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Forecasting Money Supply in India: Remaining Policy Issues

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Introduction

Das (2009) and Das (2010) compiled in a nutshell all studies on definitions and measures of money supply in India in a chronological and logical consistent manner, reviewed and analysed the research works on money supply in India in light of western monetary economics literature, narrated the great debate revolving the issue of balance sheet approach vis-à-vis multiplier approach during the 1970s in India between official economists and others like S B Gupta, discussed the econometric models and tools like Granger causality and VAR discussed in ascertaining the relationship between money, output and prices, proposed to quantify the macroeconometric relationships among the variables broad money, lending by banks, price, and output in India using simultaneous equations system keeping in view the issue of endogeneity, and finally reviewed the econometric models of forecasting money supply in India for the entire post independence period and pointed out their gaps and tries to fill these gaps.

The Remaining Issues

Das (2009) and Das (2010) did not address the following emerging issues in relation to policy implications of forecasting money supply in India:

(a) If there has been a structural change in money supply behaviour after economic reforms in India what should be the appropriate method of testing this?

(b) The interest rate deregulation in India is not accounted for any change in the money supply behaviour after liberalization – why is money supply behaviour stable after reforms?

(c) What are the links between closed and open economic monetary behaviours in India?

(d) Does economic growth have any impact on money supply in India?

(e) What is the nature of relationship between money demand and money supply in the post reform period in India?
(f) What is the best-fit model to forecast money supply and what are the exogenous money shocks in India?
The above issues were addressed as follows:

Rath (1999)

(a) If there has been a structural change in money supply behaviour after economic reforms in India stability tests of narrow as well as broad money multipliers should be the appropriate method of testing this. A common form of such stability test is the test for co-integration through the Engle-Granger two-step procedure. First one need ensure through the ADF test that the order of integration of the dependent variable is not different than that of the independent variables. In the second step, one should run an OLS on the levels of the variables in question and test the hypothesis of co-integration by determining the order of integration of the residuals of this regression again through an ADF test. The first step of the Engle-Granger two-step procedure provides a method for testing stability. If the money multiplier is stable then there must be a long-run relationship between money stock and reserve money. This relationship should be independent of the period of analysis. Here one ought to test for the stability over different periods before and after the Indian financial market was deregulated. One can expect the broad money multiplier to be stable in the sub-period but not over the entire period. If the residuals from the co-integrating equations can be demonstrated to have an order of integration zero, i.e., if it is an I(0) process, then the multiplier could be assumed to be stable in the long-run as co-integrating relationship would then be existing between broad money and reserve money. Rath (1999) followed this procedure.

Dua et al (2005)

(b) Stable money demand function is a precondition of stable money multiplier which is in turn a precondition of stable money supply. Interest rate is an

important determinant of money demand. Regarding interest rate deregulation one should note the following: (i) The call money rate (CMR) was found unstable during 1989:04–2003:09 because of market volatility. It was determined by the market since 1989:05. (ii) The Treasury bill rate (TBR) was found stable during 1993:04-2003:09. It was deregulated since 1993:04. (iii) The Commercial Paper Rate (CPR) was found stable during 1993:04-2003:09. It was deregulated since 1993:04. Hence money demand was stable during the post reform period. Thus money multiplier and hence money supply could be said to be stable during the post reform period. Dua et al (2005) conducted the above study.

(c) The links between closed and open economic monetary behaviours lie in the following: (i) Exchange rate is a determining variable of the open economy real money demand function but it is not included in the closed economy real money demand function. (ii) There has been a shift from the net domestic assets to the net foreign assets on the resources side of monetary base because of relying more on market based indirect measures than on direct monetary controls in pursuit of the recent policy of financial liberalization and the ensuing changes in monetary policy. (iii) All of CMR, TBR and CPR were found stable in the closed economy period 1980:04-1989:02 and while only CMR was unstable in the open economy period 1993:04-2003:09. Accordingly stability of money demand function also varied. Dua et al (2005) observes it.

Singh et al (2005)

(d) Bank credit to the commercial sector (BCCS) is a component of broad money. It was found that one unit rise in $\Delta \text{Log} Y_r$ raised $\Delta \text{Log}(\text{BCCS/WPI})$ by 0.48 units, where the GDP values are taken at factor cost at 1993-94 prices and WPI had the index 100 at 1993-94 over the period from 1985-86 to 2001-02. Thus Y_r affects broad money in the positive direction. This study was conducted by Singh et al (2005).

Giri et al (2005)

(e) It is an established fact that the efficacy of targeting money supply requires stable money demand function, which in turn ensures stable money multiplier. In the Indian context it was found that during 1990s and early 2000s narrow money demand function was stable and suitable for monetary targeting in contrast to broad money demand function. In the situation of rapid financial innovation in 1980s targeting rate variables like interest rate seemed more appropriate than targeting money supply whereas in 1990s targeting narrow money looked more appropriate. Giri et al (2005) conducted the above study.

The Best Fit Model to Forecast Money Supply in India

(f) In the post reform period modelling monetary sector and its links with fiscal and external sectors became a challenging task in India. These issues were highlighted by Rangarajan et al (1990), Rangarajan et al (1997) and Soumya et al (2005). Among these, the third was monetarist in focus and an extension of the first. It included the external sector and emphasizes the inter-relationships between money, output, prices and balance of payments. It mainly focused on determination of money supply and its links with fiscal operations and on the impact of money stock on output. It postulated that credit along with real capital stock affected output. At the same it captured the endogeneity aspect of money supply and the influence of the external sector on money stock. An increase in real credit leads to monetary expansion which in turn has an effect on output and price level. A rise in output via credit expansion dampens the rise in price caused by monetary expansion. Further the RBI credit to finance the resource gap, i.e. the difference between government total expenditure and total government receipts causes money supply to increase endogenously with the rise in reserve money. This monetary expansion again affects the price level and output to a lesser extent, and the cycle continues. The influence of the external sector on money supply reflects through net foreign exchange assets of the RBI, which is a component of reserve money. In short Soumya et al (2005) addressed all the issues belonging to determination of broad money. So this is the best fit model to forecast money supply in India.

The exogenous money supply shocks in India were deregulation of the CMR, deregulation of the TBR, opening door to FDI and shift from fixed to floating exchange rate regime, all of which indirectly through affecting money demand function or directly can affect money supply.

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