CHAPTER - 5

MACRO-ECONOMIC MODEL OF FINANCE, ECONOMIC GROWTH AND MONETARY POLICY IN INDIA

This chapter will develop and estimate an Econometric model of the Indian economy to examine the pattern of interaction between monetary and financial deepening and economic development and examine the significance of monetary policy in the context of macro economic stability. In the following section, the theoretical structure underlying the model is discussed which is designed specifically to test the hypotheses that have been proposed in the first chapter. This is followed by discussion of the data, their sources and the estimation procedure used. After that the estimated equations will be presented and results will be analyzed. In the last section we will discuss the monetary policy formulation, the association between rate of inflation and its variability and also evaluate there significance in the context of the recent stabilization and liberalization efforts in India.

5.1 Theoretical Structure

This chapter will construct a model in which the basic functions of money and finance and their importance in development are highlighted. Chapter 3 proposed that the increasing absorption and the use of real money balances by an economy make possible for a more efficient organization of its production system and lead to an increase in national income by relieving real resources of labour and capital from the functions of exchange. Exclusion of the real balances in production function is tantamount to ignoring the importance of exchange in growth of the economy. So real money balances have a rightful place in the aggregate production function.

Chapter 4 elaborated on the basic function of the system of finance in a modern economy. Relying on the famous exposition of Gurley and Shaw[117] of the role of the financial intermediaries, we argued that a well- developed financial system can attract the savings of surplus units and allocate them among deficit units thereby leading to an overall increase in the productivity of capital at the aggregate level, contributing to the growth of

[117] J.G. Gurley and E.S. Shaw, "Financial aspects of economic development," Op. cit., p.72.

national income. Chapter 5 argued that in the initial stages of financial development, financial assets with varied risk, return and liquidity characteristics can increase the proportion of income saved. The model described below in an elaborate form will highlight these three basic hypotheses.

Variables

Below are listed the variables used in the theoretical and the estimated model. The subscript 't' which refers to the time period has been omitted. Lagged values are shown by directly writing the number of lags in place of the subscript. For instance, last year's savings are written as S^P_{-1}. All the variables that involve Rupees amounts are in crores.

Y = Real net domestic product (at 1980-81 prices)

M = Nominal money stock defined as currency + Demand deposits;

P = Wholesale price index (1980-81 base);

K = Net capital stock (1980-81 prices)

E = Index of efficiency of investment allocation defined as the ratio of investment in non-household sector to that in the HS;

S^P = Real savings of the private sector (i.e. household and corporate) at 1980-81 prices;

I = Real net investment at 1980-81 prices; and

Y^P = Real private disposable income at 1980-81 prices.

Predetermined Variables

L = Number of Workers (in '000);

r^S = Nominal bazaar rate of interest;

S^P-1 = Lagged real private savings;

FR = Finance Ratio

E_{-1} = One period lag of the efficiency of investment variable, E;

K_{-1} = Lagged value of adjusted capital stock;

S^g = Real savings of the GS; + net real inflow or capital

Y^P = Real private disposable income (1980-81 prices)

P_{-1} = Expected rate of inflation;

S^r = Net real inflow of capital at 1980-81 prices;

log(M/P) = Money stock (M1)

5.2 Theoretical model

Our model has five equations and three identities and is generally conventional except the way in which the hypothesized relationships are introduced. We present first the model in the algebraic form along with the signs of coefficients expected on the basis of economic theory and our conceptual framework developed in the earlier chapters.

Production function

$$Y = (L, K^A, M/P, E)$$

$$\frac{dY}{dL} > 0, \frac{dY}{dK} > 0, \frac{dY}{dM/P} > 0, \frac{dY}{dE} > 0.$$

Demand for money function

$$\frac{M}{P} = \frac{M}{P}(Y, r^S, pe)$$

$$\frac{dM/P}{dY} > 0, \frac{dM/P}{dr} s < 0, \frac{dM/P}{dPe} < 0.$$

Price Formation

$$P = P(Y, M, P_{-1})$$

$$\frac{dP}{dY} < 0, \frac{dP}{dM} > 0, \frac{dP}{dP_{-1}} > 0.$$

Private saving function

$$S^P = S^P(Y^P, S^P\text{-}1, F, P^e)$$

$$\frac{dSP}{dYP} > 0, \frac{dSP}{dSP_{-1}} > 0, \frac{dS^P}{dF} > 0, \frac{dS^P}{dP^e} < 0.$$

Efficiency function

$$E = E(FR, E_{-1})$$

$$\frac{dE}{dFR} > 0, \frac{dE}{dE_{-1}} > 0.$$

Capital Stock identity

$$K = K_{-1} + I$$

Net Real Investment identity

$$I = S^P + S^r + S^g$$

Private Real Income identity

$$Y^P = Y - Y^g$$

Two of the three main hypotheses are incorporated in the production function itself. We have introduced real balances M/P as an additional factor of production along with labour and capital. As we considered in Chapter 3, the treatment of real balances as a factor of production has ample theoretical support. Like labour and capital increase in real balances used in the economy is expected to increase NDP through a more efficient organization of the production system and higher exchange efficiency. So on an a priori basis, the coefficient of M/P is expected to be positive.

The production function also has the investment allocation efficiency variable, E, as an argument. Financial intermediaries discourage physical capital formation in the HS by offering attractive financial assets in which the latter can hold its savings and allocate these savings among PCs and GS which specialize in financial investment. Thus growth of financial intermediaries is accompanied by a qualitative improvement in the capital stock and has a positive effect on income. This is our second hypothesis.

Our third hypothesis which states that financial deepening may increase the savings of the HS is incorporated in the private saving function where the index of financial growth is an explicit independent variable.

The efficiency variable E has been endogenized in equation 6.5 by making it explicitly dependent upon the present and past values of the index of financial development.

The price formation equation resembles the crude quantity theory type of a relationship. Empirical evidence supports the contention that price level changes in India in recent years have been strongly affected by variations in the money supply (C. Rangrajan, 1974)[118] (Marwah's, 1973)[119].

The demand for money function is quite conventional except for the inclusion of the expected rate of inflation variable as an argument, which was mainly prompted by the need to isolate the effect of inflation on income. Conceptually, the expected rate of inflation is as

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[118] C. Rangarajan, (1974), "Price Behaviour in India : An Explanation Through a Model of Demand and Supply of Money", (Paper read at the XIII Indian Econometrica Conference).

[119] See Marwah's Model in Meghnad Desai, (June 1973), "Macro Econometrica Models for India : A Survey, "Sankhya, Series B, XXXV, 2, p.169.)

much an opportunity cost of holding real balances as the short term interest rate (David Laider, 1972)[120], except that the former involves capital gains or losses on the holdings of real money. In an economy where the rate of interest rate will have two components : (1) the real rate of interest (2) a premium for the expected rate of inflation. The nominal interest rate will account for both the opportunity costs of holding money. In India, the expected rate of inflation has been explicitly introduced as an additional explanatory variable as competitive forces have had little influence on the nominal rate of interest.

For similar reasons, the expected rate of inflation has also been introduced in the private saving function.

Apriori, a positive expected rate of inflation reduces the real rate of return on savings and makes future consumption less attractive. Of course, on the other hand, it may encourage investment in physical assets by making capital gains on them attractive. The net effect on savings of the expected rate of inflation will depend upon the relative strength of each of these two effects and is essentially an empirical issue.

Feedback Mechanism

We noted earlier that the main financial variables influencing NDP(Y) are real balances which are endogenous, and F, the index of financial development. F influences the growth of NDP in two ways. First, financial intermediation determines the overall productivity of the capital stock K through the efficiency function, thereby influencing NDP. Second, F enters explicitly as an explanatory variable in the private saving function. Private saving, S^P, in turn influences the capital stock through the investment and capital stock identities.

Real balances are endogenous to the system. The short term interest rate r^S and the expected rate of inflation P^e are predetermined variables that influence M/P. Their effect on the demand for money influences NDP. A priori, an increases in any of them will reduce the demand for real money and induce the public to economic on the use of money. This will reduce the exchange efficiency, force the diversion of fraction of existing capital and labour resources to the functions of exchange and reduce NDP. The expected rate of inflation will also have a negative effect on NDP through its adverse effect on private savings.

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[120] David Laidler, The Demand for Money : Theories and Evidence, (Bombay : Allied Publishers, 1972) p.44

Any increase in income will increase the demand for real money which will in turn increase income through the production function. The strength of this cumulative effect will depend upon the magnitude of the income elasticity of demand for real balance and the marginal productivity of real balances.

Government savings, net capital inflow, private savings and legged capital stock will influence the NDP through their effect on the current value of the capital stock K in the production function. The magnitude of the effect of each variable will also be the same as that of K^A, since K^A is related to all these variables only through the capital stock and net investment identities.

5.3 Operationalizing the Theoretical Model Data

Data on labour stock (L), efficiency variable (E), and net investment (I) were either taken derived or extrapolated from B.H.Dholakia's study on Sources of Economic Growth in India. Data on price level (P_t) money supply (M), and not change in the stock of financial assets were obtained from RBI Bulletins. The National Accounts Statistics : 1960-61 to 1972-73 published by CSO in 1975 gave data on real NDP (Y), real private and government savings (SP, SG), and not real inflow of capital (Sr), not real investment (I) and real income of the private and government sectors (Y_p, Y_g).

Although most of the variables used in our theoretical model are well defined so that fairly reliable data is available on them, problems were faced on three counts. First, the saving function was included to examine the effect of financial development on household savings. So the correct choice should have been the inclusion of the saving function for Hs alone. But operationalizing this equation would have been impossible because of the lack of data on household income. So even though the PCs is a not deficit sector, we had to estimate the combined saving function of the HS and the PCs.

Second problem concerned the investment efficiency variable, E, in our production function. Since allocational efficiency is non-observable, we had to look for a proxy variable that could represent it effectively. We chose the ratio of the investment in the non-household sector, i.e., the GS and the PCs to the investment in the HS as a proxy for the efficiency of investment. This choice is justified because about 70 per cent to 75 per cent of the total savings in case of India are generated in the HS. In the absence of a well-knit financial

structure, a major part of the household savings is in vested in physical capital formation within the HS itself, and the PCs and the GS, the main deficit sectors, rely for their capital requirements substantially on internal savings. Once financial growth gets under way, a larger proportion of the household savings is canalized through the financial system to the PCs and GS which can now invest much more than their internal savings would permit. Thus if the non-household sector offers more lucrative opportunities to invest savings than the HS itself, then as the financial structure deepens, investment in non-household sector will increase and the physical investment within the HS will slow down, and the ratio of non-household to household investment will increase.

If the financial system allocates capital among various investment project using some productivity criteria, then the transfer of resources from the Hs to the non-household sector should improve the overall quality of capital stock. Our efficiency ratio E effectively captures the productivity gains of the intersectoral transfer of savings. But it cannot effectively capture the impact of intra-sectorial transfer of savings. It presumes that all investments within the Hs are less productive than those in the non-household sector. The financial system does, in fact, return a sizable part of the savings provided by the Hs to that sector itself. On one hand it may discourage loss productive investments within the HS, like residential construction and on the other hand, finance, in the same sector, more productive investments as in agriculture or retail trade and to that extent allocative efficiency will increase. These final aspects of investment allocation efficiency could not be taken into account because of lack of data.

Estimation

Each of the equations was tried first by ordinary least squares to examine the overall goodness of fit, the statistical significance of the independent variables, and the presence of autocorrelation. Several variables not included in the theoretical structure of the model were tried to check whether the explanatory power of the equation could be improved. In almost all equations, the specifications suggested in the theoretical structure were the best fits.

The equations selected from the OLS runs were re- estimated by 2 SLS. Because of price variables, the coefficient matrix of predetermined variables we singular. So in the second round, each of the endogenous variables was regressed on all the predetermined variables omitting P-1 to obtain their estimated values which were used to obtain 2 SLS

coefficients in the next run. Since each of the equations is adequately over-identified, the applications of 2 SLS for estimation is legitimate.

In the OLS run itself, most of the critical variables of the model were found to be highly significant. It is well known, however, that the statistical inference is strictly invalid in 2 SLS because the t-ratios computed as the ratios of estimated slopes to their respective standard errors do not have a t-distribution in a simultaneous equations model. But they are asymptotically normal so that large t-values may indicate a degree of statistical significance in a crude test of whether the relevant variable belongs in the equations. The high t-ratios in 2 SLS equations of our model indicate that the t-test is robust enough to permit inference about the significance of the variables.

5.4 Empirical Structure

Estimated Model

The t-ratios and the Durbin Watson Statistic correspond to the 2 SLS estimates. R^2 and R^2 are those of the original OLS equations. The coefficient of determination, R^2, also does not remain valid in a simultaneous equations model but gives a rough idea about the overall goodness of fit of each equation.

Equations

Production Function

$$\log Y = 2.11 + 0.681 \log M1/P + 0.21 \log L + 0.418 \log K + 0.00083E$$

(1.02) (2.32) (1.93) (4.01) (3.10)

$R^2 = .9962$ $R^2 = 0.9949$ D.W.S. = 1.83

Demand for Real Money Balances

$$\log M1/P = 5.02 + 0.93 \log Y - 0.017 r^S - 0.001 P_{.1}$$

(2.23) (9.33) (3.12) (2.02)

$R^2 = 0.9715$ $R^2 = 0.9626$ D.W.S. = 1.87

Price Formation

$\log P = 1.81 + 0.62\log M1 - 0.60\log Y + 0.002P_{-1}$

(2.97)(-1.82) (2.01)

$R^2 = .97$ $R^2 = .96$ D.W.S. = 1.69

Private Saving Function

$Sp = -182 + 0.046Y^P + 0.49SP_{-1} + 21.32(FR) - 1.76P_{-1}$

(-2.9) (3.89) (2.22) (1.76) (-2.11)

$R^2 = 0.96$ $R^2 = 0.90$ D.W.S. = 1.79

Efficiency Function

$E = 11.59 + 5.14(FR) + 0.42E_{-1}$

(1.67) (3.93) (2.3)

$R^2 = 0.89$ $R^2 = 0.87$ D.W.S. = 1.84

Identities

Capital Stock

$K = K_{-1} + I$

Net Real Investment

$I = Sp + Sg + Sr$

Real Private Income

$Yp = Y - Yg$

Individual equations

Production function

Unlike the conventional economic theory the production function has real balances appearing as an additional factor of production. It also has a linear efficiency variable, E, as an argument, representing the change in the pattern of capital formation. The inclusion of real balances has been justified earlier in chapter 3 (section 3.3). The reported double log regression has a good fit and all the variable are highly significant at 5% and labour at 10%.

There is no serial correlation in the regression. The variables, real balances and E have contributed to the explanatory power of the regression. That is to say after their introduction R^2 has improved and their inclusion has removed serial correlation.

Demand for real Balances

Damand for money function in our model is the usual one with lagged value of price-level. This is required because the expected rate of inflation being an opportunity cost of holding real balances is of the nature of capital gain or loss. A high rate of expected inflation implies a depreciation in the real value of wealth held as real balances and hence a high expected rate of inflation will shrink the public holdings of real balances to avoid capital loss. Philip Cagan has infact explain demand for real balances during hyper-inflation only by means of expected rate of inflation. Both income and short-run interest rate also found to be significant.

Price formation

In the reported equation arrived at through two stage least- squares, all the variables are found to be significant and they enter with correct sign. The money stock and lagged price level have a positive sign and the output has the negative sign. The estimated equations can predict the direction and magnitude of the change in price.

Private savings function

The private saving function has personal disposable income, lagged private savings, FR and the expected rate of inflation as explanatory variables. The equation shows that the short-run marginal savings propensity works out to be '0.046' its long run counterpart can be worked out as '0.046'/1-0.49 = 0.090

P-1 is included in the model to account for the impact of inflationary expectation on the desired time pattern of the people. A priori, A high expected rate of inflation reduces the real rate of return on savings and makes future consumption less attractive.

Allocative efficiency function

The final equation endogenizes the allocative efficiency variable E that appeared as one of the determinant of Y in the production function. The reported regression suggest E to be a function of present and past levels of financial growth the marginal impact of unit

increase in FR is (5.1) point increase in E in the short-run. The long run impact is much greater at points (5.14/1- 0.42) = 8.8.

The Indian economy over the four decades had been shifting its focus from self reliance to structural adjustment to stabilization to financial liberalization to sustainable development. The path to higher economic growth by financial liberalization is not so clear. At best the financial liberalization can reinforce the process of economic growth and may supplement sustainable development agenda. In fact in India it seems both financial liberalization and macro-economic stability are prerequisite for sustainable development. Viewed in this contact, economic policies, more specifically, monetary policy can contribute to financial growth, price stability and higher economic growth. In India it is contended that economic policies must have strong systematic bias in minimizing inflationary pressure. Therefore, it is worth while to examine the various aspects of monetary policy in India. More importantly its formulation and its relation to growth of output and inflation can be examined.

5.5 Monetary Policy, Inflation and Real Growth-India and Some Asian Countries

It is true that there exists wide agreement about the goals or objectives that the stabilization policies should pursue and it is equally true that diversity of opinion abounds regarding the role that should be assigned to the different instruments of economic policy. In India, more specifically, price stability as an objective of economic policy is being assiduously pursued and attended to by the policy makers and one often hears such assertions that economic policies must have a strong systematic bias in favour of minimizing inflationary pressures. However, legitimate doubts immediately present themselves about the original contributing factors for price increases[121] and this often possess dilemma to the policy makers in adopting prompt and appropriate measures. It would be extremely difficult to devise an anti-inflation stabilization package which mitigates all pervasive influence of the major factors in their totality. Hence to render the problem of inflation and its solution analytically tractable, it would be pertinent to take a more eclectic view of inflation and of the adequately of the pursuit of appropriate measures.

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[121] Major factors are money supply increses, international factors, dislocation of infrastructural facilities such as power, transport and port facilities, continued budget deficits, accertion of foreign exchange reserves, expectations of a poor administered prices as well as difficulties in regard to efficient and agricultural seasons, prompt supply management.

It is no gain saying the fact that disequilibrium between aggregate demand and supply does manifest itself in the rising prices. This is attributable, a monetarists, to an unwarranted expansion of money supply and credit which, in effect, arises in order to avoid the temporary depressive effects of non-accommodation. Such accommodating policy is apt to accentuate inflationary price expectations and cost trends making it imperative for the authorities to anchore these trends to a consistent course of demand policy. Table 5.1 explains the mechanics of price inflation in India and shows the trend of price inflation over the period 1951-52 to 1991-92.

The computed prices in column (4) of table 5.1 is obtained by dividing column (2) by column (3)x100 and is based on the assumption that the index of money supply is a good indicator of aggregate demand and the index of real national income a good indicator of aggregate supply. As can be seen from the table, the computed price index tracks the official price index of money supply and real national income are good approximations to the actual demand and supply in the Indian economy. In table 5.1 it can also be observed that the computed price index over predicts the actual price level in the initial years. This is obvious because during the first two decades, Indian economy had been experiencing relative moderate excess demand pressures as reflected in lower inflation rates. It was only after 1970s that price increases started getting some momentum and got entrenched with expectations further exacerbating price increases. The preceding analysis substantiates the policy makers concern regarding price stability and emphasizes that monetary management as a part of the aggregate demand management to subsequve well defined social objectives should be given due consideration, such management of the aggregate demand by regulating certain macro-aggregates (be it credit restorining, money supply targets and/or gradual reduction in Govt. expenditure) is considered essential in view of the fact that higher rates of inflation are accompanied by greater variability in inflation rates and the discrepancy between actual and anticipated rate of inflation entails considerable welfare costs. Before we examine the issue of variability of inflation, it is instructive to examine the long run relation between money stock and inflation.

Table 5.1

Mechanics of Trends in Price Inflation in India

1951-52 to 1991-92

Year	Index of Money Supply	Index of Real income	Computed Price, index (4=2/3) X 100	Official Price Index (WPI)
1951-52	26.1	49.9	52.4	43.8
1952-53	25.5	51.6	49.3	44.8
1953-54	26.5	55.0	48.1	45.3
1954-55	28.3	56.4	50.1	40.1
1955-56	32.1	58.2	55.2	44.4
1956-57	33.7	61.4	54.9	47.0
1957-58	34.8	60.1	57.9	47.5
1958-59	36.7	65.2	56.3	50.2
1959-60	39.5	66.2	59.7	53.1
1960-61	42.0	70.8	59.3	57.1
1961-62	44.5	73.1	66.8	55.0
1962-63	48.3	74.2	65.1	57.7
1963-64	54.2	78.1	69.4	62.3
1964-65	58.5	84.1	69.5	67.3
1965-66	64.7	79.1	81.7	75.7
1966-67	70.1	79.7	87.9	87.5
1967-68	75.0	86.7	86.4	88.2
1968-69	81.7	89.1	61.7	91.0
1969-70	89.7	94.6	94.8	96.5
1970-71	100.0	100.0	100.0	100.0
1971-72	112.3	104.4	110.7	105.3
1972-73	129.3	99.8	129.5	116.2
1973-74	149.5	105.0	142.3	139.7
1974-75	157.0	106.6	147.2	175.0
1975-76	170.2	117.0	145.4	173.0
1976-77	202.6	117.6	172.3	176.7
1977-78	237.2	128.3	184.8	185.8
1978-79	281.5	135.4	207.0	185.8
1979-80	325.9	128.2	252.6	217.6
1980-81	379.3	138.7	273.4	257.3
1981-82	405.1	145.7	278.0	280.6
1982-83	466.3	147.1	316.2	295.5
1983-84	451.6	149.8	301.4	317.3
1984-85	501.5	154.4	350.6	335.4
1985-86	595.5	161.7	368.2	353.2
1986-87	699.0	169.7	412.0	380.0
1987-88	787.0	178.2	441.6	410.4
1988-89	929.4	197.8	469.8	441.1
1989-90	1114.3	208.6	534.1	473.8
1990-91	1280.3	219.5	583.2	522.6
1991-92	1517.2	221.5	685.0	594.2

Source : RBI Bulletin various issues.

Note : Column (3) refers to measured Real Income and is arrived at by deflating Nominal Income by an appropriated deflator and to that extent, Column (3) & (5) are not independent.

5.6 Money Supply and Inflation

It is widely agreed that in the long run, the rate of increase in money demand will be dependent solely on the growth of potential output. This implies that in the long run the inflation rate (π) is determined by rates of money supply growth (m) and real full employment output growth (Y_f) or $\pi = m\text{-}cy_f$....(1) Where c is the income elasticity of demand for money. Because the growth of full employment income is largely determined by fundamental factors other than the growth of the money supply. Equation (1) implies that to control the long-run ('steady state') inflation rate it is necessary and sufficient to reduce the growth rate of the money supply. However, it is argued by many that monetary policy can account for very little of the inflation of the recent years. This view stresses the supply side effects (food and other price shocks) and suggests that non-monetary factors should be awarded much greater significance and that higher inflation was not of monetary origin and therefore that the prescription of monetary restraint is not necessary.

Table 5.2 provides the results of an admittedly crude attempt to examine the relationship between long-run money supply growth and inflation rates. Drawing on data on average inflation and money supply growth for the 1960s and 1970s, and on the rate of growth of aggregate output, it presents rough estimates of the income elasticity of the demand for money, using both M_1 and M_3 definitions. The implied elasticities differ in the two periods for which they are calculated, 1960-70 and 1970-80 but accord well with prior expectations[122]. The elasticities are then used to extrapolate the 'underlying' inflation rates of the 1980s. If money supply growth had been maintained at the 1980-88 rate throughout the decade and if (long run) growth in real money demand duplicated the average historical experience of the 1960s and 1970s, then the implied long-run inflation which can be attributed to price shocks. However, keeping in view the fact that recently, Indian economy has not hit very high levels of inflation, it seems monetary authorities have conducted monetary policy in an appropriate manner. The essential point is that monetary factors alone seem to have led to an inflation rate of around 8 to 11 percent per year in the 1980s and before Indian economy enters high level, some monetary breaks seem to be desirable. This apart, the exercise seems to have furnished the evidence which supports the long-run proportionality between money and price level.

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[122] In surveying international evidence on the demand for money, Laidler (1977 : 148-149) concludes that narrowly-defined elasticities are generally less than broadly defined ones, with the former often significantly less than unity. Indian studies generally have found similar results; see, for example Trivedi, M.S. (1980).

Table 5.2

The Relationship between Long-run Money Supply Growth and Inflation Rates

Historical Experience

	Monetary Growth[2] %		Inflation[3] %	Implied Growth in Real Money %		Output Growth %	Implied Income Elasticities of Money Demand	
	M_1	M_3	II	$C_1y=(M_1-II)$	$C_2y=y(M_4-II)$		C_1	C_2
1960-70	8.91	9.17	6.11	2.8	3.86	3.53	0.80	0.86
1970-80	13.88	16.91	8.17	5.71	8.74	3.50	1.63	2.50

Extrapolated 1980s experience (Period 1980-88)

Actual Monetary Growth[4] %		Assumed Growth in Real Money Demand[5] %		Implied Long-run Inflation rate[6] %	
M_1	M_3	C_1y[5]	C_2y	II_1	II_2
14.00	16.6	2.8-5.71	3.86-8.74	8.3-11.2	7.9-13.5

1. All calculation are based upon the long-run equation II=m-Cy and in Long-terms.
2. M_1 is the annual compound growth rate of RBI's narrowly defined money supply=Currency+demand deposits+Other deposits. M_3 is the compound growth rate of M_1+time deposits.
3. The rate of change of whole sale prices.
4. Actual annual compound money supply growth rate 1980-88. It is assumed that they are maintained throughout the decade.
5. Assuming the growth in real money was equal to the average of the two previous periods.
6. Prediction II1 is (M_1-C_1Y); Prediction II_2 is (M_3-C_2y).

5.7 The variability of Inflation in Asian Countries

The introduction of distinction between anticipated and unanticipated inflation has significantly remoulded the thinking of researchers as well as policy makers towards the choice of an appropriate macro economic policy. One of the major implications of this

theoretical distinction by M. Friedman[123] has been the notion that only the unanticipated inflation produces real effects are found to be only temporary. Explicit in this analysis is the belief that economic agents correct their errors of forecasting inflation step by step and inflationary expectations gradually adjust to the actual rate of inflation. This error learning process could be affected adversely by prevalence of higher rates of inflation. This is because higher rates of inflation are accompanied by greater variability in inflation rates. The increased variability would augment the average forecasting error in predicting inflation and this would further widen the time span in which expectations adjust to reality.

It is only recently the systemic relationship between average rates of inflation and their variability has been emphasized. If a higher rate of inflation is expected to yield a higher degree of variability of inflation, then the discrepancy between actual and anticipated rate of inflation may entail considerable welfare costs. Edward Foster[124] and D.E. Logue and T.D. Willet[125] have provided empirical evidence on the relationship between the rate and variability of inflation by examining the past experience of a larger number of countries. A similar exercise is attempted for seven Asian countries. For all seven Asian countries the mean rate of inflation and its standard deviation are computed for five time periods, 1957-88, 1957-76, 1957-68, 1969-76 and 1977-92. The relevant statistics are given in Table 5.3 and Table 5.4; inflation is measured by the annual percentage increase (or decrease) in consumer price index (Table 5.3) as well as in GDP deflator (Table 5.4).

A careful perusal of Table 5.3 and Table 5.4 does confirm our a priori expectation that the variability (unpredictability) of inflation becomes more pronounced with higher rates of inflation. Across each country as well as each period, the relationship between average inflation rates and variability of inflation is found to be positive. More significant is the result that the positive association between average annual inflation and standard deviation remains stable over different time periods. This suggests that choosing an inflationary policy might carry the cost of a more variable inflation. At the policy level coexistence of higher rates of inflation and greater variability makes it imperative for the policy-makers to give utmost priority to the objective of price stability. The disadvantages associated with induced

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[123] Friedman, M (1968), "The Role of Monetary Policy" American Economic Review, Vol. 58 (1), pp.1-17.

[124] Foster (1978), "The Variability of Inflation *Review of Economics and Statistics*, Vol. IX, No.3, pp.346-350.

[125] Logue, D.E. and Willet, T.D. (1976), "A note on the relation between the rate and variability of inflation" Economics, 43, pp.151-158.

uncertainty on account of higher rates and variability of inflation would also compel policymakers to conduct monetary as well as fiscal policy in the most appropriate manner so that they are not destabilizing. This is needed in order to mitigate all pervasive adverse effect that the inflationary policies might carry with them.

Table 5.3

Inflation Trends (Average growth rate and its variability)

Country	1957-68		1969-76		1957-76		1977-92		1957-92	
	X	σX	X	σX	X	σX	X	σX	X	σX
India	6.28	4.52	7.33	10.11	6.72	7.42	8.73	3.17	7.32	6.53
Korea	11.01	8.14	15.22	6.63	12.78	7.83	13.22	8.60	12.91	8.07
Malaysia	0.46	1.81	5.16	5.49	2.44	4.47	5.39	1.91	3.31	4.11
Pakistan	3.0	3.97	12.37	9.01	6.94	8.05	8.79	2.17	7.49	6.90
Philippines	4.03	2.54	12.85	8.85	7.74	7.46	15.95	12.24	10.48	10.43
Sri lanka	1.55	1.92	7.08	2.70	3.63	3.57	13.71	6.67	6.62	6.58
Thailand	3.03	4.06	7.25	7.77	4.21	6.22	8.50	5.45	5.46	6.31

(X is the average mean growth rate of consumer prices for the years and σX is standard deviation of growth rates for years in consideration).

Source : Various issues of International Financial Statistics and National Accounts Statistics.

Table 5.4

Inflation Trends (Average growth rate and its variability)

Country	1957-68		1969-76		1957-76		1977-92		1957-92	
	X	σX	X	σX	X	σX	X	σX	X	σX
India	6.98	4.00	8.75	6.71	7.51	5.46	8.45	3.46	7.79	4.95
Korea	20.54	15.79	17.85	5.66	19.60	13.18	14.13	7.98	18.20	12.30
Malaysia										
Pakistan	3.68	5.06	13.37	22.43	7.31	14.87	8.95	1.62	7.68	13.12
Philippines	2.42	3.36	13.02	7.96	5.45	7.01	15.95	13.03	7.78	9.75
Sri lanka	1.65	4.55	7.66	6.61	3.50	5.63	14.21	6.11	6.02	7.33
Thailand	2.96	3.97	7.16	7.57	4.25	5.68	7.30	4.11	4.97	5.51

(X is the average mean growth rate of GDP deflators for the years and σX is the standard deviation of growth rates for the year in consideration).

Source : Various issues of International Financial Statistics and National Accounts Statistics.

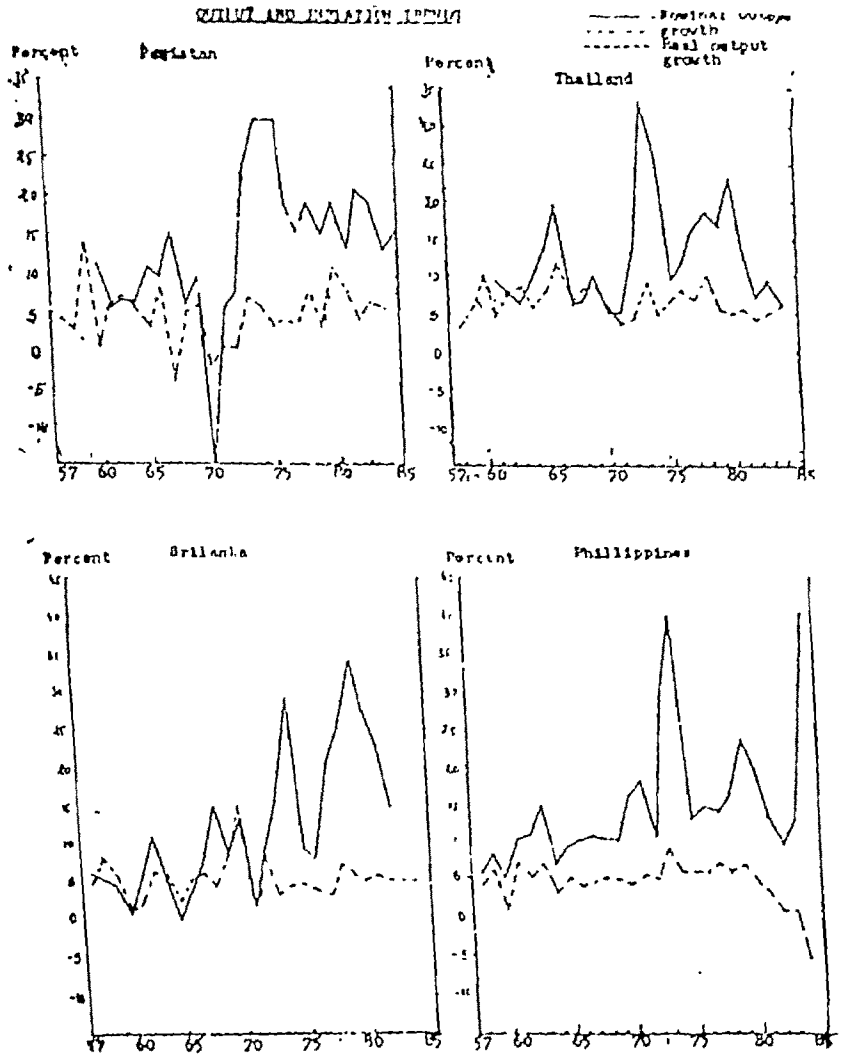
growth
Real output
growth
Percent
Thailand
Percent
Srilanka
Percent
Phillippines

Fig. 1

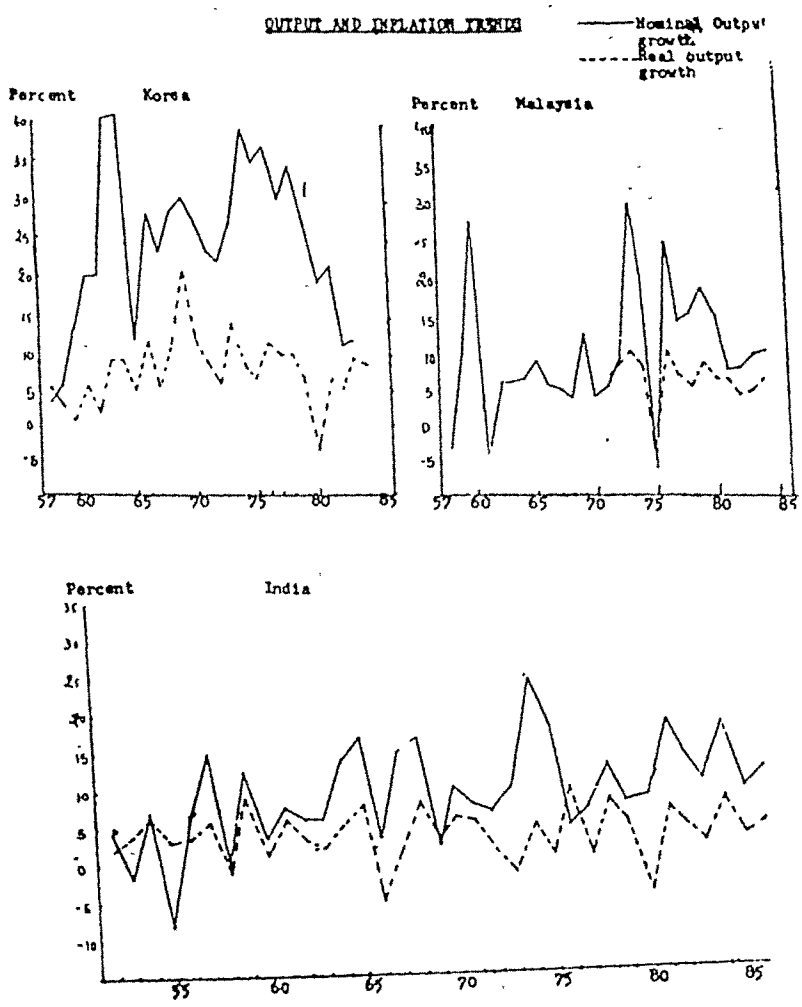
OUTPUT AND INFLATION TRENDS
Nominal Output growth
Real output growth
Percent
Korea
Percent
Malaysia
Percent
India

Fig. 2

Table 5.5

Nominal Output Growth Trends (Average growth rate and its variability)

Country	1957-68		1969-76		1957-76		1977-92		1957-92	
	X	σX	X	σX	X	σX	X	σX	X	σX
India	9.41	5.84	10.81	6.68	10.00	6.25	12.46	3.78	10.85	5.65
Korea	21.73	12.32	30.47	6.05	25.41	11.04	22.70	8.00	24.67	10.38
Malaysia	6.88	8.00	13.10	11.10	9.50	9.92	13.10	4.00	10.54	8.73
Pakistan	9.12	3.34	11.65	19.20	10.32	13.84	15.68	2.98	12.48	11.81
Philippines	9.66	2.71	19.58	9.91	13.84	4.34	19.32	9.50	15.44	9.06
Sri lanka	6.03	4.18	12.01	7.64	8.53	5.58	22.07	7.62	12.34	9.26
Thailand	9.72	4.18	14.43	9.43	7.66	9.72	13.93	5.60	12.69	7.09

(X is the average mean growth rate of nominal income for the years and σX is the standard deviation of growth rates for the year in consideration).

Source : For India, National Accounts Statistics and for others, International Financial Statistics, various issues.

Table 5.6

Real Output Growth Trends (Average growth rate and its variability)

Country	1957-68		1969-76		1957-76		1977-92		1957-92	
	X	σX	X	σX	X	σX	X	σX	X	σX
India	3.43	4.25	3.92	3.24	3.64	3.86	4.26	3.80	3.85	3.85
Korea	4.70	6.57	11.46	4.73	8.63	4.70	6.89	4.08	8.11	4.60
Malaysia			8.14	3.67			7.17	1.07	7.60	2.60
Pakistan	4.58	4.38	3.04	2.97	3.93	3.93	6.20	2.43	4.60	3.70
Philippines	4.90	1.54	6.08	1.44	5.40	1.61	3.30	3.91	4.78	2.70
Sri lanka	4.79	1.83	6.04	4.41	5.31	3.24	5.49	9.08	5.37	2.76
Thailand	7.72	2.21	6.83	1.65	7.34	2.04	6.39	1.58	7.06	1.96

(X is the average mean growth of real income for the years and σX is the standard deviation of growth rates for the year in consideration).

Source : For India, National Accounts Statistics and for others, International Financial Statistics, various issues.

Perhaps the most striking feature of the graphs (from Figs. 1 and 2) is how co-incident are the fluctuations in real and nominal output growth. This is true for virtually all countries up to the early 1970s. During the 1970s opposite movements in nominal and real income growth are observed in a number of countries. For some countries like Pakistan, Sri lanka,

Philippines and Malaysia, there seems to have been a secular increase in the average rate of nominal income growth; for almost all the countries, there was a peak in the early 1970. Real output growth generally exhibits a much more stable trend so that many of the graphs are 'Open mouthed'. This could suggest that control of nominal income growth may imply a significant degree of control over short-run movements in real output growth, but less, if any control over long-run real output growth. The volatility of nominal income growth (as measured by the standard deviation) was much higher in the period 69-76 compared to the period 57-68 (Table 5.5) for all the countries except Korea and this again fell in the period 77-88. For most of the Asian countries nominal income growth was actually more stable prior to the first oil shock. There does not seem to be any definite, consistent pattern observed in the growth rates of real output. For countries like Korea, Philippines and Sri lanka, average real growth rate, after oil price shock has increased whereas for other countries, average real growth rate has retained, more or less, constant. For the entire period of 1957-92. Korea, Malaysia and Thailand have shown highest real growth rate increase in the rate of inflation during 1957-92. Considering Table 5.4 (inflation trends on the basis of GDP deflators), it is apparent that variability of inflation in the post oil price shock period had increased for all the countries except Korea. If one considers the whole period 1957-92 which covers both oil price shock periods, the variability of inflation seems to have been maintained at a higher level.

Considering the Figs. 1 and 2, the graphs of nominal and real output growth are generally close together until the early 1960s and even for sometime thereafter upto 1970 for countries like India, Thailand, Sri lanka reflecting low rates of inflation. In particular, there is a tendency for the graphs to coincide at the troughs indicating very low or in some cases negative inflation during recession. Many Asian countries experienced a relatively sudden increase in inflation in the half decade to 1970 and over a long-period (1957-92), inflation differentials have widened considerably. For the period as a whole, it seems that real growth rare has shown relatively greater stability than inflation and this is true for all countries. This has the implication that real growth in general is less subject to short-run shocks than is inflation. This is further reinforced by the fact that variability of inflation in 69-76 period is greater than the period 57-68 for many countries whereas variability of real growth rates even after price shock remained more or less constant and in countries like India, Pakistan and Thailand actually fell.

Table 5.7

Money Stock (M_1) and Factors Affecting M_1 (Rs. Crores as on last Friday) (outstandings)

Year	NCBg	BCCs	NFE	CCL	NML	M_1
1969-70	4752	5407	584	360	4567	6536
1970-71	5264	6455	559	384	5341	7321
1971-72	6444	7368	619	411	6522	8320
1972-73	7770	8729	577	457	7813	9684
1973-74	8726	10701	674	502	9456	11172
1974-75	9533	12647	392	531	11215	11911
1975-76	10112	15392	1094	555	14022	13143
1976-77	11022	18503	2471	568	17041	15609
1977-78	13470	21222	4445	593	24343	18383
1978-79	15391	25437	5434	603	29706	21819
1979-80	20101	30630	5295	592	37052	19947
1980-81	24731	36236	4665	619	43243	23117
1981-82	30139	43913	2579	657	51687	24729
1982-83	34748	51162	1828	682	59885	28535
1983-84	40505	59992	1646	720	68655	33066
1984-85	48950	70801	3279	777	84292	39646
1985-86	58522	81852	3474	940	101034	43599
1986-87	71298	93146	4788	1192	118995	51177
1987-88	84107	104346	5398	1338	137544	57645
1988-89	96880	127222	6503	1475	165473	66607
1989-90	117151	151704	6651	1551	196001	81056
1990-91	140193	171769	8672	1621	229363	92892
1991-92	158294	191065	19527	1696	256471	114111

Source : Reserve Bank of India Bulletin, Various issues

Note : Notation used is as follows :

(1) NCBg = Net Bank Credit to Government

(2) BCCs = Bank Credit to Commercial Sector

(3) NFE = Net Foreign Exchange resources

(4) GCL = Government Currency Liabilities

(5) NML = Non-Monetary Liablities of Banking System

(6) M1 = Money Stock = Currency with the public and demand deposits + Other deposits and M1 = (1) + (2) + (3) + (4) - (5) or

M1 = NBCg + BCCs + NFE + GCL - NML

Table 5.8

Structural Composition of M_1 (expressed as Percentages to M_1)-(outstandings)

Year	NCBg	BCCs	NFE	CCL	NML	M_1
1969-70	72.70	82.72	8.93	5.50	69.87	100
1970-71	71.90	88.17	7.63	5.24	72.95	100
1971-72	77.45	88.55	7.44	4.93	78.39	100
1972-73	80.23	90.14	5.96	4.72	80.67	100
1973-74	78.10	95.78	6.03	4.50	84.64	100
1974-75	80.03	106.17	3.29	4.46	94.15	100
1975-76	76.93	117.11	8.32	4.22	106.68	100
1976-77	70.61	118.54	15.83	3.64	109.17	100
1977-78	73.27	115.44	24.17	3.22	137.86	100
1978-79	70.53	116.16	24.90	2.76	136.14	100
1979-80	100.77	153.55	26.54	2.96	185.75	100
1980-81	106.98	156.75	20.11	2.67	187.06	100
1981-82	121.87	173.53	10.42	2.65	208.97	100
1982-83	121.77	179.29	6.40	2.39	209.86	100
1983-84	122.50	181.43	4.98	2.12	210.65	100
1984-85	123.45	178.56	8.27	1.95	212.59	100
1985-86	134.22	187.73	7.96	2.15	231.77	100
1986-87	139.31	182.00	9.35	2.33	232.51	100
1987-88	145.90	181.01	9.36	2.32	238.62	100
1988-89	145.45	191.00	9.76	2.21	248.93	100
1989-90	144.53	187.15	8.20	1.91	241.80	100
1990-91	150.92	184.91	9.33	1.74	246.91	100
1991-92	138.71	167.43	17.11	1.48	224.75	100

Source : Derived from Table : 5.7

Note : Column (1), for example, is derived as follows :

(NBCg/M1)X100;

Column (2) = (BCCs/M1)X100.

The percentages are calculated on the basis of working out the ratios of each of the variables from (1) to (5) to that of M_1 where the numerator refers to actual outstanding values of the variable for that particular year and denominator is the outstanding Money Figure for M_1.

Table 5.9

Monetary Stock (M_1) and Factors Affecting M_1 (Rs. Crores) Yearly Variations

Year	NCBg	BCCs	NFE	CCL	NML	M_1
1970-71	512	1048	-25	24	774	785
1971-72	1180	913	60	27	1181	999
1972-73	1326	1361	-42	46	1291	1364
1973-74	956	1972	97	45	1643	1488
1974-75	807	1946	-282	29	1759	739
1975-76	579	2745	702	24	2807	1232
1976-77	910	3111	1377	13	3019	2466
1977-78	2448	2719	1974	25	8302	2774
1978-79	1921	4125	989	10	4363	3436
1979-80	4710	5283	-139	-11	7346	-1872
1980-81	4630	5606	-630	27	6191	3170
1981-82	5408	6677	-9086	38	8434	1612
1982-83	4609	8249	-751	25	8208	3806
1983-84	5757	8830	-182	38	9770	4531
1984-85	8445	10809	1633	57	14637	6583
1985-86	9572	11051	195	163	16742	3950
1986-87	12776	11294	1314	252	17961	7578
1987-88	12809	11200	610	146	18561	6468
1988-89	12773	22876	1105	137	27929	8962
1989-90	20271	24482	148	76	30528	14449
1990-91	23042	20065	2021	70	33362	11836
1991-92	18101	19296	10855	75	27108	21219

Source : Derived from Table : 5.7

Table 5.10

Structural Changes in Composition of M_1 (expressed as percentages to M_1)-Variations

Year	NCBg	BCCs	NFE	CCL	NML	M_1
1970-71	65.22	133.50	-3.18	3.05	98.59	100
1971-72	118.11	91.39	6.00	2.70	118.22	100
1972-73	97.21	99.78	-3.80	3.37	94.64	100
1973-74	64.24	132.52	6.51	3.02	110.41	100
1974-75	109.20	263.32	-38.15	3.92	238.02	100
1975-76	46.99	222.80	556.98	1.95	227.84	100
1976-77	36.90	126.15	55.83	0.52	122.42	100
1977-78	88.24	98.01	71.16	0.90	299.28	100
1978-79	55.90	120.05	28.78	0.29	126.97	100
1979-80	251.60	282.21	-7.42	0.58	392.41	100
1980-81	146.05	176.84	-19.87	0.85	195.29	100
1981-82	335.50	414.22	-129.40	2.35	523.20	100
1982-83	121.10	216.73	-19.73	0.65	215.65	100
1983-84	127.05	184.87	-4.01	0.83	215.62	100
1984-85	128.28	164.19	24.80	0.86	222.34	100
1985-86	242.32	279.77	4.93	4.12	423.84	100
1986-87	168.59	149.03	17.34	3.32	237.01	100
1987-88	198.03	193.16	9.43	2.25	286.96	100
1988-89	142.52	255.25	12.32	1.52	311.63	100
1989-90	140.29	169.43	1.02	0.52	211.28	100
1990-91	194.67	169.52	17.07	0.59	281.86	100
1991-92	85.30	90.93	51.15	0.35	127.75	100

Source : Derived from Table : 23

Note : Column (1), for example, is derived as follows :

(NBCg/M1)X100 where refers to change

Column percentages are calculated on the basis of working out the ratios of variations of a variable to variation in M1 between successive years.

5.8 Monetary Policy Formulation

The primary emphasis of monetary policy is usually placed on its role as an instrument of macro economic demand management. Hence great importance is attached to the permissible magnitude of monetary expansion consistent with the anticipated rates of growth of the economy as well as some broad assumptions regarding price trends. However in the formulation of policy, in addition to the quantity of money supply expansion, the 'quality' of money supply expansion also merit special significance. This is because the quality of money supply expansion in certain situations might compensate for more than the anticipated increase in the quantity of money supply expansion in certain situations might compensate for more than the anticipated increase in the quantity of money supply, in other words, different "sources" of money supply expansion may exert varying degrees of pressures on aggregate demand (N.A. Majumdar, 1979)[126].

5.9 Composition of Money Supply

It appears that some structural changes have taken place in the composition of money supply in the last decade. These have important implications for monetary management. To indicate the structure transformation, the relative contribution of selected factors to money supply has been indicated in the data set out in the accompany tables. These data relate to 'money stock', that is 'outstanding levels of money supply' for each of the years between '70-71' to '87-88' three factors have been taken up for discussion : Net foreign exchange assets and food procurement credit, Net Bank credit to government and commercial sector.

(i) Net Foreign Exchange Assets

The accrual of foreign exchange assets is a sort of an 'autonomous factor' so far the central bank is concerned and hence money supply expansion which is directly attributable to this factor becomes a "given" in the monetary budget. To some extent the room for manouverability in monetary budget perhaps in narrowed down as a consequence.

There is an even more important aspect to be considered. During the years when a sizable increase in money supply is anticipated because of foreign exchange assets; there may be a temptation to compensate for it through a policy compensatory deflation so as to keep the

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[126] N.A. Majumdar, and Patil R.H. (1975), "Impact of Domestic and external factors on money supply:1974-75 experience", Reserve Bank of India Bulletin, June.

total money supply expansion within a respectable range. For example during the two consecutive years 1976-77, 1977-78 and 1978-79 money supply, M_1 and M_2, expanded at the very rapid rates of 18, 7, 17. 7, 18.7 (M_1) respectively yet the price situation was one of relative stability in the years' 1976-77, 77-78 and 78-79, with WPI recording rises of 2%, 5% and zero per cent. These are precisely the years when contribution of foreign exchange stood at 56%, 72% and 29% of the money supply. The point is that if an effort were to be made to keep money supply expansion within the range of say 10% during these years, by containing credit to the public or the private sector, this would have probably led to reduced investment expenditures or dampening of demand. Viewed against this background the need to look into the quality of money supply expansion becomes clear. Under the apprehensions of possible inflationary rise in prices, if increased contribution of foreign exchange assets is compensated by curtailing the liquidity to the private sector in order to keep adequate monetary budget, it would lead serious loss of output. That is why the structural composition of M_1 and its change is important.

(ii) Most important fact from the table is that out of all the factors considered, Net Bank Credit to government and Bank Credit to commercial sector have been the most important constituent parts of Money Stock and in the recent past, they have contributed substantially to the growth of Money Stock. Food procurement credit and foreign exchange assets have declined in importance as their contribution and relative weightage have gone down. The item which merits major attention has been the substantial increases in net Bank credit to the government. This has serious implication for the formulation and conduct of monetary policy. This is because for monetary policy to be effective it is necessary that the monetary authority should have an effective say in regulating money supply which, in turn, requires that the monetary authority must have a reasonable degree of control over the creations of reserve money.

Obviously, there are exogenous factors such as movements in the foreign exchange assets which affect the level of reserve money. The degree of independence in regulating reserve money depends upon the institutional arrangements governing the functioning of monetary authority. Over the years, the practice has grown under which the entire budget deficit of the Central Government has been taken by the Reserve Bank of India, leading to an automatic monetisation of the deficit.

The issues that arise in the coordination of fiscal and monetary policies in India can be understood by a brief review of the borrowing programmes of the Government. There has been a significant rise in government borrowing since 1971. The volume of treasury bills outstanding including those funded into special securities rose from Rs.2500 crores in March 1971 to Rs.3900 crores in March 1987. Other marketable debt of the Central Government rose during the same period from Rs.4000 crores to Rs.42000 crores. Marketable debt of the State Govt. too rose sharply from Rs.1200 crores in 1986. Net Reserve Bank credit to Government also rose significantly from Rs.3800 crores in 1971 to Rs.45800 crores in 1987. Out of the increase in treasury bills and other marketable debt outstanding of the order of Rs.81900 crores, the absorption by the Reserve Bank accounted for about 60 percent. The Reserve Bank owned more than 93 percent of treasury bills outstanding in 1987.

The developments mentioned above highlight two important features of the government borrowing programme. First, the scale of borrowing was maintained at relatively high level and budgetary deficit presented by the increase in volume of treasury bills outstanding has gone up sharply. Government finances have come under increasing pressure in recent years. Surpluses on revenue account have given way to deficits. Interest payments as a proportion of tax receipts have shown a sharp rise in recent time period.

Secondly, The market borrowing of the Government has generally been at lower than market rates even though the rates of return offered on other types of borrowings have been high taking into account the fiscal concession. The discount rate on treasury bills which had risen to 4.6 percent per annum in mid 1974 has been pegged at that level and even today remains at that level. Banks and the life insurance and general insurance enterprises are required to invest a prescribed proportion of the funds mobilized by then in Government securities. It is to be noted that even the growing captive market for government securities represented by the fast growing commercial banks could not absorb fully the Government securities which were floated. As the earnings from holding these securities were not attractive and the banks had other alternative avenues for utilizing their funds more profitably, they held government securities only to the extent they were required to hold them under statutory obligations. In these circumstances, the Reserve Bank of India, which manages the public debt, became the residual subscriber to Government securities and treasury bills.

As Government incurred deficits every year, the question of retirement of treasury bills did not arise. The Reserve Bank had, therefore, to address itself to the difficult task of neutralizing to the extent possible the expansionary impact of deficits after taking into account the short term movements in its holding of net foreign exchange assets. The increasing liquidity of the banking system resulting from rising levels of reserve money had to be continually mopped up. The instrument of open market operations is not available for this task, given the interest rate structure. The task of absorbing excess liquidity in the system had to be undertaken mainly by increasing the CRR. At some point, this can result in some crowding out or the credit to commercial sector. With frequent and sharp increase the CRR has reached its statutory limit.

The growing budget deficits and their absorption by the Reserve Bank highlight not only the close link between fiscal policy but also the need for close coordination between the two. The essence of coordination between fiscal policy and monetary policy lies in reaching an agreement on the extent of expansions in Reserve Bank credit to Government year to year. This will set a limit on the extent of fiscal deficit and its monetisation and thereby provide greater maneuverability to the monetary authorities to regulate the volume of money. It is in this context that introduction of a system of monetary targeting mutually agreed upon between the Government and the central bank assumes added significance.

APPENDIX V

Variables of Macro–Economic Model

Year	GDP AT CONSTANT PRICES	M3	WPI 1980–81 PRICES	CAPITAL STOCK	INVEST. IN N–HH SECTOR/HH SECTOR	REAL SAVINGS (HH+PCB) 1980–81 PRICES	REAL NET INVEST. 1980–81 PRICES	REAL PRIVATE DISPOSABLE INCOME	TOTAL WORK–ING FORCE	RATE OF INTE–REST	P S –1	E –1	K –1	GOVT. SAVINGS + CAPITAL IN FLOW (SG)	REAL (GROS) INCOME OF THE GOVT. SECTOR 1980–81
	(Y)	(M)	(P)	(K)	(E)	P (S)	(I)	(Y) P							
1951–52	43872	2137.00	18.50	34314	1.19	3845.76	5565	44785.50	163177	3.50				1594.59	5400.00
1952–53	45117	2121.00	19.47	37104	1.06	3858.73	2785	50449.50	165210	3.50	3845.76	1.19	34314	652.42	5049.81
1953–54	47863	2200.00	16.80	40537	0.44	4428.97	3431	51754.87	167470	3.50	3858.73	1.06	37104	631.09	6239.42
1954–55	49895	2379.00	17.58	44445	2.45	5403.95	3910	50227.41	169955	3.50	4428.97	0.44	40537	790.89	5467.97
1955–56	51173	2683.00	16.35	50756	1.48	7956.99	6311	56457.94	172666	3.50	5403.95	2.45	44445	1180.32	6103.41
1956–57	54086	2869.00	15.35	59464	1.56	7570.56	8708	56983.95	175523	3.50	7956.99	1.48	50756	2104.18	7361.38
1957–58	53432	3163.00	17.88	67670	3.23	6048.39	8206	55462.37	178573	3.90	7570.56	1.56	59464	2371.97	6377.47
1958–59	57487	3476.00	18.46	73669	4.25	6124.35	5999	59989.64	181801	3.90	6048.39	3.23	67670	2929.87	6823 73
1959–60	58745	3883.00	19.24	80162	2.20	7606.97	6493	59383.08	185158	3.90	6124.35	4.25	73669	2234.51	6739.90
1960–61	62904	3964.00	20.13	88580	3.91	7643.49	8418	59356.04	188649	3.90	7606.97	2.20	80162	3799.64	7792.99
1961–62	64856	4243.00	21.58	95714	8.27	7447.60	7134	62380.07	191985	3.90	7643.49	3.91	88580	3642.34	8169.78
1962–63	66228	4553.00	21.47	104411	3.42	8568.86	8697	63171.83	195427	5.00	7447.60	8.27	95714	4248.12	9488.41
1963–64	69581	5037.00	22.25	113497	6.85	8921.20	9086	67488.41	198918	5.00	8568.86	3.42	104411	5052.38	10567.75
1964–65	74858	5499 00	23.69	123507	4.43	8827.11	10010	72715.16	202645	5.00	8921.20	6.85	113497	5360.23	11096.11
1965–66	72122	6134.00	26.25	134791	3.02	10449 08	11284	70031.82	206427	5.00	8827.11	4.43	123507	5096.87	11587.96
1966–67	72586	6817.00	28.25	146539	1.08	11940.39	11748	71698.23	210321	5.00	10449 08	3.02	134791	5054.22	11754.25
1967–68	78785	7460.00	32.15	156440	1.38	9652.29	9901	76077 89	214379	5.60	11940.39	1.08	146539	5064.26	11718.11
1968–69	80841	8306.00	35.93	165076	1.19	10808.00	8636	78251.69	218575	5.60	9652.29	1.38	156440	3827.01	11940.28
1969–70	86109	9337.00	35.48	175685	0.70	13587.31	10609	82844.36	203350	5.60	10808.00	1.19	165076	4232.91	13696.36
1970–71	90426	10958.00	36.82	187359	1.09	14230.57	11674	85079.77	180710	6.00	13587.31	0.70	175685	4766.60	14791.40
1971–72	91339	1269 00	38.82	199652	1.20	15165.53	12293	85886.08	182968	6.00	14230.57	1.09	187359	4747.44	15808.49
1972–73	91048	15033.00	41.05	210269	1.67	14382.74	10617	86783.19	185346	6.00	15165.53	1.20	199652	3980.94	16583.99
1973–74	95192	17571.00	45.16	225548	1.40	17709.29	15279	90395.58	187940	6.50	14382.74	1.67	210269	1764.79	17612.43
1974–75	96297	19457.00	54.28	238112	1.45	14779.41	12564	84123.53	190759	6.50	17709.29	1.40	225548	6764.61	18847.68
1975–76	104968	22286.00	67.96	250899	1.65	17219.91	12787	89606.24	193811	8.00	14779 41	1.45	238112	6056.11	17980.00
1976–77	106280	27321.00	67.19	265331	1.27	20450.52	14432	95016.25	197105	8.00	17219.91	1.65	250899	6517.75	21401.86
1977–78	114219	32906.00	68.63	281409	1.10	22218.84	16078	101776.18	200652	8.00	20450.52	1.27	265331	5834.03	22871.32
1978–79	120504	39861.00	72.19	302341	1.03	26778.25	20932	109489.56	204865	8.00	22218.84	1.10	281409	6952.36	24174.65
1979–80	114236	46801.00	72.19	319300	1.39	23306.17	16959	102460.43	209249	8.00	26778.25	1.03	302341	7701.76	27803.90
1980–81	122427	55358.00	84.54	338093	1.44	24132.00	18780	105009.00	223333	8.00	23306.17	1.39	319300	6588.72	27840.61
1981–82	129889	62426.00	100.00	359522	2.54	24318.68	19449	118971.03	228249	7.50	24132.00	1.44	338093	7746.00	29002.00
1982–83	133915	72868.00	111.23	379220	5.93	23722.12	16935	120433.27	233381	7.50	24318.68	2.54	359522	7773.65	31641.20
1983–84	144865	85899.00	116.69	396067	2.14	24751.07	17646	120163.67	238632	8.50	23722.12	5.93	379220	7685.64	35024.15
1984–85	150469	101957.00	125 47	413644	4.47	26061.40	16198	126769.74	244001	8.50	24751.07	2.14	396067	7902.91	38091.14
1985–86	156600	118338.00	133.59	435562	2.92	29942.15	21232	144227.27	249564	9.00	26061.40	4.47	413644	9993.80	4445.60
1986–87	162711	140633.00	139.49	456705	4.19	29789.31	19205	148798.85	255254	9.00	29942.15	2.92	435562	9965.71	49494.47
1987–88	170041	162660.00	147.61	476576	1.63	36956.24	20473	157145.73	261380	9.00	29789.31	4.19	456705	9969.62	53844.48
1988–89	187725	192085.00	159.73	501314	1.28	42227.55	26826	173694.02	267914	9.00	36956.24	1.63	476576	11522.98	58917.68
1989–90	201453	230309.00	171 64	525427	1.26	47114.54	32590	182380.36	274569	9.00	42227.55	1.28	501314	10600.39	63663.53
1990–91	212253	265828.00	184.32	552282	1.13	53469.78	37283	189116.89	277413	10.00	47114.54	1.26	525427	7624.41	67880.20
1991–92	213963	315084.00	203.23	570771	1.41	51462.43	26575	196385.29	281208	10.00	53469.78	1.13	552282	10502.60	73117.19
1992–93	2248887	346734.00	275.3	618459	1.59	50325.10	33658	204412.28	287642	10.00	51462.43	1.41	570771	8285.14	62063.57

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