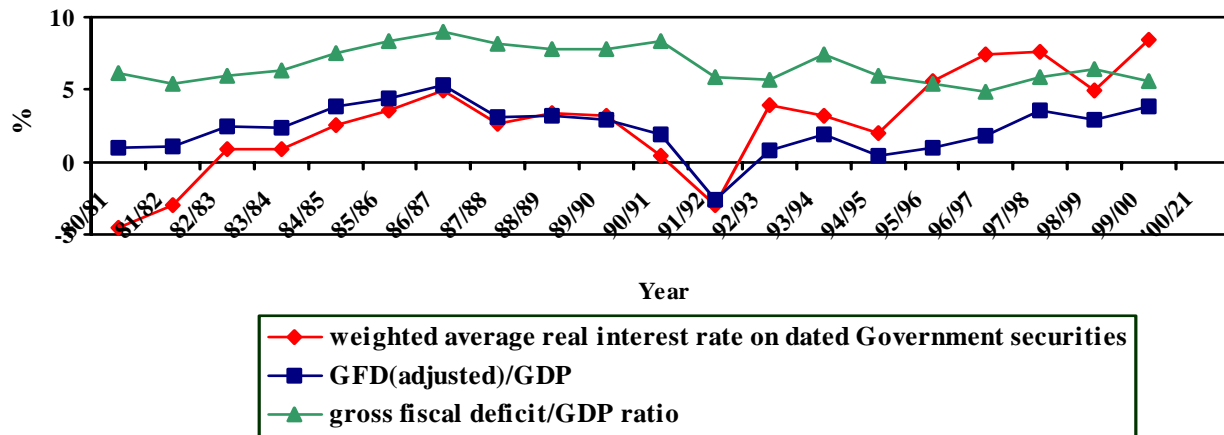
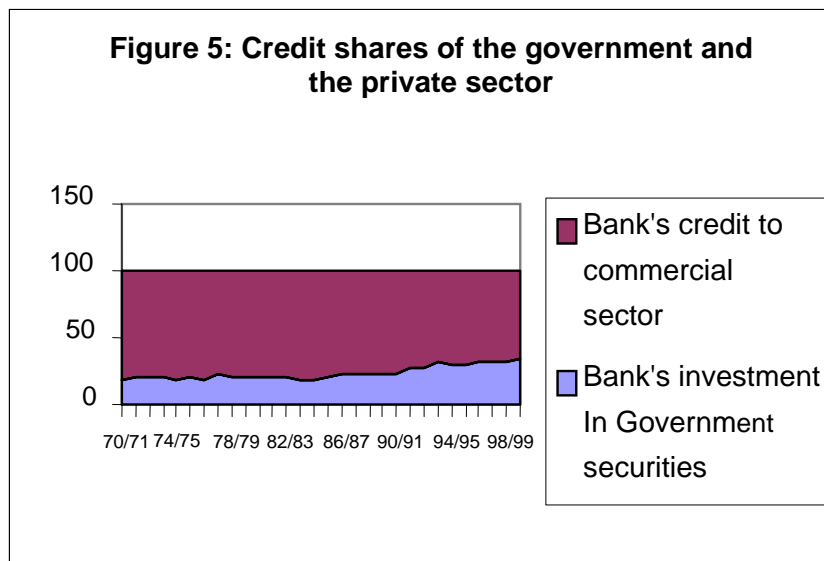
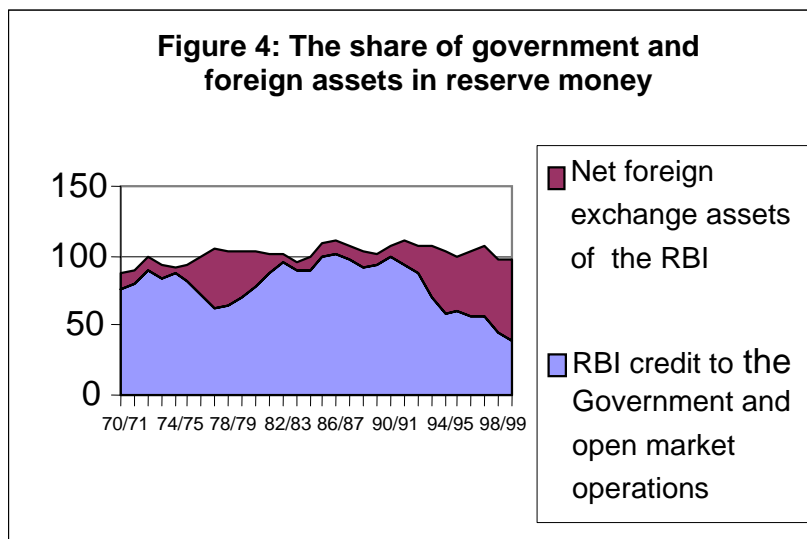


Figure 3: Adjusting the fiscal deficit for inflation



6. The inflation-adjusted fiscal deficit is substantially lower than the ordinary fiscal deficit, but the gap has been narrowing in the 1990s with a fall in inflation rates. The average weighted real interest rate on government debt also rose in the same decade.

Since the government is a net debtor, the real value of its repayments falls with inflation. Therefore, the nominal GFD does not correctly measure the change in real debt, that is, of what the government owes in terms of real goods. The inflation-adjusted fiscal deficit gives a much more true picture of the fiscal position. Figure 3, which graphs both the ordinary and the inflation-adjusted GFD, shows how much lower the latter is. To that extent the real claims on the government are lower and the deficit is more sustainable. The gap between the two, however, has been narrowing in the 1990s, as nominal interest rates on government borrowings have risen and the rates of inflation have fallen. Figure 3 and Table 1 also show the weighted real interest rate on government securities; this has clearly risen in the 1990s, and partly explains why interest payments account for about half of revenue expenditure. Sustainability of public debt requires the real interest rate to be less than the growth rate. Therefore, both high real interest rates and low growth rates increase the debt burden. Lowering the real interest rates would stimulate demand and also improve the fiscal deficit.



7. In the 1990s the share of reserve money growth due to accumulation of forex reserves has gone up substantially (Figure 4) and that due to RBI credit to the government has gone down, while the share of the commercial bank credit to the government has gone up (Figure 5).

Moving towards market-determined interest rates for government securities has coincided with a period of large foreign inflows. Open market operations were also activated since the mid-1990s. Table 2 shows the effect on some key averages over the last two decades. Sterilised forex asset accumulation meant that the government had to turn to commercial banks for a larger part of its borrowing requirements, thus putting pressure on the interest rate, and widening the revenue deficit. Seignorage does not change if foreign reserves account for a larger share of reserve money, but funding of the government deficit does change. Foreign reserves exceeded US\$40 billion in 2001.

Table 2 : Monetary Consequences of Opening Out (annual average values)					
Decades	Ratio of RBI Credit + Open Market Operations to Reserve Money (RM) %	Ratio of Net Foreign Assets of the RBI to RM %	Share of G securities in other bank credit	Share of commercial credit in other bank credit	Change in forex reserves as a ratio of current account of BOP (+, increase)
1980-1 to 1989-90	92.29	10.67	21.04	78.96	-0.069
1990-1 to 1999-2000	66.30 [@]	37.88	29.53	70.47	1.734*
Notes: * For 1990-1 to 1998-9; [@] OMOs were negligible earlier, but over 1995-2000 net sales of G. securities and treasury bills were an average annual value of 6.06% of Reserve Money					
Source: Handbook of Statistics on Indian Economy, RBI (2000).					

Conclusion

The data tell us the government did not earn as much as it could have from inflation as a tax on money balances, because of the political imperative of keeping inflation low in a poor democracy. Although before reform the CB was not autonomous and monetary policy accommodated fiscal policy, seignorage revenue was not maximized. Even so seignorage and money growth exceeded the inflation tax. Prices were kept down through administrative measures and subsidy schemes.

This led to distortions that lowered efficiency and growth. The revenue deficit and government debt rose to unsustainable levels. However, liberalization was accompanied by too large a fall in monetisation of the government deficit, raising the possibility of 'unpleasant monetarist arithmetic'.⁶ The rapid accumulation of forex reserves caused part of the problem, as the Reserve Bank substituted foreign for domestic securities in its portfolio. These inflows can be an opportunity, however, if real interest rates are lowered and growth rates raised. Lower inflation and higher real interest rates of the 1990s have been increasing the burden of government debt. Higher real interest rates also lower growth.

The data support the hypotheses that the pressures of democracy, poverty and openness have determined the combination of monetary and fiscal policy followed in India. These pressures have also prevented the policies from working together fully to complement each other. International experience shows that institutional change, which will allow better coordination, is feasible.

INTERNATIONAL EXPERIENCE

In the 1990s, America achieved just what India has been trying to do without success, over the past decade. Their budget deficit, which had mushroomed in the eighties, was converted into a surplus while the economy prospered. How did they do it? Four factors made this achievement possible (Blanchard 2000; Goyal 2000b). First, an expansionary monetary policy complemented a restrained fiscal policy. Second, rules that bound government expenditure were adopted. Third, a cut in defence expenditure provided some leeway. Fourth, there was good luck in the shape of a booming economy. The good luck, of course, helped by good policy.

Steep tax cuts by supply-siders in the Reagan era were expected to stimulate output. But the expected increase did not occur, and since there was no equivalent cut in government expenditure, the deficit grew rapidly. It fluctuated around a peak ratio to GDP of 6.1 per cent in 1983. Volcker, the Chairman of the Federal Reserve, had moved to a high interest regime to lower inflation, by the late 1970s. Neither the rise in interest rates, nor the cut in taxes, had the desired effect of reducing government spending. The high interest rates led to capital inflows, strengthened the dollar, and increased net imports, so that a trade deficit was added to the budget deficit. It incidentally also provoked the Latin American crises as capital flowed out of those countries to the US. When Clinton came to power in 1992 there was consensus that the deficit

⁶ Rao (2000) argues that an optimal degree of monetisation would avoid Sargent's unpleasant monetarist arithmetic. The RBI's successful managing of the public debt in the last years of the 1990s counters critics who argue that India's public debt is too high for maneuverability.

had to be reduced, but the economy was just emerging from a recession. The new Chairman of the Federal Reserve, Greenspan, implicitly agreed to support Clinton's measures to reduce the deficit, with an expansionary monetary policy. The latter would ensure that the economy was not plunged into a recession with the expenditure cuts. Average interest rates on one-year government bonds fell from 7.3 per cent in 1991 to 3.3 per cent in 1994. The economy entered a sustained expansion, which lasted through the 1990s. Inflation was also low. The deficit ratio fell steadily from 4.7 in 1992 and had turned into a surplus by 1998. Thus, this combination of monetary and fiscal policy worked, while the opposite, tried in the 1980s, failed.

Second, legislative rules helped reduce the deficit. The Gramm-Rudman-Hollings Bill passed in 1985, set yearly ceilings for the deficit with a target for a zero deficit by 1991. It had some effect, but creative accounting --because of design flaws (including overstrictness) -- prevented the realization of the target. The Bill also lost credibility because a very large deficit was required to fund the 1990 crisis in savings and loan institutions. Therefore, it was replaced by the Budget Enforcement Act of 1990, which corrected the design flaws shown up by experience. First, rather than restrict the deficit itself, constraints were placed only on spending. Caps that enforced small reductions in discretionary spending were set, but escape clauses were provided for emergencies. A 'pay-as-you-go' rule meant that new transfer payments to individuals could be made only if these transfers were demonstrated to have assured funding so that they did not increase deficits in the future. In a recession, as revenues fell, the deficit could increase, since restraints only covered spending. This macro-stabilization provided another escape clause. Such flexibility lowered pressure to break rules, gave the Act more credibility, and contributed to its success.

There is general agreement that US monetary policy had been quite successful over the past fifteen years. Clarida et.al. (1999) point out that the Federal Reserve was highly accommodative in pre-Volcker years: on average, it let real short-term interest rates decline as anticipated inflation rose. Volcker and Greenspan took a proactive stance; systematically raised real as well as nominal short-term interest rates in response to higher expected inflation. The US experience suggests that monetary policy should use interest rates rather than monetary aggregates as instruments. Although clear articulation of the CB's goals is desirable, constraints that dictate how the goals should be achieved are not desirable.

McKibben and Vines (2000) argue that phased-in and pre-announced Fiscal contraction can have positive effects since forward-looking adjustments dominate negative current Keynesian effects. The US experience of the 1990s is one example of this. Blanchard (1997, 2000) gives

another: the contrast between the two Irish deficit reductions in the 1980s. The first, which focused on tax increase did not lead to a credible belief in lower future budget deficits; growth fell and deficits did not improve. The second, which was based on cuts in spending and tax reform, had a favourable effect on expectations and output.⁷

Another country that successfully coordinated monetary and fiscal policy for high growth was China. Although there were stop-go cycles, tax reform allowed monetary policy to accommodate huge government expenditure on infrastructure.

A new feature of the 1990s is the adoption of fiscal and monetary rules. Other countries following expenditure rules are the Netherlands and Sweden. The Euro area (under the 1992 Maastricht Treaty), Canada and Switzerland follow deficit and debt rules, while the UK, Australia and New Zealand impose only transparency requirements on governments. More than a dozen developed countries follow Consumer Price Index (CPI) based inflation targeting, while among developing countries, Brazil, Chile, the Czech Republic, Israel, Poland and South Africa have adopted it (IMF 2001). The 1990s have been a period of falling inflation and fiscal deficits for most countries, including those who did not follow rules. The real test of these rules will come when times turn adverse.

In the UK, Australia and France the Chancellor or Minister of Finance makes strategic monetary policy decisions; the CB acts as the executive to carry out these decisions. Although the CB is independent of the executive in the US and West Germany, there are political pressures (Goodhart 1989) even though a number of checks and balances have been designed to contain them. In the US these include provisions covering the tenure of the chairman of the Federal Reserve and there is a requirement for the Chairman to report to Congress every six months. The minutes of the board's monthly meetings have to be published after a six-week time lag. These procedures aim to ensure the principle of political accountability while protecting the monetary authorities from the electoral politicians (Whitehead 2000). Transparency, along with checks and balances, can achieve these aims even without rules. It is also essential to enforce rules. Details vary from country to country, but similar principles apply.

MACRO POLICY AND INSTITUTIONAL CHANGE.

Ideal macro policy procedures, for a developing country, should be robust to imperfect information about the economy, and should be able to withstand political pressures that favor short-term populism at the expense of long-term growth. We explore some such procedures first

⁷ Blinder (1997) warns that these observations may be too few to conclude that contractionary fiscal policy can have expansionary effects.

for fiscal then for monetary policy, drawing on considerable recent international experience and work on macro-policy. Readers who want to avoid conceptual details can go straight to the final policy conclusions in the last section.

Fiscal policy

In a democracy it is the government which moves first and, therefore, determines what monetary policy is feasible. Populist pressures fall more directly on an elected government. There is a strong temptation to give handouts in the short run, as well as huge requirements for productive government expenditures on infrastructure and the development of human capital. Constraints on fiscal policy that prevent the first, assure the latter, and allow complementary monetary policy, are required.

Result 1 (f): A fiscal responsibility act (FRA) can prevent the occurrence of a revenue deficit.

Such an act would restrain unproductive populism, by curbing the tendency to increase government consumption and transfers for consumption on the basis of borrowed funds.

Result 2 (f): If there already exists a large revenue deficit, reductions should be phased in gradually, and backloaded.

A credible programme for reducing fiscal spending has even stimulated output, in some stabilization episodes, by inducing favorable private sector expectations (see Section 'International Experience'). As conditions improve, tougher steps can be taken. Therefore, backloading-- or imposing higher cuts in the future-- allows maximum gain for minimum current pain. Hard-to-reverse structural reforms that remove fundamental causes of deficits are preferred to excessively stringent macroeconomic policies that can cause a political backlash and, therefore, cannot be sustained.

Result 3 (f): Automatic non-discretionary stabilizers should be built in, with escape clauses for unforeseen large shocks.

If the FRA takes the form of phased caps on spending rather than on the deficit, the deficit could increase in case of economic slowdown when revenues fall, thus allowing automatic macro-stabilization, and increasing the political feasibility of the scheme. The deficit should be allowed to vary over the cycle, that is, it should be cyclically adjusted. Such stabilizers will reduce populist pressures and delays and both clauses will improve credibility. They will also improve transparency and communication, since the finance ministry will have to clearly explain and justify its actions and inactions.

Result 4 (f): Capital expenditures that raise future revenue by increasing potential output, should be protected from cuts and kept at maximum feasible levels, together with incentive based reforms that improve the efficiency of such expenditures.

Such a rule would allow essential development expenditures to be met, improve their design and outcomes, and favorably affect private sector expectations, since gaps in physical and social infrastructure are recognized as a severe constraint on development.

Result 5 (f): An acceptable zone should be set for the fiscal deficit, it should be brought to the border of this zone, and further reductions be allowed to occur naturally with the fall in the revenue deficit and higher growth.

This fiscal deficit zone targeting is analogous to inflation zone targeting, which is analyzed in greater detail. It permits the maximum stimulus to development, consistent with restraining government consumption, debt, and unproductive expenditures. Such an Indian Fiscal Responsibility Act (FRA) is urgently required. It would allow optimal coordination of fiscal and monetary policies, suited to Indian conditions. The link between fiscal and monetary policy over time as already discussed, needs to be modified slightly for India. The Government should commit not to a level of seignorage, but to a level of revenue expenditure. A delicate balance between financial credibility and democratic accountability could then be maintained in a way that increases choices and opportunities for all participants.⁸ As interest rates fall and growth rises the government debt/GDP ratio would fall. But the FRA currently proposed does not satisfy any of these principles. It imposes reductions on both the revenue and fiscal deficit, and on retiring government debt, without any backloading, automatic stabilization or features to improve incentives. If the targets are not met, a pro-rata cut on all expenditures is to be imposed without protecting capital expenditure. The Act has not yet been legislated, but is not very credible as it is, and has, therefore, not enthused the markets. As growth slows and there are clear signs of excess capacity in industry, fiscal stabilization measures may be warranted.

Worldwide monetary policy has been gaining importance compared to fiscal policy, as financial markets deepen and expectations play a greater role. How can monetary policy become more effective in India?

Monetary Policy

⁸ See Whitehead (2000). If a robust system suited to country features is designed it would avoid the fragility associated with reform based purely on 'hope and imitation, rather than experience (p. 10)'. Both capital and labour would gain. Capital's bargaining power rises in an open economy, while a closed economy can follow Keynesian policies favouring labour.

Clarida et.al (1999) in a comprehensive survey of recent developments in the theory and practice of monetary policy lay out a set of the major new results available.⁹ It is useful to adapt the ones which are relevant in the Indian context. The results are based on simple IS (investment equals savings) curve and Phillips curve (PC), derived from rigorous optimisation by agents with foresight. These foundations make the model robust. Since they are forward-looking the IS and PC curves differ from standard formulations.

The IS curve relates the output gap or excess demand inversely to the real interest rate, positively to expected future demand and a demand shock. The PC curve relates inflation positively to the output gap, to future expected inflation and a cost-push or supply shock. The output gap is defined as the gap between actual and potential output. The instrument that the CB uses is the interest rate. The PC relates inflation to the output gap, and cost-push, rather than unemployment. This makes it relevant to Indian conditions because even though it is difficult to measure unemployment, the output gap can be defined for India. The idea of potential output and expected future changes in it are useful for an economy undertaking structural reform. Second, cost-push factors play a dominant role in inflation.

Such a PC is derived assuming a certain probability that administered and other prices will remain fixed in any period. When a price is varied, it is set as function of the expected future marginal cost. A proportionate relationship is assumed between the output gap and marginal cost. A cost shock, then, is anything that disturbs this relationship. Such deviations can occur due to wage contracts or mark-up shocks. In this basic workhorse, the authors systematically examine the effect of different CB objective functions and monetary policy arrangements. If the CB wants to reduce the output gap, inflation and its variability, then some relatively robust results are the following:

Result 1 (m): A short-run trade-off between inflation and output variability arises only if there is positive cost-push inflation.

When cost-push is zero only current and future demand cause inflation. The CB can then vary interest rates to set excess demand to zero for all time and lower inflation with no cost in terms of output, which remains at its potential. A fall in output is required to lower inflation only if cost-push is positive.

⁹ Papers representing the variety of work done in this area can be found in Mankiw (1994), Taylor (1999), and volume 16(4) of the *Oxford Review of Economic Policy* with a summary by Allsop and Vines (2000). Other papers on which this section is based are Bernanke and Mishkin (1997), Goodhart (1989), Hendry and Mizon (2000), Mishkin, (1999), Svensson (2000), and Taylor (2000).

Result 2 (m): As long as there is cost-push inflation and deviations of output from potential may harm welfare, optimal policy would aim to achieve an inflation target only over the medium-term.

Under a positive cost shock, forcing an immediate reduction in inflation would have a cost in terms of output foregone. Therefore, inflation should converge to its target only over time if there is a positive weight to output stabilization. These two results bring out the importance of cost-shocks, which are a major determinant of inflation in a developing economy.

Result 3 (m): Under certainty, when expected inflation is positive, optimal policy should raise real interest rates. While optimal policy should perfectly offset demand shocks, it should keep nominal interest rates constant under shocks to potential output.

Real rates should rise to contract demand when inflation is because of a rise in demand, since there is no cost in terms of output in this case. That is nominal interest rates should respond more than 'one-for-one' to expected inflation. If there is a rise in potential output, since it is foreseen, permanent income and demand will both rise, so expected inflation will be zero, and there will be no need to change interest rates.

Result 4 (m): Under commitment to a rule, the Central banker will raise nominal interest rates relatively more compared to Result 3 (m), when expected inflation rises.

The reason is that a tough credible policy today will decrease the output cost of lowering inflation tomorrow. Even if the CB is not trying to raise output above the natural level and there is no inflation bias, there is a gain from commitment to an inflation target, when agents are forward-looking. Since it influences agents' expectations, a rule can lower the costs, of disinflation, even in a developing democracy.

Result 5 (m): Since information on current variables is imperfect, policy rules have to be formulated in terms of forecasts of target variables.

All CBs work with imperfect information, due to inadequate data or unknown policy lags. Good structural models are required to produce these forecasts. Prior to adopting formal targeting rules, a developing country CB must start producing regular forecasts of potential target variables and see how they perform.

Result 6 (m): Model uncertainty can lead to interest rate smoothing; the instrument is varied less than required by the optimal policy response.

A more serious kind of uncertainty is imperfect understanding of the way the economy works-- leading to parameter uncertainty in models. This problem is particularly acute in a developing country. Under uncertainty, neither expected inflation nor permanent income or potential output is perfectly foreseen, and it is difficult to distinguish supply from demand shocks.

Central bankers worldwide tend to smooth interest rates. Smoothing means that the desired interest rate change is not accomplished at one go, so that a series of small changes follow in the same direction, like Greenspan's famous consecutive interest rate cuts. It is as if CBs add a lagged interest rate term, with a coefficient of about 0.8-0.9, to the optimal policy response function. This may be due to conservatism or 'status-quoism' caused by uncertainty or concern about the financial sector. The latter is particularly sensitive to variations in interest rates. Thus model uncertainty leads to making less than full use of forward-looking behavior in designing policy, in order to collect more information as well as lower asset-price volatility. Excess volatility of asset prices, where forward-looking behavior dominates, is partly due to rigidities elsewhere, and also because asset portfolios cannot be fully diversified.

The short-term interest rate mainly affects capital flows, exchange rates, and other asset prices. It is the longer-term interest rates that affect aggregate demand. Smoothing short-term interest rates can lower volatility in asset prices and yet allow the CB to directly affect demand through the long-term rate. If the short-term interest rate is expected to rise in the future, for example, the long-term rate will rise more. So the long-term rate can be affected with a smaller current change in the short-term rate.

Interest elasticities of demand have been observed to be low, but more recent studies report significant interest rate effects on domestic expenditures as deeper financial markets spread effects more widely. Globalization and financial innovations are occurring at a rapid pace even in emerging market economies. Interest rates play a larger role in the transmission of monetary policy, and become the natural instrument¹⁰ of monetary policy, although other channels of transmission, such as credit, continue to be important. (a) Interest rates become more flexible and responsive to CB intervention; (b) the interest rate becomes a more sensitive and fast signal of potential imbalances; (c) demand for broad money becomes unstable and enhancement in its supply from commercial banks more flexible, so that targeting monetary aggregates becomes difficult, and the attempt causes high volatility in interest rates; and (d) the size of foreign exchange, bond, equity and other asset markets rises. These are very sensitive to interest rates. Now forward-looking behavior becomes more important and markets are interested in guessing the CB's response to uncertainty and changes. Thus, transparency becomes a major issue.

Result 7 (m): If inflation is within an acceptable zone policy should target output; otherwise policy should bring inflation to the border of the zone and then let it fall with favorable supply shocks.

The argument for smoothing the nominal interest instrument reinforces that for inflation-zone targeting. With the latter, sharp changes in interest rates are not required. If the welfare cost of small departures from target output is higher than that of inflation from its target, inflation zone targeting is a better choice. Moreover, it is suited to a developing country. It allows the discovery of potential output. There is a high degree of uncertainty attached to the latter, and it changes more as reforms raise efficiency. With a medium-range inflation zone target, changes in potential output reveal themselves. If inflation does not rise even as output exceeds the expected potential, the potential must have risen. Thus inflation targeting allows focus on domestic considerations and response to shocks. The concept of core inflation allows the first round effects of supply shocks to be excluded from the target, and there are escape clauses for very large supply shocks. The inflation rate-- when excess demand is zero or output equals its potential-- is called core inflation.

In a developing country, a monetary conditions' index can be a precursor or complement to more formal inflation forecasting. It is a weighted set of variables that affect aggregate demand. The set and weights vary across countries but include money and credit aggregates, short-term interest rates, exchange rates and their fluctuations, direct measures of domestic inflation, commodity prices, wages and even some real variables such as capacity utilization. It was difficult to forecast inflation credibly under the large oil shocks, but low and smooth inflation has been a worldwide feature of the nineties. Committing to a rule is not as effective as having kept one's word in the past. If inflation is smooth, developing countries can gradually build up a reputation with forecasts that turn out to be correct most of the time. As financial systems deepen and segmentation is reduced they can turn to full inflation zone targeting. But transparency and open discussion is a pre-requisite to increase understanding about the issues and to co-opt the private sector. Major improvements in information and communication technology (ICT) make transparency and productive debate more feasible.

The rhetoric of inflation targeting has disguised its reality; it is not really a rule, but allows considerable flexibility. The rule is actually constrained discretion, since it determines the behavior of the interest rate as 'a predictable function of a few economic variables' (Allsop and Vines 2000, p.17) and is rule-like only in enforcing forward-looking behavior. Since it is transparent, private sector jump variables such as asset price expectations help in its implementation. Since it is forward-looking, it prevents the CB from taking actions with

¹⁰ The very successful Bundesbank and Swiss National Bank have operated on money supply, the major alternative to operating on interest rates. But they were flexible and gave weight to other concerns.

undesirable long-term consequences; the transparent discussion educates the public about these long-term effects and, therefore, has political benefits.¹¹ It forces both the CB and the public to understand the long-term consequences of choices made and, therefore, to forego short-term opportunism and populism. But there is discretion to deal with unforeseen circumstances. It is not necessary to impose politically unacceptable short-term costs. Especially as the inflation target refers to a medium to long-term range, it gives considerable opportunity for short-run stabilization. If the floor is taken as seriously as the upper target, it implies stimulus of the economy in order to raise inflation, if demand falls. Since a positive inflation rate is targeted for, rather than a price level, real wages can adjust even if nominal wages are rigid.

A medium-term inflation zone target is consistent with short-run stabilization, and longer-term saving, investment and external balance. In developing countries, the latter aspect is very important; arrangements must facilitate a rapid rise in imperfectly known¹² potential output and also disarm the political pressures that harm the future for the present.

Result 8: In a small open economy the nominal interest rate instrument can be smoothed, and the intermediate target real interest rate can be achieved under a managed real exchange rate.

In a small open economy optimal monetary policy depends on the nature of transmission through the exchange rate channel. This is discussed subsequently. However, in a typical developing country with a managed exchange rate, the effect of the exchange rate on inflation and capital flows and its role as an asset-price dominate. In these circumstances, varying the nominal exchange rate in a target band around the real exchange rate can make it feasible to smooth the nominal interest rate instrument and achieve the desired intermediate target real interest rate. In such an economy, the latter will often be the level that maintains the desired level of foreign exchange reserves.

OPENNESS AND THE INTEREST RATE

Even in a developing economy, the CB can influence interest rates. In such an economy, a larger percentage of prices are administered, and, therefore, fixed in the short-run. If all prices are not flexible and money supply rises, real money balances change in the same direction as the change in nominal money supply. Money demand falls with the nominal interest rate. The latter is the sum of the real interest rate and expected inflation. Expected inflation can be backward-looking

Bernanke and Mihov (1997) argue that the procedure they followed was equivalent to an interest rate rule.

¹¹ Eichenbaum (1997) argues that he is sure that agents are forward-looking; and if they are not dynamic macroeconomics should be taught to all high school students. Then they would become forward looking! More seriously, such behavior is a function of the stability and predictability of the environment. As this increases so will the ability of agents to anticipate the future.

and determined by past inflation, or forward-looking and rise with money supply. In both cases money supply exceeds demand and the real interest rate must fall. In the latter case, since money demand falls by more, a smaller increase in money supply is adequate to decrease the real interest rate. It is, therefore, possible for the CB to change real interest rates as an intermediate or short-run target.

Goodhart (1989, p. 293) in a wide-ranging survey of the actual conduct of monetary policy writes:

Academic economists generally regard (open market) operations as adjusting the quantitative volume of the banks' reserve base, and hence of the money stock, with rates (prices) in such markets simultaneously determined by the interplay of demand and supply. CB practitioners, almost always, view themselves as unable to deny the banks the reserve base that the banking system requires, and see themselves as setting the level of interest rates, at which such reserve requirements are met, with the quantity of money then simultaneously determined by the portfolio preferences of private sector banks and non-banks.

Thus it is necessary to move from the LM curve, with its idea of a monetary aggregate which is controlled, to the idea of monetary policy controlling a real interest rate. We saw that this is the variable that clears the money market in the short-run, and affects demand for goods. Actual operating procedures focus on interest rates and not on monetary aggregates.

But what is the effect of openness? Under perfect capital mobility and a fixed exchange rate money supply becomes endogenous and the world real interest rate determines the interest rate. But capital mobility is rarely perfect especially in the short-run, so that in the short and medium-run the interest rate can focus on domestic concerns. The very fact of reserve accumulation and sterilization shows that some independence is available to monetary policy. A managed exchange rate gives further degrees of freedom in determining domestic interest rates. The CB also has enormous power in affecting expectations and risk perceptions. Even if it is not able to fully control money supply, its power has increased.

Although in a developing economy-- with many backward sectors barely penetrated by modern financial systems-- monetary policy has poor reach compared to fiscal interventions, more openness greatly raises the impact of monetary policy, in two major ways. (a) as agriculture becomes a traded good, the nominal exchange rate affects agricultural prices; this affects wages and prices throughout the economy, since food is a major part of the consumption basket; (b) the

¹² As Blanchard (1997) remarks, macroeconomists know very little about the medium-run, about what determines changes in productivity and potential output. This is a major question open to research.

exchange rate is an asset price that is very sensitive to interest rates and the expectations of domestic and foreign traders, and arbitrageurs. But how to use exchange rates most effectively?

Box 3

Monetary Transmission Channels

- Aggregate demand

- Real interest rate

$$M \downarrow \Rightarrow r \uparrow \Rightarrow I \downarrow \Rightarrow AD \downarrow \Rightarrow Y \downarrow$$

- Credit

$$M \downarrow \Rightarrow \text{Credit} \downarrow \Rightarrow I \downarrow \Rightarrow AD \downarrow \Rightarrow Y \downarrow$$

- Exchange rate (floating)

$$M \downarrow \Rightarrow r \uparrow \Rightarrow \text{NFI}(r) \uparrow \Rightarrow \varepsilon \downarrow \Rightarrow AD \downarrow \Rightarrow Y \downarrow$$

- Expectations

- Inflation expectations

$$M \uparrow \Rightarrow \pi_t^e \uparrow \Rightarrow W_{t+1} \uparrow \Rightarrow \pi_{t+1} \uparrow \Rightarrow i \uparrow$$

- Wealth expectations

$$M \downarrow \Rightarrow \left. \begin{array}{l} \text{Equity prices} \\ \text{Wealth} \end{array} \right\} \Rightarrow \left. \begin{array}{l} I \downarrow \\ \varepsilon \downarrow \end{array} \right\} \Rightarrow Y \downarrow$$

- Cost shock from the exchange rate

- Own exchange rate

$$M \uparrow \Rightarrow E_t \uparrow \Rightarrow \text{CPI}_t \uparrow \Rightarrow \pi_t \uparrow$$

- External rates

$$\left. \begin{array}{l} i^w \uparrow \\ E^w \end{array} \right\} \Rightarrow E_t \uparrow \left\{ \begin{array}{l} \Rightarrow \text{Intermediate goods prices} \uparrow \Rightarrow \text{WPI}_{t+1} \uparrow \Rightarrow \pi_{t+1} \uparrow \\ \Rightarrow \text{CPI}_t \uparrow \Rightarrow \frac{W_{t+1}}{P_{t+1}} \uparrow \Rightarrow \pi_{t+1} \uparrow \end{array} \right.$$

Notation

AD : Aggregate demand

M : Money Supply

r : Real interest rate

I : Investment

Y : Output

NFI : Net foreign inflows

ε : Real exchange rate

E : Nominal exchange rate Rs/US\$

E^w : World nominal exchange rate

i^w : World nominal interest rate

π_t^e : Expected inflation

W_{t+1} : Wage in t+1

CPI : Consumer price index

WPI : Wholesale price index

P_{t+1} : Implicit GDP deflator in t+1

In a large mature economy the exchange rate channel of monetary transmission works through and is subservient to the interest rate channel. The mature floating exchange rate system insulates macro-policy from the external sector. If the real interest rate rises, higher capital inflows tend to appreciate the real exchange rate and lower demand. In a small, open or emerging market economy the exchange rate has other major effects on the transmission mechanism,¹³ (a) imported goods affect the CPI and hence CPI inflation with a shorter lag than the aggregate demand channel. CPI inflation zone targeting imparts importance to the exchange rate, which has a large impact on consumer prices in an open economy.¹⁴ This is true especially once agriculture becomes a traded good; (b) it affects intermediate goods prices; (c) wage-price setting, which may work with lags or be forward-looking; (d) the exchange rate is also an asset price, which directly brings in the effect of monetary policy on forward-looking expectations; and (e) shocks to foreign prices, demands and risk premia also have an impact (see Box 3).

Exchange rate targets have been followed by many developing countries over some period but have not done well. Such a target is normally a fixed or a crawling peg. It has the advantage of serving as an explicit nominal anchor fixing the inflation rate for traded goods. In particular, pegging the exchange rate of a high inflation country to that of a low inflation country can serve as a credible commitment to low inflation. But the disadvantages are: giving up autonomy of domestic monetary policy; transmission of external shocks as domestic interest rates change with foreign; real appreciation that harms exports; and suppression of feedback on the monetary policy stance from sensitive forex markets (Mishkin 1999). A pegged exchange rate can encourage domestic firms to make excessive short-term international borrowing, resulting in financial fragility and crises. The perceived risk for foreign investors is also lowered. If emerging market currencies only depreciate over time as the pegged rate is adjusted downwards, this provides a safe one-way bet and encourages speculation. Moreover, more open and unified financial markets have lowered the effectiveness of direct credit controls.

Exchange rate policy has three objectives in a developing economy: price stabilisation, stimulating exports and preventing a currency crisis. Utilizing the exchange rate channel, as part of medium-term inflation zone targeting, could help to achieve these objectives in a small, emerging economy. The specific intervention would depend on major transmission channels in

¹³ See, for example, Svensson (2000) and Mishkin, (1995). Cecchetti (2000) and Taylor (2000) all point out that other ways in which the exchange rate affects outcomes need to be taken into account in designing policy for a small open economy.

¹⁴ The current weight of essential commodities (mainly food) in the CPI is 48.83 compared to 17.63 in the WPI (Economic Survey, GOI 2001). Normally 4-6 per cent is regarded as an acceptable rate of inflation for India in view of the many administered prices. Farm support prices are the administered prices that have been consistently raised. If these are stabilized at world prices Indian inflation rates can fall.

the economy. Most exchange rate regimes fall in between pure floats or pure fixed exchange rates. If the exchange rate is managed in a band centered at the equilibrium real exchange rate, the nominal exchange rate could be varied in the short-term, to stabilise CPI inflation since traded goods have a major impact on inflation. The band will make it possible to avoid large fluctuations in the nominal interest rate instrument. This, together with smoothing short-term interest rates, will lower volatility of asset prices, but allow sufficient variability in nominal interest rates to reach the target real interest rate.

Box 4

Smoothing r in An Open Economy

Romer (1999) extends his MP analysis to an open economy. In the short run, capital mobility is less than perfect. Since the loss in foreign exchange reserves (RL) rises as the real interest rate, r , falls, there is a level of r at which RL is zero. Under managed

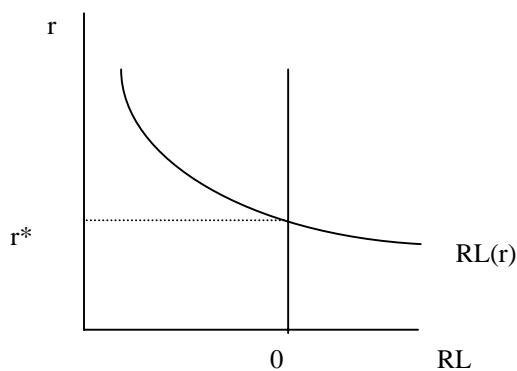


Figure 1

exchange rates CBs fix the real exchange rate ($\bar{\epsilon}$). Then, $RL(r) = NM(\bar{\epsilon}) - NFI(r)$. Overall net foreign inflows (FI) which are an increasing function of r must equal net imports (NM). FI equals net foreign inflows (NFIs), plus reserve loss RL. Therefore, RL is a downward sloping function of r in Figure. It equals the difference between total purchases from foreigners (of goods, services, and assets) and total sales to foreigners. The CB loses reserves if it

is positive. Here, r^* is the interest rate at which RL is zero, and $NFI = NM$. There is a basic asymmetry in that reserve loss cannot continue to be positive for long; but reserve gain (-RL) can continue indefinitely. At $r > r^*$ reserves will be accumulating. There, once the desirable level of reserves has been reached, the CB can lower r to the r^* at which $RL = 0$.

Romer (1999) shows (see Box 4) how ensuring that reserve accumulation is zero after the desired level of reserves is reached, would fix the real interest rate. In a developing country, output is normally below potential and the potential itself can be greatly expanded. Keeping real interest rates at the minimum feasible, which is the world real interest rate, would stimulate demand, growth of potential output, and ensure positive returns to savings. Thus there is

movement in the direction of achieving all the objectives of establishing low rates of inflation, stimulating output and exports, and discouraging financial crises.

Table 2 shows that Indian forex reserves have increased more than three times, as a ratio of the current account deficit, compared to what they were in the eighties, and Table 1 that Indian real interest rates have been much higher in the nineties. It is possible for India to lower real interest rates and the level of reserves. While reserves are more than adequate for import cover, they can never be adequate for a crisis. Confidence against the latter can also come from joining supportive swap arrangements among CBs such as many Asian countries are entering into; they will boost each others' reserves in the event of a crisis. New financial products can also serve to make reserves available in times of need. For example, in 1998, Argentina purchased liquidity insurance as a contingent repo option. Fourteen international banks were involved (Goyal 2000a). Finally, a good exchange rate regime serves a preventive purpose. After the East Asian crisis this is a key research area. Random two-way variation within a band will encourage hedging and prevent self-fulfilling one way bets on the direction of movement of the rupee and major fluctuations.

CONCLUSION

We now draw together the main conclusions and policy implications arrived at in the course of the analysis. First, for fiscal policy, then monetary policy, and finally the two together. A fiscal responsibility act should be adopted but it should focus on backloaded reductions of the revenue deficit while protecting capital expenditures, automatic stabilization and incorporating escape clauses. This is what we call fiscal-deficit zone targeting: after the fiscal deficit reaches an acceptable zone, further reductions should be allowed to come through growth. This policy set will make coordination of monetary and fiscal policy in the shortrun and resolve the dilemmas of long-run financing of government expenditure.

If legislation is enacted to restrain the revenue deficit and shift the composition of public expenditure towards investment, then openness gives an opportunity for monetary authorities to lower Indian real interest rates closer to world levels. The real interest rate can be kept around the level at which the desired level of foreign exchange reserves is maintained. Such a policy set would not increase the inflation rate. Since accountability, in a democratic policy, forces the CB to keep inflation low, a weak constraint on the CB -- such as medium-term inflation zone targeting -- is credible. Under such a constraint, inflation has to be maintained within the predefined zone over time. The zone stabilizes inflation expectations, so that the cost of disinflation is lower. Thus, measures to change aggregate demand would be required only if inflation is outside the zone; otherwise productivity improvements can be allowed to decrease inflation in

their own time, under expanding potential output. This gives sufficient discretion to smooth nominal interest rates and achieve the desired real interest rates. Smoothing nominal interest rates lowers asset price volatility.

In most countries of the world today monetary policy uses a short-term nominal interest rate rather than money supply as the policy instruments. Recent advances in the theory of monetary policy have developed an analytical framework suited to this trend. The instability in money demand, with the availability of close substitutes, has made control of monetary aggregates ineffectual. Moreover, it is the real interest rate that affects the demand for goods. Thus, while the short-term nominal interest rate is the policy instrument, the real interest rate is the intermediate target. As long as prices are not perfectly flexible the CB can influence the real interest rate in the short to medium-run, taking account of expected inflation in setting nominal interest rates.

Exchange rate management can also help to allow domestic interest rates to depart from world rates if it becomes necessary, and help to smooth nominal rates by lowering the need for an interest rate defence of the currency. The nominal exchange rate will also, in the future, have a major impact on food prices and the CPI. Exchange rate management can, therefore, contribute towards reducing inflation. Oil price shocks and rising agricultural support prices have contributed to inflation in the past. WTO-induced agricultural trade liberalization gives an opportunity to stabilize food prices without alienating the farm lobby. Some prices will rise as administered prices are freed, but restructuring and gains in productivity can compensate to some extent. Managing the exchange rate in a band around the real equilibrium rate will encourage exports. Thus exchange rate policy can fulfil its three objectives in a developing economy: price stabilization, stimulating exports and preventing a currency crisis.

Rules embodying constrained discretion in macro policy will allow the strengths of democracy to be used and compensate for its weakness. Since such rules make long term consequences of policy clear, they help to align private sector actions with desired outcomes, make society more forward-looking and reduce the popularity of short-term populism. Transparency and good communication are both a prerequisite and a beneficial side effect of such rules. The favourable effect on expectations can actually allow a rise in demand to accompany short-term government consumption expenditure cuts. The stimulation of the economy that they result in is what makes them feasible and credible.

The mix of monetary and fiscal policy affects important issues of medium-term macroeconomic balance, such as between saving and investment, or internal and external balance;

moreover, in a developing country the mix must facilitate a rapid rise in potential output. Both fiscal and monetary policies can work together to stimulate higher growth and lower inflation.

Since populism has had more adverse effects on the government budget, while it has pushed monetary authorities towards keeping inflation low, stronger rules should insulate the government from populism. The ideal mix should make a virtue of uncertainty -- by letting those who have the most information, act within bounds that deflect them gently towards better outcomes.

ACKNOWLEDGEMENT

I thank Kirit Parikh and Shovan Ray for comments, Niraj Goyal for quality support, Santosh Kumar and Sucharita Sinha for research assistance, and TS Ananthi for help with the word processing.

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