CHAPTER II

MONEY SUPPLY ANALYSIS : A THEORETICAL FOUNDATION

From the output, employment and income generation point of view money is considered the most strategic variable. In the presence of stable money demand function in the economy, changes in money stock would initially disturb equilibrium of economy, but eventually would permit economy to attain stable equilibrium with higher output, employment and income. If idle resource exist in the economy, monetary change would contribute to growth of output with price stability, a goal which is cherished by Central Monetary authority. Analysis of money supply therefore needs to be approached in terms of the following:

1. Its appropirate measurement,
2. Mechanics through which money stock gets produced and
3. Its influence on aggregate economy especially on output and prices.

I. Measures of Money Stock :

An appropirate definition of money is one of the most controversial issues in economics. Economic theory has not provided a clear cut, complete or unequivocal answer to this issue. In our opinion, money being an invention, as all inventions are subject to change over a period of time, money is not an exception to it, in fact its concept keeps on changing with

the state of economic development. For example, Transaction Theories explains the medium of exchange function of money, while Asset Theories emphasise the medium of exchange as well as the store of value.

With the passage of time, many innovations in respect of financial instruments, practices and institutions have occurred in various economies. The economists have studied the implications of these financial innovations for the role of money and monetary policy. the works of Gurley and Shaw and Radcliffe Committee, are relevant in this connection. Though, they have taken into consideration many emperical studies, they have failed to provide an appropriate measure of money. The result is that "monetary authorities all over the world present alternative measures of money which are reviewed and revised from time to time".[1]

In India, economic thoughts in this directions have originated mainly from the works of two working groups on money supply appointed by the Reserve Bank of India [RBI].[2]

The First Working Group [1961] regarded "narrow" money as the appropirate measure. It did not use the term money for assets other than currency, demand deposits and other deposits, which it rightly called as near money assets in order to distinugish them from money. These other assets are included in the measure of quasi money.

$$M = C + DD + OD$$

Where C = Currency held by the public

DD = net demand deposit of banks

OD = other deposits of the RBI

The Second Wroking Group [1977] followed a rather ambivalent approach in this direction. While it thought that "the hard core of monetary aggregates should basically continue to be those assets possessing the quality of superior liquidy arising from the conception of money as a medium of exchange and the most generally accepted means of payment available for the mediation of transaction and final settlement of claims,[3] the group also accepted that the use of single measure of money stock for monetary analysis and policy would be inadequate and misleading. It, therefore proposed four measures of money. The four measures of money stock are defined below. Broadly, the main characterstics which seperate one measure from the other is the varying degree of its liquidy, the measures being specified in the decending order of liquidity -

M1 Consists of :

i] Currency notes and coins with the public

ii] Demand deposits of all Commercial and Co-operative Banks; and

iii] Other deposits held by the Reserve Bank of India

M2 Consists of :

i] M1; and

ii] Saving deposits with Post Office Savings Banks.

M3 Consists of :

i] M1; and

ii] Time deposits of all Commercial and Co-operative Banks.

M4 Consists of :

i] M3; and

ii] Total deposits with the post office Saving Organisation.[4]

Pertient question is, which one of these measures would serves the purpose best?

"In any macro economic study of interrelationship between money, prices and output, what is relevent is the total spending power of all financial assets. Clearly, therefore, the Conventional measure of narrow money, M1, is inappropriate".[5]

More recently, the Committee to Review the working of the Monetary System has analsysed the working of the Indian Monetary System and policy in terms of M3. It has recommended setting up of monetary targets in terms of M3 as instrument of monetary policy. "We, therefore, recommend that the Reserve Bank of India adopt monetary targeting as an important monetary policy tool. Formulation of monetary policy with M3 as the monetary variable to be targeted becomes a feasible proposition in the restructured monetary system envisaged by us".[6]

With the advancement in economic development, development of banking and the financial institutions, development of

the capital market in the recent past and the deepening of the financial market in India. In the light of above development, it would be more appropriate to use M3 as the better measure of money stock. So, we also follow the view of monetarists who conceive a broader concept of money as a temporary abode of purchasing power which includes time deposits with the banks along with currency, and demand deposits with banks in the money stock. Hence our subsequent analysis deals with M3 [Broad measures of money] concept.

II. Theory of Money Supply Determination :

Before we take up the study of the theory of money supply, it is necessary to understand the difference between two kinds of money; [a] Ordinary money (M) and [b] high powered money (H).

The ordinary money is partly the liability of the Central Monetary authority and the rest of the banking system. In recent years money supply has been empericaly measured in various countries. In India second working group set up by RBI has specifically recommended the four measures; namely M1, M2, M3 and M4 for analytical precison. The large part of the changes in ordinary money are caused by what is popularly known as High powered money or Reserve Money.

High powered money (H) is produced by the RBI and Govt. of India [Small coins including one rupee notes] and held by the public and banks. The RBI calls it "reserve money". H is the

sum of :

[i] Currency held by the public [C]

[ii] Cash reserves of banks [R] and

[iii] Other deposits of the RBI [OD][7]

Now, we present very briefly a widely held theory of moeny supply determiantion. The monetarist theory of money supply is given in the following equation:

$$M = m\ (H)^{8}$$

$$\text{Where } m = \frac{1 + c}{c + r\ (1+t)}$$

$$\text{Hence } M = \frac{1 + C}{c + r\ (1+t)} \cdot H^{9}$$

"m" is a well defined function of three behavioural assets ratio c ; t and r, they are called proximate determinants of "m".

Where :

c = Currency deposit ratio i.e. currency with the public as a ratio of the aggregate of Demand Deposits and Time Deposits with banks.

r = The reserve deposit ratio. It is the ratio of total reserves to total demand and time liabilities of the banks. Total reserves of banks can be divided under two heads : [i] required reserves, which banks are required statutorily to hold with the RBI [cash reserve ratio] and [ii] excess reserves, that bank hold as 'Cash on hand' [vault cash] with themselves or with the RBI. So "r" is increasing function of the total demand and time liabilities of banks.

t = Time deposit to demand deposit ratio [TD/DD]

It is the public who decides how much time deposits to hold in relation to demand deposit ,it shows the desire of the public for TD and DD.

[For their behavioural change see Annexure 6]

Though they are not ultimate determinants of "m", because these ratios themselve are functions of a few specifiable variables such as, rates of interest, the development of banking system, and banking habits of the public etc.

Many emperical studies in India and abroad have shown that the money multiplier "m" can be treated as a behavioural stable parameter. The leading works in this direction are Friedman and Schwartz[10]; Phillip Cagan[11], Khatkhate Villanueva[12], Jag M Chona[13] Mody & Thakar[14] etc. So, we also treat "m" as to be a stable parameter. Hence, the factor responsible for major changes in M is H or RM.

As defined earlier, "H" is produced by the RBI and Government of India and held by the public and banks, in other words it is government currency plus the Reserve Bank money [RM here after] - all held by the public and banks. Of the total stock of RM Government's currency liability to the public constitutes a very small proportion [only 2% in 89-90] more over year after year it is declined on continous basis. It has delcined from 7.97% in 1970-71 to only 2% in 1990-91. Therefore, variation in M is mainly due to changes in RM.

In order to identify the influence of various forces on

RM, we reorganised the balance-sheet of the RBI. The balance - - sheet Identity is presented as under :

Monetatry liability [ML] + non-monetary liabilities [NML] = Financial Assets [FA] + Other Asset [OA]

ML + NML = FA + OA

Monetary liability = Financial assets - Net non-monetary liability [NNML]

Where : [NNML = NML - OA]

Hence : RM = ML = FA - NNML

The above equation focuses upon the multifarious factors which are responsible for the variations in the monetary liabilities of the RBI i.e. RM.

It can be observed that the growth of FA, other things being given has positive influence on RM, while NNML acts as depressing force. The RBI issues notes on the basis of fixed fiduciary system since 1956. The rational or the guiding factors behind calculation and determination of the quantum of notes issued by the RBI is not indicated by the RBI in its annual or other publications. No rational explanation of the currency expansion leading to the overall monetary explosion is readily available. That does not mean RBI changes RM arbitarily. Rather, there is an intricate but definite system whereby changes in RM occur. A basic understanding of the system is utmost important to arrive at a sound theoretical formulation.

The RBI, while discharging the Central-Banking function, undertakes transaction with various sectors of the economy and rest of the world. The various transations can be classified with respect to :

[i] the government [ii] Banks

[iii] Commercial sector [iv] Foreign Sector.

The RBI in order to facilitate these sectoral transaction, provides credit to them, acquires financial claims on them and creates RM in the process. Using this classification of the RBI, the RM equation can be stated as under :

[Reserve Bank Credit is denoted by RBC]

RM = [1] Net RBC to Government
+[2] RBC to banks
+[3] RBC to Commerical Sector
+[4] Net foreign Exchange asset of the RBI
-[5] net non-monetary liabilities of the RBI

Then, the five factors [with appropriate algebraic signs] listed above are the proximate determinants of RM.

III. Review of Literature :

Money stock plays an important role in determining the level of economic activity. The need for effective control of money supply, therefore, cannot be under estimated Under the

influence of Keynesian economics the entire issue of controlling money supply was ignored. It was assumed to be a policy determined variable hence exogeneous to the system. In the post Keynesian period we do come across some literature on money supply analysis.

It is true that slowly this view point has come to be seriously questioned. Few studies in this regard undertaken abroad[15] and in India are of great significance. The leading studies on the determination of money in India are by V.V. Bhatt,[16] G.S. Gupta,[17] D.S. Pathak,[18] S.B. Gupta,[19] Madhur, Nayak & Roy,[20] Pandit,[21] Jadhav-Singh,[22] Rangrajan-Arif,[23] and RBI.[24]

Bhatt has attempted to quantify the relationship between the money stock and so called reserve money and has examined the stability of this relationship as well.

G.S. Gupta's study presents a simple money multiplier for India. This model is used to quantify the relative contributions of fifteen direct determinants of money during the period 1948-49 to 1967-68. Gupta comes to the conclusion that over the period as a whole the increase in "unborrowed reserve" accounted for 85 per cent of the growth of the quantity of money.

D.S. Pathak has tried to construct a model of the monetary process in India. His work highlights that the supply of money is deemed endogenous, government's fiscal operations in

conjunction with the state of the balance of payments appear to determine money income.

S.B. Gupta's number of articles on money supply analysis and the famous work "Monetary Planning for India" provides valuable understanding about what monetary planning should aim at and how changes in the supply of money come about, and the sources of change in high - powered money, the Key factor responsible for changes in money supply. In response to this, the RBI has introduced considerable changes in the methods of presenting monetary data.

Madhur, Nayak & Roy have developed a macro-econometric model for short-term macro-economic forecasting and policy formulation. Their model analyse the effect of the budgetary operation on certain key macro variables such as money, credit and inflation. According to them, the combined fiscal deficit of the government determines the net RBI credit to government, thus providing the crucial link between the fiscal and monetary sectors.

Pandit's work on money supply also shows that the reserve money is endogenously determined as a function of the exogenously determined net RBI credit to the government and the RBI's holdings of the net foreign assets which is determined in the external sector.

Jadhav-Singh's work is on the fiscal sector. As per their study, to the extent that fiscal deficit is financed by net credit to government it leads to monetary expansion. With the partial adjustment process, money stock [M3] is thus, related to fiscal deficit.

Rangarajan-Arift's work focus on the interaction between the monetary, fiscal and real sector in a closed economy frame-work. Their work highlights that government expenditure adjusts more rapidly than receipts to a given change in price level. As a result, inflation tends to widen the fiscal deficit leading to larger money supply.

Recently the RBI has appointed a committee of experts to review the working of the monetary system in India. The Committee has studied various aspects of Indian economy in general and monetary and financial sector in particular. This report of the committee is path breaking work and it has inspired many emperical researchers in this area, we have immensely benefited from this work. Committee has stressed the need for regulating Money Supply through its proximate determinant namely the reserve money or monetary base. It has also stressed the need for reducing the budgetary deficit of the government so as to impart stability to Indian Monetary Sector. However, empirical content in the report is inadequate and leaves out much to be desired.

Though this is not an exhaustive survey of the literature and findings of emperical work that has gone into this area, we feel that it does provide analytical framework for enabling us to under take the present study.

IV. HYPOTHESES

The present study seeks to examine the following hypotheses in the context of the Indian economy's experiences :

[1] It is hypothesised that the volume of credit money in India is less sensitive to monetory policy instruments.

[2] In the determination of money stock, earlier the emphasis was on mechanical application of "Money Multiplier". However, we hypothesise that the monetary base/Reserve money has stronger positve impact on the changes in money supply.

[3] It is hypothesised that Government's Monetary and Fiscal operations have stronger influence over the monetary changes.

[4] It is also hypothesised that the monetary expansion has relatively stronger impact on general price level than on output growth.

[5] Unlike Keynesian view, we hypothesise that the money supply in India is endogeneous and Fiscal & Monetary policy are inextricable intertwined.

V. METHODOLOGY

The present study seeks to examine the above mentioned hypothesis and the behaviour of some of the crucial Monetary and Fiscal variables. The statistical information is obtained from :

1. The R.B.I. Report on Currency and Finance
2. The Reserve Bank of India Bulletins
3. Economic Survey Government of India, and
4. Government of India's budgets and notes and memorandum to the budgets.

The focus of the study is to investigate the long term relationships among fundamental determinants of money stock, hence annual data are taken into consideration. The study relates to the period between 1970-71 to 1989-90, a period of 20 years, which is fairly long enough to reflect economy in general and price behaviour in particular. The year considered is financial year, that is, from April to March.

Since ours is a multivariable model, we have extensively used the well-known statistical technique namely, "Regression and Correlation Analysis", to analyse the crucial Monetary and Fiscal variables involved in the study. The study is conducted in terms of rates of changes of the variables rather than in terms of their absolute level as there is strong upward trend in all time series data.

VI. SCHEME OF THE WORK

The study is divided into Six chapters. The order of treatment of issues is followed as under :

Chapter I : It highlights the monetary structure of the Indian Economy

Chapter II : Deals with the theories of money supply, Literature survey, Methodology and Chapterscheme

Chapter III : Provides an analysis of reserve money where in we focus upon its proximate determinants in general and the government's monetary and fiscal operation in particular.

Chapter IV : It deals with the relative behaviour of other determinants of Reserve money, such as, Reserve Bank's credit to Commercial Sector, to Commercial banks and to Foreign Sector.

Chapter V : In this chapter we examine the relative behaviour of money supply with reserve money and their effect on output and price.

Chapter VI : This chapter deals with findings and policy implications.

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