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Determinants of Money Supply in India: A Post Reform Scenario

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Abstract: *There is a continuous debate on money supply process and its impact on macroeconomic variables and so on examination of determinants of money supply. This paper examines the determinants of money supply in India. The paper assesses in detail the major determinants of money supply and how the nature of determinants has changed over the period of time. The analysis is based on money multiple processes, using RBI's annual data for the period 1990-91 to 2014-15. The paper found the two major determinants one is proximate and the other is policy oriented, however latter one has upper hand in determining the money supply. The most important point out here comes that the nature and composition of both the determinants have changed, and these must have implication from policy perspective.*

Keywords*: Money Supply, Determinants, Money Multiplier, Proximate, Policy Oriented.*

I. Introduction

Money supply is a matter of interest not only to the Central bankers and policy makers but for the academicians as well. Whenever there is the study of any economic system, there is a continuing debate on the relative importance of money supply studies. Although having different ideologies regarding the money supply and its role as on the one side the extreme monetarists imply that the money alone matters and all other assets (real and financial) are close substitutes for money. On the other hand extreme Neo-Keynesianism rests on the premise that 'money does not matter' and the changes in interest rates of certain range of financial assets alone are important (Chona, J.M, 1976). The money supply is one of the important factors responsible for the changes in the macroeconomic variables in the economy and has fundamental importance in the economic discipline. The debate on the role of money supply in the determination of price level is ages old and has its relevance in the all periods of the time. According to the quantity theory of money, inflation is always and everywhere a monetary phenomenon, produced in the first instance by an unduly rapid growth in the quantity of money (Friedman 1968, p-18). Friedman's assertion does not hold that an increase in money supply growth rate is the sole cause of inflation in long run, but just the most important cause (Friedman 1980). Although, it is not here our concern to make the deliberation on the cause and effect relationship between money and inflation or money and other macroeconomic variables.But because of the close association with the macroeconomic variable of the economy it seems now relevant to pose two important questions which need to be answered. What are the major determinants of money supply in the study period? How the nature of the determinants of money supply have changed in the same period?

Thepaper byusing the money multiplier approach makes an attempt to answer the above questions. In the section IIwe give the theoretical background of the determinants of money supply. The section III discusses the money multiplier process. The section IV makes the trend analysis of money multiplier (m) and the high powered money (H), both the major determinants of the money supply process. The section V and VI separately makes an analysis of the factors determining both 'm' and 'H'. Finally the section VII makes the concluding remarks.

II. Determinants of Money Supply

Broadly mentioning, researchers have reported that there were two major approaches to the money supply determination in India; balance sheet approach or structural approach and money multiplier approach. The money multiplier approach focuses the relation between the money stock and reserve money, while as the structural approach favours analysis of individual items in the balance sheet of the consolidated monetary sector in explaining the variation in money stock (Jadhav, N, 1994, p-106). The money multiplier approach emerged strongly as a critic to the balance sheet approach, and because of if this it led to a big debate in the early 80's, a hot and a rich debate between the two groups of researchers, one group lead by Gupta who believed in the money multiplier theory, the other group of RBI economists, who were not accepting this theory. The analytical difference in the two may appear to be confined to be two different points of departure; the difference to an extent, however, also reflects the deeper division between monetarist and non- monetarists. It was especially Gupta (1976) who in his article vehemently criticises the manner in which RBI carries out the analysis of money supply in India. Gupta argues that the RBI's analysis is tautological and whole analysis by RBI which is only an

accounting analysis is empirically devoid of meaning and hence in favour of complete methodological revision. One of the main reason for supporting the methodological revision was that there should be incorporation of behavioural and other leading (real) factors into the money supply analysis (Srinivasa Rao, 1977) . It is actually this inclusion which will serve as the base for the real analysis and the factors responsible for the money supply within the economy. An examination of determinants of money supply, banking system and the public interact to create the monetary aggregate are significant in conducting monetary policy and understanding the macroeconomic framework of the economy (Rath.D. P.1999). In this backdrop our concern is also to make an attempt to have a detailed analysis for the money supply analysis in the post reform period. The whole analysis is based on the money multiplier process.

III. Money Multiplier Process

The money multiplier is a key component of the money multiplier approach to the money supply process. The money multiplier theory explains money supply process and changes, if correctly interpreted and applied, has indeed a very high predictive power (Srinivasa Rao, 1977). It determines the stock of money supply from a given level of monetary base or high powered money. Greater analytical emphasis is now being given to the behaviour of money multiplier, so that the robust theory of money supply can be developed. Before going to a detailed analysis of money multiplier analysis it is essential to have an essential understanding regarding the definition and concept of ordinary money (M) and high powered money (H), as these two are serving the basic building blocks for the money multiplier process and hence for money supply. In the monetary literature money (M) is usually defined in two alternative ways, one is called the 'narrow' definition of money and the other is 'broader' definition of money. Empirically the M (narrow) is defined as the sum of currency held by the public plus demand deposits (D) of the banks plus other deposits of RBI. So:

$$M= C+DD+OD \qquad (I)$$

On the other hand the high powered money (H) is however the original fiat money produced by RBI and government of India and held by the banks and the public. Simply it is the government money (Gupta, 1976). The RBI calls H the reserve money. H comprises the currency held by the public (C) cash reserves of banks (R) and other deposits of RBI (OD). So:

$$H= C+R+OD \qquad (II)$$

On comparing the (I) and (II) the only difference is that the former includes the D while as the later includes the R. It is this difference which attributes the H the quality to be high powered. It is because of the fact that banks in a fractional reserve system (as is the case in Indian economy) kept a part of total cash is only in the form of reserves is the basis on which whole edifice of credit and deposit is build, or the power of R to serve for the multiple creation of DD lends H the quality of high powered-ness.

Under the fractional reserve system the money supply is an increasing function of reserve money (or high powered money) and the money multiplier, such that

$$M^s= m.\ H \qquad (III)$$

Where

M^s is nominal money stock/money supply, m is money multiplier, and H is reserve (nominal reserve money/ base money)

H= As already mentioned above H is the sum of C+R and M is the sum of C+DD. In order to determine the factors responsible for the change in money supply, we can also write (III) as follows:

$$M = \frac{1 + c + t}{c + r(1 + t)} . H$$

Where:

c= C/DD is currency deposit ratio t=TD/DD is ration of time to deposit ratios

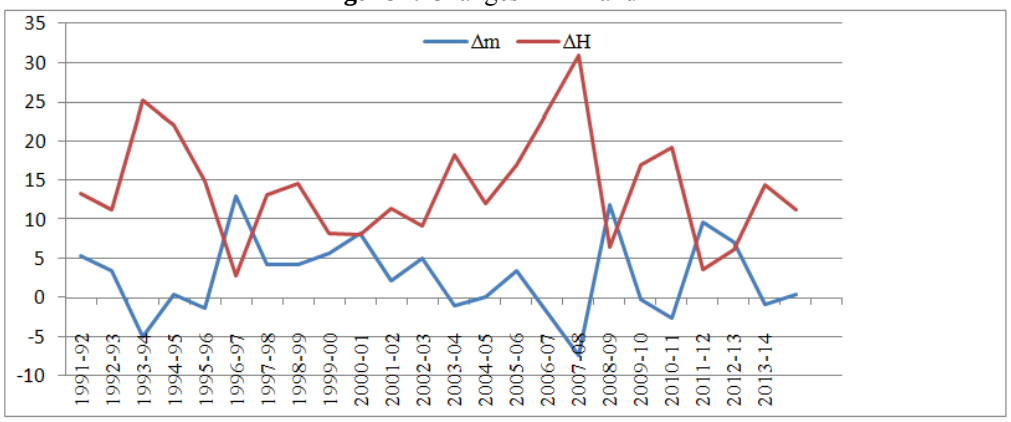
r = reserve deposit ratio

Hence from the above equations, the money multiplier approach suggests that there are two major determinants of money supply, and they are ::: (1+c+t)/(c+r (1+t) or "m" or money multiplier and the H or the reserve money. Or the equations permits changes in money stock decomposed into its "proximate determinants" (Freidman and Shawrtz, 1963), (Caga, 1956) and the exogenous monetary base (H). However the movements of multiplier largely reflect the behaviour of public and banks and the very short monetary movements caused by these changes are predominate. Hence having a precise control over the behaviour charters by the central bank is impossible. But over the long run the high powered monetary base is more important, as it is more often known as policy controlled. Hence it is interesting to have deliberation on the sources 'm' and 'H' both, so that we can come to the conclusion how these factors have changed over the period of time, and what is their nature, since the major reforms have been initiated in the Indian economy.

IV. Trends in Money Multiplier (M) and The Base Money (H)

From the above analysis it becomes clear thatin determining the money supply there are mainly two factors i.e. 'm' and 'H' which ultimately determines the money supply in the economy. It becomes relevant here to have a trend analysis of both the factors and hence come to the conclusion how the factors are affecting the money supply and how their nature has changed over the period of time. From the table we shall try to understandthe trends of both the factors.

Figure I: Changes in 'm' and 'H'

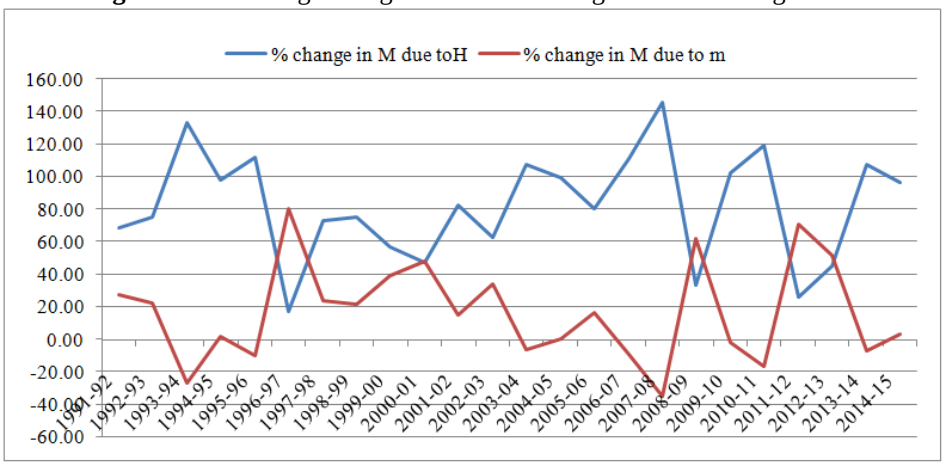


Source:RBI Data Base on Indian Economy

From the Figure I it is clear that there is upper hand of 'H' as compared to 'm' and also that both move in the opposite direction. However it is important to note that whenever there is any uneven happening there is policy intervention by the monetary authorities andhence the change in 'H'. In the early reform period there have been major reforms in the economy including the financial reforms and hence the policy intervention on a large scale, hence leads to change in H very high. Then in 2008-09, there were the global financial crisis, in order to protect the domestic economy from these financial shocks policy intervention weremade and in 2009-10 to 2010-11 there was the domestic inflation pressure, to curb the same policy interventions. In general there is upper hand of 'H' as compared to 'm' and hence the policy or the non- behavioural variables are playing more important role than those of behavioural variables.

Now making it more relevant we shall try to identify the changes in money supply due to changes in 'H' and 'm' and hence will become clear that over the period of time which factor has played a significant role in money supply in the economy.

Figure II: Percentage change in M due to change in H and change in m



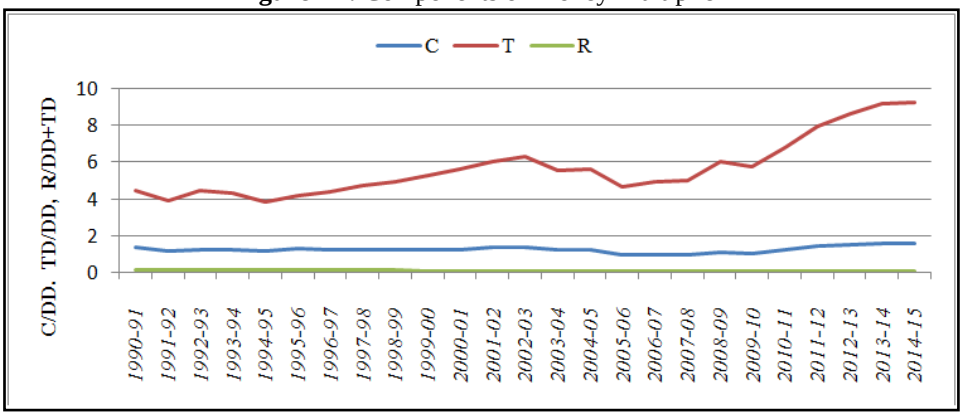
Again the same story seems emerging from the above figure II, that the 'H' effects are more than 'm' effects. That means to say the 'H' has the significant power to impact the money supply in the economy. However for some years the m effect is negative like 1993-94, 2008-09 and 2010-11. There may be several many reasons but the one or the most important is the increase in the currency ratio, which would have more than offset the impact of a decline in the reserve ratio. However it becomes more relevant to argue when we are

going to make the analysis of 'm'.Hence what emerges from this type of trend analysis is that for the whole post-reform era the 'H' effect swamped the 'm' effect on money supply. This implies that inflation pressures cannot be ascribed to 'm' although they have been exacerbated by it. In other words, given the relatively smaller impact of money multiplier on money supply, the policy issue from the point of view of monetary management in the context inflationary environment monetary expansion has to be controlled mainly by operating on 'H'.

V. Sources of Change in Money Multiplier (M)

The variation in the money multiplier is mainly related to three key ratios i.e. c, t, r. these are also called the "proximate determinants".However they are not the ultimate determinants of money multiplier and hence of money supply. It is because the ratios are behavioural in character. Although they are providing vantage point from which to observe the simultaneous interaction of various forces that determine the money multiplier and hence the money supply. Now we will try to interpret the ratios individually, so that we can come to the conclusion how the nature of the ratios has changed over the period of time and ultimately their impact on the general money supply.

Figure III: Components of Money Multiplier



Source: RBI Data Base on Indian Economy

Currency-Deposit Ratio (c =C/D): The currency deposit ratio represents, on the one hand adoption of banking habits by the people and on the other hand, it is the measure of their confidence upon banking system. However another aspect of the currency-deposit ratio that is mainly our concern in the study is how they are affecting the money multiplier and then untimely money supply. As the money stock is negatively related to currency-deposit ratio because a rise in (C/DD) brings about a shift from deposit to currency and since deposits undergo multiple expansions while currency does not, the net result is contraction of money multiplier and of the money stock.

The movement of currency-deposit ratio can be explained in association with many factors such as rate of interest, economic growth, banking habits, financial innovations etc. However Cagan (1956) suggested that the currency ratio is likely to be influenced by the financial sophistication. According to this hypothesis, as a richer array of liquid financial assets becomes available, the demand for currency falls disproportionately. This may include the ease and access to financial services, rapid increase in the financial innovations, banking habits of the common men. Earlier the institutional changes led to the use of banks for the payment of wages and salaries, now the transfer of subsidies also led to the reduced use of cash. Cash dispensing technology and related innovations reduced the demand for cash (Paroush and Ruthenberg, 1986). Ultimately all these changes are one way or the other way related to the level of economic activities or the GDP growth. This may become relevant if we argue in the sense that, if the corporate spending is less cash intensive than consumer spending, the currency ratio is likely to vary inversely with the share of investment in GDP (Beenstock, M. 1989). Besides these factors the share of agriculture in national income may affect the currency deposit ratio, as it is possible that with the decline in the share of agriculture the demand for currency may decline.There are other factors which play a significant role in the movement of currency deposit ratio, which includes the use of modern technology such as ATM, or ease to access the banking services.

Time Deposit-Demand Deposit Ratio (t= TD/DD): The time deposit-demand deposit ratio has again an important implication for the money multiplier and hence for the money stock in the economy. As there is increase in TD/DD ratio means the availability of free reserves and consequent enlargement of volume of multiple deposit expansion leads to monetary expansion. From the fig. it is clearly indicated that in the whole post-reform era there is an increasing trend of the TD/DD ratio. There may be many reasons behind the upward

moment of the TD/DD ratio, however the theory of asset demand suggests (H. Akther 1993) that real income and the interest rate on time deposits are the major determinants of time deposit ratio.

Other than those mentioned above the possible factors that may have effect on the time-deposit ratio are the greater awareness regarding portfolio adjustments brought about by financial deepening and diversification. As the economic reforms started in 1990's the financial liberalisation also proceeded, there is a shift in monetary policy stance with greater reliance on market-based indirect measures and less on direct monetary control. Such shift could have significant impact on day-to-day interest rate movements. These interest rates would in turn have implication for money supply as variations in interest rate may affect the money multiplier. In financial liberation process, the government control on bank lending, especially to private corporate sector, or removal of interest rate ceiling also have significant implications. As per the financial deepening and diversification is concerned there had been policy intervention by the government and RBI in the form of financial inclusion, recently Pradhan Mantri Jan-DhanYojana and many other policies which have made a well playing field for the financial awareness, portfolio diversification, and financial deepening. However these factors are not taken into account on empirical ground because of unavailability of data.

Reserve/ Deposit Ratio(r= R/TD+DD): In the reserve-deposit ratio, the reserves are of mainly two types, the statutory reserves (where the banks have no choice) and the excess reserves (banks have their own choice). Economists are in conflict over the presence of excess reserves in profit maximising commercial banks. Excess reserves are sterile assets to profit maximising banks and in an ideal situation banks should not hold excess reserves so long as return on alternative assets are positive(Teigen 1964). However an explicit assumption behind the theories of excess reserves is that banks try to strike a balance between liquidity and profitability. According to standard demand theory, the demand for excess reserves is determined by total deposits which acts as a proxy for wealth constraint and loan rate of interest which acts as an opportunity cost of holding reserves(H. Akther, 1993).

Although there isn't any significant movement in the reserve-deposit ratio in the post reform era, but the shift in the ratio from 0.16% to 0.06% has its implication for the "m". The change in the ratio is mainly associated with the rate of growth of demand deposits, rate of growth of time deposits compared with demand deposits and the behaviour of actual reserves. The more rapid increase in the time deposits and the demand deposits, lower will be the reserve ratio and higher the level of reserves (statutory or excess) higher will be the ratio of reserve ratio. As already discussed above that the masses are now more banking oriented as the time deposits have shown an increasing trend in post reform era. There are many factors such as interest rate deregulation, financial deepening, portfolio diversifications etc. responsible for this increasing trend and had its impact on the reserve deposit ratio. Also one more important point to note here is that declining rate of growth of reserve ratio means banks are earning profit and also that they have greater confidence in people's banking habits.

VI. Sources of Change in High Powered Money (H)

As we have seen from the derivation of the money multiplier process the two prominent factors responsible to the controlled variation of money supply are the "m" and "H". That means to say, that to control the money supply in the economy we should have control on the two factors very well. In order to know how to control we must know what are the sources of variation and their relative importance, nature and *modus operandi* of each source as we have done in case of the "m" similarly we are going to make deliberations on "H" also.

'As already defined high powered money was empirically defined to comprise (1) currency held by the public, (2) cash reserves of banks and other deposits of RBI. Some (relatively small) part of currency is directly issued by the government; the rest is all Reserve Bank Money (RBM). The cash reserves of banks are held partly in the form of currency as cash in hand and partly as deposits with RBI. Therefore, H can be defined as the sum of government currency and the RBM held by the public and the banks (Gupta, S.B 1979). This H is also known as reserve money by RBI (Gupta S B 1982).

An alternative way to look into the reserve money is to recognise it as the set of net monetary liabilities of central bank. Since these liabilities are created in the process of generating matching assets by the central bank, the sources of change in the reserve money could be fully examined through the balance sheet of central bank. The balance sheet identity for the RBI can be identified in the following form:

Monetary Liabilities + Non-Monetary Liabilities= Financial Assets+ Other Assets

Or Symbolically,

ML+NML = FA + OA

Or ML = FA – (NML-OA)

As monetary liabilities of the RBI are the same as the RBM, so:

RBM = ML = FA – (NML-OA) (SS)

This simple identity defines the Reserve Bank Money or the monetary liabilities of the RBI as the excess of its financial assets over its net non- monetary liabilities. The main purpose of the identity is to provide the simple framework in which to study the operation of multifarious factors which are responsible for the variations in RBM. The most important point to note here is that RBI does not change the H (RBM) by a mere fiat or completely arbitrarily. Rather, there is an intricate but the definite system where by changes in H (RBM) occurs. For this purpose to identify the proximate factors governing H, all the RBI's transactors may be divided into four sectors viz. (1) the government (2) banks (3) development banks, and the (4) foreign sector.

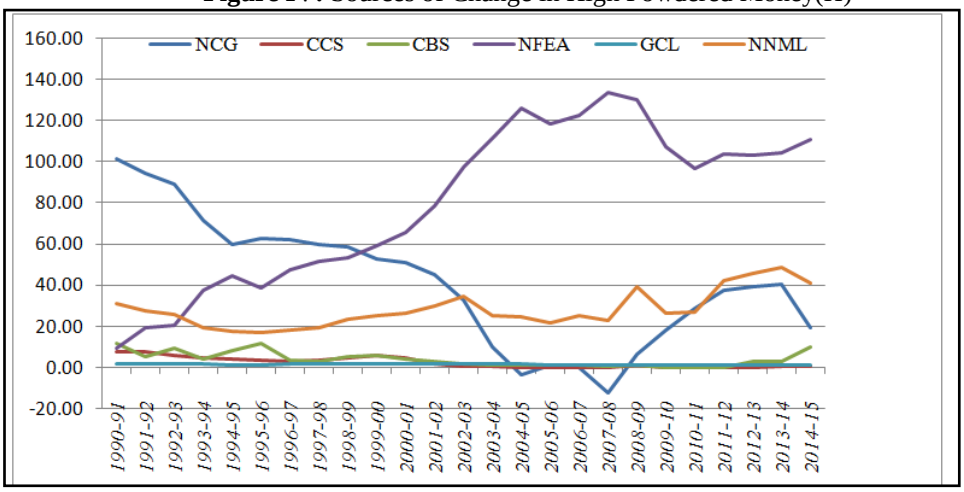
Following the four fold sector classification of the RBIs transactors, all (net) financial assets of the RBI are divided under the corresponding four sector categories. Then the equation (SSS) can be written in the following way:

Reserve Money = Net RBI Credit to Government + RBI Credit to Banks + RBI Credit to Commercial Sector+ Net Foreign exchange Assets of RBI + Government's Currency liabilities to Public - Net Non- Monetary Liabilities of RBI.

Accordingly, changes in reserve money (H) could be traced to the changes in assets acquired by the RBI in the course of its operation.

An examination of the sources of change in the factors responsible for the changes in the H (reserve money) have made a dramatic change over the period of post-reform era. Why the roles of some factors have increased while others have declined or has there been movements in the nature of the factors over the period of time.Here we make an attempt to make the deliberation on all the factors for the data given.

Figure IV: Sources of Change in High Powdered Money(H)



Source:RBI Data Base on Indian Economy

Net RBI Credit to Government: According to RBI(1977) its net claims on the government comprises mainly in the form of the rupee securities held in the issue department, treasury bills purchased and discounted, investment in government securities, loans, advances to the state governments, rupee coins in issue and banking department less government deposits with the RBI. Although net increase in Reserve Banks credit to the government is the rough measure of deficit financing of government and hence has its impact on H in the economy. This deficit financing leads to increase in the money stock in the economy on the one hand and on the other side it allows no scope for the RBI/ monetary authority to control the same so may be a main cause of policy failure. So in this back drop, with the intention to ensure inter-general equity in fiscal management, long run macroeconomic stability, better coordination between fiscal and monetary policy, government came with FRBM Act 2003(Chelliah, R.J, 2004). Despite the aforesaid, what, is more important that the Act prohibits borrowing by the government from the RBI. The act also bans the purchase of primary issue of central government securities by the RBI after 2006, preventing the monetisation of government deficit.

As is evident from the data the net RBI credit to government is one of the main sources for the creation of H and hence a main source for the creation of money stock in the economy. As is prevalent from the data that the early reform period was very significant and has significantly declined up to 2007-08 and made its contribution negative. One of the main reasons for this decline would be the implementation of the FRBM Act 2003. However there comes the pertinent question: the reason why it has again made an upward movement. This may be because in the wake of global financial crisis the Act was suspended and the fiscal consolidation as mandated in the FRBM Act was put on hold in 2007-08. This suspension and the macroeconomic problems especially the high inflation rates have again led to the emergence of the role of net RBI credit to government in H.

RBI Credit to Banks: One important source of change in H is the Reserve Bank's Credit to scheduled banks. The RBI lends to the banks partly in fulfilment of traditional central banking functions and partly for promoting certain new policy objectives. Under the former, we may place the 'lender of last resort' function and provision of busy season finance; under the latter we may place loans, advances against the government securities, usance bills or promissory notes as collateral or through purchase or redistributing internal commercial bills as well as treasury bills etc. although the data relives that the share of Reserve Bank's Credit to scheduled commercial banks have remained stable over the period of time. The major cause for this stability is that as RBI is the 'lender of last resort' and whenever banks feel banking panic, excessive currency and clearing drains, the RBI must then come in their rescue. Banks as a whole can also be victims of substantial loss; if there is a big enough shift in the asset preference of the public from bank deposits to currency. In the latter case, we have seen from the data that there isn't any such shift rather there is decline in the currency deposit ratio and hence increase in the bank reserves also. Therefore does not require any rescue operation from RBI. Although some individual banks can be subjected to further drains, i.e. clearing drains, to other banks within the system. Normally, the total reserve position of banks as a whole is not tight and hence is in a position to meet their needs for cash in the inter-bank call-money market. Hence for this purpose there isn't significant from the RBI for this purpose so remains the stable over the period of time.

Reserve Bank Credit to Commercial Sector: Although RBI does not provide credit directly to the commercial sector, but only indirectly through banks and development banks. According to RBI (1977), these funds (credit) may be disbursed in the form of investment in bonds/ shares, loans to IDBI, ARDC and others, internal bills purchased and discounted. The commercial sector credit had an important role in the creation of H in the early reform period and it had significantly declined as the reform period moved ahead. The main reason for this was that the development banks were established recently in the then period. There wasn't any major competition from the unorganised sector. And hence there hadn't been any option other than these banks for the commercial sector to fulfil their credit needs.

Net Foreign Assets of RBI: Those assets which are the net holdings of RBI represent the Reserve Bank credit to the foreign sector because they are the financial liabilities of the foreign sector most of these assets held in the form of foreign securities and cash balances. Therefore the accumulation of these foreign exchange reserves (excluding gold) represents the outflow of domestic savings to the abroad via Reserve Bank credit to foreign sector.

Since RBI is the custodian of the country's foreign exchange reserves and also have a major role in controlling the foreign transactions, it directly sells and buys major portion of foreign exchange against India rupee. Although with the implementation of Tarapore Committee (1997 through which on the one side the autonomy of RBI on foreign exchange convertibility has been reduced and on the other hand had made its impact on H. Tarapore committeehad suggested full capital account convertibility although hadn't been implemented yet and we have only partial convertibility. Even though this partial convertibility had its impact on the H. As the dramatic shift of increasing the role of Net Foreign Assets of RBI is because of openness of the economy along with the convertibility as suggested by Tarapore committee although implemented partially. It is because when the RBI (or others) buys foreign exchange it pays it in terms of its own currency and hence the supply of money stock (H) in the economy increases and conversely opposite happens in case of selling foreign exchange.

Net Non-Monetary Liabilities of the RBI: The Net Non-Monetary Liabilities of RBI comprises paid up capital, reserves, accumulated contribution to national funds, RBI employees' pension funds and corporation guarantee fund, compulsory deposits of public etc. The NML are the excess of the non-monetary liabilities over assets. Although there has been a slight increase in the sample period; this may be because of increasing number of bank branches both in public as well as in private sector. Actually these are the liabilities of RBI which do not have any monetary impact (RBI 1998).

VII. Conclusion

Determination of money supply through the process of money multiplier leads to the conclusion that money supply is mainly determined by the two important variables, one is behavioural in nature (m) and the other is policy oriented (H). But the important question is what are the factors (sources) which determine these two variables and what is the nature of those factors (sources). In this process we make an attempt and found the nature of the factors determining the "m" so called 'proximate determinants' c, t, r. It is found that in the post reform era the nature of proximate determinants have changed significantly if not of all the three. The significant change in the nature of 't' (time-deposit ratio) as its role in determining 'm' (money-multiplier) has significantly increased because of aforesaid reasons and other two have also changed their character if however

not significantly. Similarly factors (sources) responsible for the change in base money (H) have also changed their characters mainly because of policy interventions as discussed earlier if however not all the sources. But the significant shift has been seen in net RBI credit to government and net foreign exchange assets of the RBI. These dramatic shifts ultimately have a significant impact on the nature of money supply and hence the nature of impact of money supply on the macroeconomic variables may change significantly. So there is need to analyse how this changing nature has affected the macroeconomic variables. In general there should be a policy shift in the taking into account the nature and pattern of determinants of money supply, so that have we may have a control on the macroeconomic policy framework in the economy.

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Appendix A

Derivation o Money Multiplier:

My definition, broad money (M_3) is given by:

$$M_3 = m.\ H$$

$$m = \frac{Ms}{H}$$

M= C+DD+TD

H= C+R

$$m = M/H = \frac{C + DD + TD}{C + R}$$

$$\mathrm{m} = \frac{(\mathrm{C} + \mathrm{DD} + \mathrm{TD})}{\mathrm{C} + \mathrm{R}}$$

$$m = \frac{C + DD + TD}{C + r(DD + TD)}$$

$$m = \frac{1 + \frac{C}{DD} + \frac{TD}{DD}}{\frac{C}{DD} + r(1 + \frac{TD}{DD})}$$

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

Where:

c= C/DD is currency deposit ratio

t=TD/DD is ration of time to deposit ratios

r= reserve deposit ratio

Hence from the equation (III)

$$M = \frac{1 + c + t}{c + r(1 + t)} . H$$

Appendix B

Table I: Changes in Money Supply (ΔM) Arising from Changes in money multiplier (Δm) and High Powered Money (ΔH) form 1990-91 to 2014-15

Year	H	□H	m	□m	M	□M	Percentage Change in M due to H	Percentage Change in M due to m
1990-91	877.79		3.04		2672.057			
1991-92	995.05	13.36	3.21	5.32	3190.01	19.38	68.94	27.45
1992-93	1107.79	11.33	3.31	3.35	3670.53	15.06	75.23	22.24
1993-94	1386.72	25.18	3.15	-5.00	4365.07	18.92	133.09	-26.43
1994-95	1692.82	22.07	3.16	0.38	5349.02	22.54	97.91	1.69
1995-96	1944.57	14.87	3.12	-1.33	6062.73	13.34	111.47	-9.97
1996-97	1999.85	2.84	3.52	12.92	7040.63	16.13	17.61	80.10
1997-98	2264.03	13.21	3.67	4.23	8307.86	18.00	73.39	23.50
1998-99	2592.85	14.52	3.82	4.21	9915.11	19.35	75.04	21.76
1999-00	2805.55	8.20	4.04	5.64	11333.98	14.31	57.30	39.41
2000-01	3032.94	8.11	4.37	8.17	13253.79	16.94	47.87	48.23
2001-02	3379.52	11.43	4.46	2.12	15081.38	13.79	82.89	15.37
2002-03	3690.38	9.20	4.69	5.04	17298.06	14.70	62.59	34.29
2003-04	4364.90	18.28	4.64	-1.06	20241.93	17.02	107.40	-6.23
2004-05	4891.11	12.06	4.64	0.04	22691.41	12.10	99.67	0.33
2005-06	5719.32	16.93	4.80	3.47	27454.99	20.99	80.66	16.53
2006-07	7088.61	23.94	4.71	-1.91	33377.30	21.57	110.99	-8.85
2007-08	9282.75	30.95	4.36	-7.38	40481.94	21.29	145.37	-34.66
2008-09	9879.61	6.43	4.87	11.78	48162.15	18.97	33.90	62.10
2009-10	11556.53	16.97	4.86	-0.29	56173.93	16.64	101.98	-1.74
2010-11	13768.21	19.14	4.73	-2.61	65177.55	16.03	119.40	-16.28
2011-12	14263.44	3.60	5.19	9.54	73966.45	13.48	26.71	70.77
2012-13	15148.86	6.21	5.55	6.99	84045.54	13.63	45.56	51.28
2013-14	17327.39	14.38	5.50	-0.90	95262.22	13.35	107.72	-6.74
2014-15	19284.71	11.30	5.52	0.37	106415.78	11.71	96.50	3.16

Source: RBI Data Base on Indian Economy

Table II: Money Multiplier and its components from1990-91 to 2014-15

Year	c=C/DD	t=TD/DD	r= R/DD+TD	m= (1+c+t)/(c+r(1+t)
1990-91	1.35	4.42	0.16	3.04
1991-92	1.17	3.87	0.15	3.21
1992-93	1.25	4.40	0.14	3.31
1993-94	1.25	4.25	0.16	3.15
1994-95	1.14	3.80	0.15	3.16
1995-96	1.27	4.12	0.15	3.12
1996-97	1.25	4.32	0.12	3.52
1997-98	1.23	4.66	0.11	3.67
1998-99	1.24	4.93	0.11	3.82
1999-00	1.26	5.23	0.09	4.04
2000-01	1.26	5.62	0.08	4.37
2001-02	1.34	6.00	0.08	4.46
2002-03	1.37	6.26	0.07	4.69
2003-04	1.22	5.52	0.07	4.64
2004-05	1.24	5.56	0.07	4.64
2005-06	1.01	4.65	0.07	4.80
2006-07	1.01	4.90	0.08	4.71
2007-08	0.98	4.95	0.10	4.36
2008-09	1.13	6.01	0.08	4.87
2009-10	1.07	5.73	0.08	4.86
2010-11	1.26	6.73	0.08	4.73
2011-12	1.44	7.94	0.06	5.19
2012-13	1.51	8.62	0.05	5.55
2013-14	1.53	9.18	0.06	5.50
2014-15	1.55	9.23	0.06	5.52

Source: RBI Data Base on Indian Economy

Table.III: Sources of High-powered Money

Year	Net RBI Credit to Govt.	Bank Credit to Commercial Sector	RBI Credit to Banks	Net Foreign Exchange Assets of the RBI	Govt.'s Currency Liabilities to the Public	Banking Sector's Net Non-monetary Liabilities
1990-91	101.22	7.22	11.40	9.09	1.85	30.78
1991-92	94.48	7.30	5.13	18.93	1.71	27.55
1992-93	88.87	5.61	8.92	20.44	1.65	25.50
1993-94	71.61	4.65	4.00	37.08	1.44	18.78
1994-95	59.95	3.89	7.96	44.14	1.41	17.34
1995-96	62.40	3.53	11.29	38.10	1.29	16.61
1996-97	62.10	3.12	3.50	47.41	1.46	17.59
1997-98	59.70	3.62	3.13	51.19	1.48	19.12
1998-99	58.83	4.72	5.11	53.21	1.48	23.35
1999-00	52.85	5.44	5.98	59.13	1.63	25.03
2000-01	50.73	4.38	4.27	65.01	1.77	26.17
2001-02	45.03	1.75	3.18	78.11	1.88	29.96
2002-03	32.70	0.83	1.94	97.08	1.92	34.46
2003-04	10.29	0.47	1.24	110.98	1.67	24.65
2004-05	-3.67	0.28	1.07	125.29	1.52	24.49
2005-06	1.15	0.24	1.01	117.67	1.34	21.42
2006-07	0.34	0.22	1.08	122.19	1.15	24.98
2007-08	-12.20	0.19	0.49	133.16	0.99	22.65
2008-09	6.23	1.40	1.05	129.57	1.02	39.27
2009-10	18.31	0.11	0.10	106.60	0.98	26.10
2010-11	28.80	0.16	0.37	96.50	0.92	26.75
2011-12	37.56	0.28	0.34	103.21	0.94	42.33
2012-13	38.98	0.20	2.66	102.85	1.01	45.71
2013-14	40.32	0.51	2.81	104.03	1.00	48.67
2014-15	19.36	0.77	9.73	110.31	1.01	41.18

Source:RBI Data Base on Indian Economy