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**Study
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MONETARY POLICY, INFLATION AND ACTIVITY IN INDIA



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Monetary Policy, Inflation and Activity in India

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I. Introduction

While it is the case that by comparison with the rates historically registered in developing economies the annual average inflation rate for 1991-92 (upto the week ended January 25) is at 12.2 percent not very high, it has crossed the double-digit figure, now on, only in twelve years in the little over four decades since 1950. Two considerations would give importance to inflation control as an aspect of macroeconomic policy at this juncture. Primarily, in the Indian economy, characterised by structural unemployment and a vast hinterland constituted by a work-force labouring without any indexation of wages whatsoever, the inflation rate is a determinant of short-run variations in levels of living (and thus poverty). Secondly, the traditional theory of economic policy for an open economy would emphasise the importance of the real exchange-rate as a determinant of the trade balance. Now, except under a regime of an inflation-adjusted crawling peg, inflation renders the official exchange rate vulnerable. It may also be added that it has recently come to be emphasised (see Rajaraman, 1991) that, nominal rates given, India's competitiveness is more closely

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related to its inflation rate relative to that of its closest competitors rather than that prevailing in the countries of destination of its exports. Now, the very high inflation prevailing in many parts of the developing world, such as in Latin America, is no longer a consolation when many of India's competitors have a lower rate of inflation. However, these two considerations apart, the current inflation in India may have somewhat historic consequences. This has to do with the fact we are now witnessing an attempt to radically restructure the policy regime, and it is increasingly becoming apparent that inflation could undermine the programme irrespective of its underlying cause.

This paper is an attempt to understand the working of monetary policy in the Indian economy using an episode in its recent economic history as the data to be explained. It is diagnostic in its aims. However, while it does not aim to be prescriptive, it does indicate clearly what monetary policy can, and cannot, do. Finally, the paper takes a distilled view of both the structure and motion of the economy, and of the working of monetary policy. I concentrate only on the essentials.

The episode referred to itself is the current inflation. Quite apart from the fact that the brevity of the sample period would rule out any formal statistical analysis, the choice of a non-econometric approach is deliberate. The "narrative approach", pioneered by Friedman and Schwartz, is being increasingly recognised as an integral part of monetary policy studies (see Romer and Romer, 1987). It is my belief that our understanding of how monetary policy works is best done by focussing on particular episodes. In any case, I will base a large part of my argument on econometric evidence.

II. The current inflation : some stylised facts

In Table 1 are presented data on factors believed to be associated with the inflationary process in the past three years. It is striking how closely the acceleration in the inflation rate is tracked by the

acceleration in the rate of change in the prices of foodgrains. The fact of the change in foodgrain prices being higher than the current inflation rate would suggest that 'core' inflation is far from having been tamed. In fact, if commodity prices are an early ('leading'?) indicator of the build up of inflationary pressure, it must be accepted that the general price level will continue to rise, perhaps even at a faster rate for a while. This is for the simple reason that we know from past experience that firms and workers in the 'organised' manufacturing sector attempt to correct for deviations from historical profit rates and real wages, respectively, brought about by an increase of agricultural (foodgrain) prices in the economy.

TABLE 1

Year	Inflation rate	Change in price of foodgrains	Growth of output of foodgrains	Growth of money (M3)	Net procurement
1989	7.4	2.2	0.6	18.8	4.55
1990	10.3	8.2	3.0	16.6	7.95
1991	12.2	17.3	-1.5	15.2	- .85

Notes : (1) '1989' refers to the financial year 1989-90, and so on. (2) the figure for the growth of foodgrains in 1991-92 is anticipated. (3) the changes in prices for '1991' is upto January 1992. (4) money growth is of the change in the averages of reporting Fridays (5) 'Net procurement' is procurement minus offtake in millions of tonnes.

Sources : (1) output : 'Economic Survey 1991-92' (2) prices : 'Index numbers of wholesale prices', Office of the Economic Adviser, MoI (3) money supply : 'Annual Report 1990-91', RBI, and DMB, RBI (4) net procurement : DRE, RBI.

Above all, the stylised facts of the episode under consideration suggest that despite a considerable diversification of the structure of the economy agricultural performance largely determines the macroeconomic environment in the short run. Undoubtedly, it is the single most important determinant of the inflation rate. This is easily seen from the data in Table 1. Note that only in one of the three years under consideration is the rate of growth of the production of foodgrains higher than that of the growth of population (estimated at approximately 2 percent per annum).

This has meant a 'natural' reduction in the per capita availability of foodgrain in these years, 'natural' in the sense of having been brought about by a supply shock. However, it is entirely possible that an additional factor contributing to a reduction in availability is government intervention in the grain markets. Focussing on quantitative interventions, government intervenes via its procurement and public distribution policies, with procurement and imports entering into the quantity distributed. The net effect on availability of these interventions sums up, to a point, the quantitative impact of government intervention. The figures in Table 1 suggest that government operations in 1989-90 and 1990-91 have actually reduced per capita availability in the foodgrains markets in these years. For the year 1991-92 the picture is less clear-cut; while most procurement for the year is likely to have been completed, offtake from the public-distribution system may be expected to continue. However, taking procurement figures registered so far as final and allowing for offtake to proceed as in the past, yields a marginally negative figure for the expected change in stocks for the year 1991-92, suggesting that the government has released more into the market than it has taken out of it. In general, it is seen that government operations in foodgrains is insufficiently counter-cyclical, actually worsening the supply situation in certain years. This has been pointed out by Kabra (1991). We see that while this is unlikely to have been the case in the current year, government operations ought to have ensured much greater offloading into the market this year to have had any significant impact on foodgrain prices. Only such a pattern would justify the government buoying up prices in good years.

Finally, note that the continuous slowing down of money growth (M_3) over the period we are looking at has not been able to dampen the inflationary pressure. In fact, it has not even been able to prevent its acceleration. It is the quite considerable variation in relative prices implied by the differential rates of growth of sectoral prices (see Tables 1 and 2) which gives one the confidence necessary to conclude that the inflation being observed is not a

'monetary phenomenon'. There is no problem of identification here. Elsewhere I have provided an account of why relative price shifts in India are inflationary (see Balakrishnan, 1991a).

Before turning to monetary policy during the episode I consider the question of whether the current inflation may be related to the reform programme initiated since last July.

Inflation and policy reform :

Measures undertaken as part of the structural-reform programme and of the macro-economic stabilisation currently underway may be expected to have a bearing on the inflation rate. These are the cut in certain subsidies, the raising of certain administered prices, and, the devaluation of the rupee.

Effective price controls represent a situation of repressed inflation. Naturally, therefore, removal or reduction of subsidies lead to a rise in the price level. The impact however is a one-shot one (unlike, for instance, in the case of a continuing nominal depreciation of the rupee or a continuous rise, under certain conditions, of the procurement price). The thirty percent increase in the price of fertilisers in July and the increase in the issue price of cereals in December of 1992 is expected to lead to a temporary spurt in the inflation rate. The price data available at present is inadequate to assess this claim. Precisely for this reason, however, it is unlikely that the observed acceleration in the price of foodgrains is a response to increase in these administered prices. First, a reduction in the fertiliser subsidy would be expected to raise open-market prices via a shift in the long-run supply curve in agriculture. Though, surely, this must take time longer than one cropping year? Also, recently published evidence reports a "low value of the price elasticity of demand for fertilisers and other inputs...." in Indian agriculture (see Paul and Mehra, 1991). As for the issue price hike, the lag in its impact must, one would expect, be much shorter. The direction of the impact itself is less than clear though. At least, from a consideration of how the demand side of

the market is likely to be affected. One of two results might occur. If consumers with access to the PDS always exhaust their ration entitlements first, whatever the price of PDS grain, then, via a reduction in their real incomes they would consume less in the open market, now actually leading to a lowering of the open-market price. A second scenario is the one where a higher price of grain in the ration system leads to substitution away from rice and wheat (the grains supplied through the PDS) to coarse grains (jowar, bajra). Since coarse grains are only available in the open market, the increase in demand for these grains leads to a rise in their price. Whatever the consequence for open market prices of a reduction in subsidies, it is obvious that, it must make its erstwhile recipients worse-off. The point remains though that, considering the demand side, the consequences for open-market prices of an increase in the 'issue' price is not obvious. What of the behaviour of suppliers? It is suggested that administering an issue-price increase would lead traders to raise prices. That traders might do so does not even require explicit cartels. Implicit collusion out of a recognition of collective gain could do it. However the view that traders use an increase in the 'issue' price to raise the price of their good carries with it the implication that they were not charging what the market will bear to start with. This must make the economic theorist uncomfortable! Equally, the view that a rise in issue prices leads to a rise in open-market prices via expectations of an increase in open market prices must provide an explicit model of expectations formation that will generate a rise in the expected price following a rise in the 'issue' price. In my view, the intervention crucial for supply decisions in the food-grains market is the procurement price. When the procurement price is pegged above the market-clearing price it ensures that the base price for all market transactions starts here (and rises over the marketing season). This is so because procurement policy as implemented in India takes the form of government assuring producers to take as much as is offered to it at the announced price. Such minimum-support price schemes imply an infinitely-elastic demand-curve facing the producer. No such mechanism is at work as far as the issue price and the public distribution system is

concerned. The point is not that raising 'issue' prices does not lead to higher open market prices. Only that we are not sufficiently clear regarding the mechanism involved to be certain. Since this paper is concerned with monetary policy, I shall not devote any more time to this problem. In any case, the hike in the issue price of grain effected in December 1991 certainly provides an opportunity to evaluate the evidence.

The inflationary consequence of the twenty percent devaluation of the rupee is very easily noticed. In fact, the increase of 2.9 percent (over July-August 1991) in the index of manufactured-goods prices following the devaluation in July would conform very closely with an a priori expectation that a twenty percent nominal devaluation should lead to a direct impact on the price level of two percent, assuming an import coefficient of 0.10 for the Indian economy. Note, of course, that the import coefficient of Indian industry, however, would be larger, and, hence also the inflationary impact of devaluation on manufacturing prices. One would also expect that about six months since the event is sufficient for quite complete pass-through of higher import costs. If this were the case, it is interesting to note that the rate of inflation of the price of manufactured goods is actually a little lower since July. The figures, measured point-to-point, are 4.3 percent and 3.6 percent, for the periods April-July 1991 and July 1991 to January 1992, respectively. Thus the devaluation of July 1991 cannot explain the higher rate of inflation of manufactured-goods prices so far this financial year (see Table 2). It may, however, reflect some of the elements that constituted the macroeconomic stabilisation launched since July, notably the rise in costs due to import compression and the higher interest rate on commercial bank loans.

III. Monetary policy 1989-92

The notion of an absolute standard for characterising the monetary policy stance during any particular episode is not meaningful. It would be more helpful to consider the directional

TABLE 2

Year	Percentage rate of interest	Expansion of credit to industry	Growth of manufacturing production	Change in prices of manufactures
1989	16	18.9	8.6	11.2
1990	16	16.1	9.0	8.5
1991	20	4.7	-0.1	10.2

Notes : (1) '1989' refers to the financial year 1989-90, and so on. (2) The rate of interest is the minimum lending-rate on loans exceeding rupees 2,00,000. During 1991 the rate of interest was raised in stages upto 20 percent, and, in March 1992 lowered to 19 percent as part of the Budget for 1992-93. (3) Figures for manufactured-goods prices are upto January '92 and for output upto November '91. (4) Credit expansion in '1991' is calculated on the basis of the rate for April to October 1991.

Sources : (1) rate of interest : CPC, RBI (2) credit : 'Annual Report 1990-91', and CPC, RBI (3) prices: see Table 1 (4) output : DIS, DEAP, RBI.

impact on the intermediate targets of monetary policy of variations in the principal instruments of regulation. As the prime example of the latter, I shall here focus on changes in the nominal rate of interest on commercial-bank loans to the corporate sector. This follows from the premise that in the Indian financial system, characterised by administered interest rates across a wide spectrum, the official lending rate is, very likely, the nominal anchor. The cost of borrowing, along with some other indicators, for the years 1989-92 is presented in Table 2.

Note that given the inflation rate in these years the real rate of interest has been positive. Not only has this not always been the case in India in the past, but, also, the cost of borrowing has risen substantially during 1991-92. The minimum lending-rate has been raised in stages over the year by four percentage points (with effect from March it has been lowered by one percentage point to nineteen percent). High and rising interest rates, then, describe the monetary-policy stance of the financial year just concluded.

The reduction in the level of output in industry, following a year of nine percent growth in 1990-91, corresponds to one's expectation of the impact of higher interest rates on output via its impact

on aggregate demand. However, it is important to recognise that 1991-92 has also been a year of a significant reduction in the budget deficit, of import compression, and, above all (it is anticipated), of a reduction in the level of agricultural production. So it would be inappropriate to exaggerate either the efficacy of monetary policy or the blame that ought to be apportioned to tight money in restraining output growth. Perhaps the most direct way of measuring the efficacy of monetary policy is to consider its impact on the expansion of credit; this would also be in accordance with the stated objectives of monetary policy in India (see Reserve Bank of India, 1985). From such a point of view, tight money in 1991-92 has achieved its purpose. The rate of growth of credit was lower in 1991-92 by over 70 percent. However, even if tight money has had a restraining effect on output, it appears to have been unable to prevent the step-up in the rate of increase of the price of manufactured goods. This is in keeping with the stylised facts of the (industrial) output-inflation relation in the Indian economy. Here, the evidence for at least thirty years is that industrial recessions are not only unable to quell inflationary pressures but that they are actually associated with an acceleration in the inflation rate. This phenomenon is easily explained in terms of the structure of the Indian economy, and, in particular, the nature of price-determination mechanisms. Quite simply, so long as agricultural performance dominates macro-economic outcomes in the short run, a negative agricultural-production shock lowers industrial output and raises the inflation rate across the board. Demand-determined industrial production and cost-determined industrial prices ensure this response pattern. Kaldor had argued the possibility of such behaviour in theory (see Kaldor, 1976). I have established its existence in the Indian economy (see Balakrishnan, 1991a).

IV. Monetary policy, inflation and activity

By any standard the year 1991-92 was one in which the monetary policy stance was severe. Periods such as this are of invaluable interest because they are associated with a considerable perturba-

tion in the data, in this case the variation in the principal monetary-policy instruments, making it possible to discriminate among alternative explanations of how things work. And what do we learn? Precisely, that the experience of monetary policy now has been no different from that in recent Indian economic history. To drive my point home, I can do no better than to quote from a most distinguished commentator on the working of monetary policy in the Indian economy : "Despite the various restrictive credit policy measures taken by the Reserve Bank inflationary pressures could not be contained during the Third Plan period due largely to the supply shocks." (see Rangarajan, p. 5). Note that the period being referred to is the early Sixties. But this would be an accurate description of the situation in 1991-92! To repeat a point made earlier on in this essay, it suggests too that the basic determinants of inflation in the economy have remained the same over the past twenty-five years. It must also be granted that the limitations of monetary policy in the face of inflationary pressure emanating from the agricultural sector have long been recognised by the discerning among our policy makers, even as they have remained enthusiasts of monetary regulation. I consider the potential of monetary policy as an anti-inflationary instrument a little more closely below.

The accounting framework used by the Reserve Bank of India makes it possible to read-off the variation in the money stock by source. This must lead one to surmise that the monetary authority in India is likely to be effective, when it comes to control, only with respect to the category 'bank lending to the commercial sector'. For, it is required to finance the government's unborrowed deficit, and, variations in the net foreign-exchange reserves of the economy are largely outside its control ('sterilisation' is, more or less, ruled out by a limited market for gilts). Essentially, it implies that a very large part of the creation of reserve money is not under its control. To get an idea of magnitudes, consider that in 1990-91 the increase in 'net credit to government' exceeded the total increase in reserve money creation (see 'Annual Report 1990-91', RBI). On the other hand, the expansion of credit to the private

sector can be influenced by the RBI. This, however, is only done indirectly; by means of its very substantial control over the cost of borrowing faced by this sector. The point is not just the academic one that, in the absence of credit rationing, pegging the rate of interest implies that (at least this component of the) money stock is endogenously determined, but, that controlling the expansion of credit with a view to combating inflation cannot come without costs. Firstly, one has to contend with the possibility that raising interest rates does not affect credit demand at all, since with cost-based pricing in industry, interest costs are passed on. This point has been much emphasised by Lance Taylor, who, in fact, argues that restrictive monetary policy is stagflationary (see Taylor, 1983). This is indeed a possibility, though I believe that the inflationary consequences of interest rate increases in the Indian context are likely to have been highly exaggerated given the very small percentage of working-capital constituted by interest costs. However, one reason for recessions brought about by a credit squeeze being inflationary is that industry mark-ups may actually rise in the recession. This does occur in the Indian economy (see Balakrishnan, 1991b). It is an unintended consequence of tight money. To return to the argument though, for the conduct of monetary policy the message is that with complete interest-cost pass-through over the normal range it would be necessary to vary borrowing costs substantially to achieve any appreciable reduction in credit expansion. But where the expansion is successfully curtailed by such a measure, a certain degree of dampening of inflationary pressure may be imagined. This occurs because credit facilitates the production process which implies that its restriction must curtail output growth, which in turn releases the pressure on the inputs to industry. The prices of raw materials and foodgrains (due to lower rate of growth of wage payments) must now grow slower. The mechanism is straightforward indeed, but what needs to be acknowledged is that output loss is a natural concomitant of using the interest-rate mechanism to curb inflation via curbs on credit.

There is in principle one use of the interest rate as an instrument of

control that could lower inflation without output loss. The speculative holding of stocks must be governed, among other factors, by the rate of interest. Thus increases in the rate of interest, by raising the cost of holding stocks, induces dis-hoarding, and the resulting increase in the current supply must lower the inflation rate. The rate of interest has been discovered to be a determinant of changes in international commodity prices (see Gilbert, 1990). However, the relevance of this discovery for the Indian case needs to be questioned at least a little. The reason for this is not that traders in commodities in India do not depend upon funds from the organised banking sector. Or even that loans against commodities constitute only a small proportion of total bank credit outstanding. After all the official lending rate, appropriate to the organised sector, must impart some influence on rates across the board, i.e., even the unorganised sector, for, otherwise, unexploited gains from arbitrage remain. To the second of the queries, the appropriate response would be that it is irrelevant that credit to traders in commodities forms only a small part of overall credit. At stake is the proportion of commodity hoards that is financed by borrowing from the commercial-banking sector. The essential question however, is about the role of speculation itself. I concentrate on the market for foodgrains for two reasons; because it is foodgrain prices that in my view drive the inflationary process, and it is with respect to foodgrains that it is believed that speculation is an important determinant of inflation in India. An interesting feature of price behaviour in wheat and rice markets for close to two decades is that the price in the beginning of a crop-marketing year is higher than that prevailing at the end of the previous one only in one year out of eighteen in the case of wheat and in five out of eighteen years in the case of rice (see Tables 3 & 4). This implies that profit-maximising traders are unlikely to be carrying grain over across crop-cycles, unless we are to believe that they do not learn from past experience, which would take us against most reasonable premises. Where carry-over does not take place there must occur periodic 'stock-out', obviously before the harvest. The special nature of foodgrains as bulky, perishable goods as opposed to many other commodities, not to mention the

TABLE 3
Quarterly price of wheat
(All-India Index '70-71 = 100)

Yr	Pw1	Pw2	Pw3	Pw4
1971	96.40	97.23	99.67	104.73
1972	98.20	102.93	107.27	117.50
1973	102.30	101.37	110.70	118.63
1974	159.60	184.83	192.37	195.47
1975	166.80	159.27	156.10	156.43
1976	147.30	148.13	150.47	161.97
1977	149.97	152.73	163.07	165.00
1978	150.33	149.83	154.03	161.20
1979	151.73	155.93	166.50	168.57
1780	162.17	166.33	182.50	193.97
1981	182.23	187.60	192.97	200.20
1982	192.63	204.67	216.00	243.33
1983	217.00	213.67	217.00	222.33
1984	206.00	208.33	210.00	226.00
1985	210.00	222.33	229.00	242.87
1986	227.63	230.23	244.00	251.07
1987	236.20	250.17	263.80	284.50
1988	259.03	274.23	307.17	323.40

Source : Food Corporation of India, 'Tables'.

Note : Data arranged according to financial year quarterly-averages. Wheat marketing commences April, or, in quarter 1.

TABLE 4
Quarterly price of rice
(All-India Index '70-71 = 100)

Yr	Pr1	Pr2	Pr3	Pr4
1971	101.57	105.70	102.63	102.13
1972	109.00	119.70	117.73	117.37
1973	125.43	137.80	146.03	151.77
1974	116.10	128.60	132.30	127.70
1975	197.37	195.93	173.63	148.53
1976	150.00	161.67	159.33	156.70
1977	163.40	172.93	161.10	150.50
1978	158.27	164.13	162.77	157.87
1979	167.53	183.97	191.97	191.90
1780	200.50	206.63	204.53	206.57
1981	213.47	231.33	229.43	230.60
1982	236.83	260.73	262.87	267.67
1983	285.33	308.67	283.33	277.33
1984	277.00	281.67	268.67	267.33
1985	275.00	263.00	280.33	276.63
1986	290.43	309.67	309.77	298.73
1987	307.57	325.90	339.07	336.97
1988	351.20	374.97	365.53	361.43

Source : Food Corporation of India, 'Tables'.

Notes : Data arranged according to financial year quarterly-averages. Rice marketing commences in October, or, in quarter 3.

case of financial assets, is perhaps relevant here. This has the crucial implication that on average foodgrain-price inflation in India is not driven by private speculation but by supply shocks (assuming a stable demand function). It is so, because, it appears that in any given year traders do determine the distribution of the grain across the crop year but do not (cannot?) alter aggregate availability, which alone determines average price. The upshot of this is that if speculation is not driving inflation, and I have here provided some evidence that it may not be, then monetary policy geared towards influencing stock-holding would be irrelevant as an anti-inflationary instrument. The argument has been made in terms of the rate of interest, but it is equally applicable to the 'Selective Credit Controls' deployed by the RBI, the main thrust of this instrument being that it discourages the holding of stocks of certain primary commodities believed to be in short supply. My own suggestions here are tentative, and almost in the nature of speculation themselves, but if they are correct it has implications for our understanding both of the inflationary process and of what we may expect from monetary policy. It is unfortunate that serious empirical work on the question of speculation in foodgrain markets is quite conspicuously absent.

While on the question of stocks, it must be emphasised that government operations in the market for foodgrains, unlike private trade, does not entail stock-out i.e., there could be net carry-over between years (cropping years and financial years), resulting in the price level being kept above or below the market-clearing level. In fact, as I have argued earlier, by altering net availability in the market for grain, government can affect the rate of change of foodgrain prices. And this, in the short run, is the only anti-inflationary instrument that is likely to yield results. In the absence of sufficient stocks with government, as is the case today, such policy is constrained by foreign exchange reserves.

V. Conclusion

The distinction between money and credit is vital to understand-

ing how monetary policy works. The very influential 'monetarist' position expressed with such clarity in Friedman's celebrated essay (see Friedman, 1968) on the role of monetary policy would appear to be unduly narrow. In any case, where there is involuntary unemployment, the story that fluctuations in output occur because workers get their expectation of inflation wrong (itself because they cannot predict the randomly varied money stock) comes across as less than credible (see Tobin, 1981). Back in the Indian economy, surely, higher interest rates having a permanent effect on the output of industry and a weak effect on even those prices that are flexible is more like how monetary policy works? Not only does the episode analysed suggest that this is the case, but we also know that the 'money and inflation' story is hard put to characterise adequately the data-generating process here (see Saini, 1984 and Balakrishnan, 1992), or, even in advanced industrial economies for that matter (see Hendry, 1985).

Does all this imply that monetary policy does not matter? Certainly not. While monetary policy may be somewhat of a blunt instrument when required to deal with inflation, not only in India but in most credit-based market economies, its ability to maintain steady growth of output and to anchor rates of return in the economy are substantial. At a stage when the financial sector in India is being sought to be de-regulated the latter may be considered a significant strength indeed. Historically, a Central Bank's authority has been judged, and rightly, by its ability to impart confidence to the market participants and not by the facility with which it manages to peg the short-run inflation rate. As an instance, one need only to recall the stabilising impact of the Federal Reserve's announcement that it was willing to accommodate all credit demands in the United States economy following the stock-market crash of October 1987. The brief of this paper prevents me from addressing the pivotal role that continues to be played by the Reserve Bank of India presently, a time of considerable policy uncertainty.

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