Money Demand in India

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Abstract:

There exist many approaches, both at theoretical and empirical levels, to compute money demand function. This paper attempts to derive a money demand function for Indian economy over the period 2004-2014.

Key Words: *Money Demand Function, Narrow Money, Broad Money, Indian Economy*

I. INTRODUCTION:

'Money is what money does'; this famous phrase by Friedman hints towards the functional definition of money. The basic function of money is to facilitate transactions, i.e. medium of exchange. As exchange medium, money signifies a class of asset possesses purchasing power, classified into narrow and broad concepts. Narrow money constitutes those assets which are more readily used in day to day transactions, for example currency and demand deposits. Broad money constitutes, in addition, claims that are not instantly liquid, for example time deposits. Given these empirical complexities there exists a lively debate concerning whether a broader group of monetary assets might better meet the definition of money in a modern payment system[1].

The objective of this paper is to derive money demand function for the Indian economy over the period 2004-2014. Secondly, it underscores the effectiveness of Broad Money (M3) as a significant contributory factor towards the derivation of money demand function in India.

To achieve the stated objectives, the paper has been divided into four sections. *Section two* explains the methodology adopted to compute money demand function. Making use of the technique developed to compute demand for money, *section three* calculates an empirical estimation for money demand function for the Indian economy. *Final section* contains the concluding remark and recommendations.

II. Methodology:

Right from the classical version of quantity theory of money to more modern Friedman's version, there exist plenty of approaches, both at theoretical and empirical levels, to compute

[1] R. Dornbusch, S. Fischer and R. Startz (2012), 'Macroeconomics', Tata McGraw-Hill Publication, 10ed., pg. 373

money demand function. Baumol (1952) and Tobin (1956) independently developed a model based on the tradeoff between the liquidity and its cost.

However, according to Ericsson (1998)[2], all these different empirical specifications imply a long run relationship of the form:

$$\frac{M}{P} = f(Y, OC) \qquad \text{(I)}$$

Were, M denotes nominal money supply. P denotes the price level, Y $[= \frac{Y}{WPI}]$ denotes the level of economic activity in real terms and OC denotes the opportunity cost of holding money. Following the Keynesian approach, Y represents the transaction and precautionary motive for holding money, while the opportunity cost variable represents the speculative motive. As a proxy for opportunity cost we will be using inter-bank call rate. Based on the theories and literature we can predict the signs of the variables. The real income component represented by Y is expected to have a positive sign as higher real income levels will call for increased levels of real demand for money. OC is expected to have a negative sign as an increase in interest rate will increase the opportunity cost of holding real balance.

Empirically, the real demand for money function can be computed of as follows:

$$M^d \left(= \frac{M}{P}\right) = \beta 1 + \beta 2(\mathrm{Y}) - \beta 3(\mathrm{i}) + \mu \qquad \text{(II)}$$

Following the Quantity Theory of Money approach, money supply should be equal to money demand. Any excess in money supply will be reflected in the rise of inflation rate.

III. EMPIRICAL ESTIMATION OF MONEY DEMAND FUNCTION[3]:

Following the methodology developed in section two, both narrow and broad money variables for 2004-2014 were divided by WPI for the same period to arrive at the real money demand function for the Indian economy. Nominal GDP were weighted with respect to WPI to arrive at real GDP values for the said period. As for the opportunity cost of holding money, inter-

[2] Ericsson, N. R. (1998), Empirical Modeling of Money Demand, Empirical Economics, p. 295-315
[3] Reserve Bank of India, (2015), "Handbook of Statistics on the Indian Economy"

bank call rate for the stated period, were made use of. Derivation of regression equation using the processed data revealed the following estimates:

Regression[4]:
M1/WPI v/s Real_GDP, Call rate

Model Summary[b]

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.972[a]	.945	.930	4.713	1.105

a. Predictors: (Constant), Call rate, GDP b. Dependent Variable: M1/WPI

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
1	(Constant)	18.896	8.060	2.344	.052
	GDP	.002	.000	10.395	.000
	Call rate	-2.393	1.153	-2.076	.077

Derivation of demand function using narrow money (M1) data for 2004-2014 does not yield a convincing equation especially with low Durbin–Watson statistic and a greater than 5% p-value for call rate coefficient. The situation changes entirely when we use broad money (M3) data.

Regression:
M3/WPI v/s Real_GDP, Call rate

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.997	.995	.993	8.438	2.023

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	95029.998	2	47514.999	667.342	.000[b]
	Residual	498.402	7	71.200		
	Total	95528.400	9			

[4] Central Statistical Organization, MOSPI, GOI (2010), 'New Series of National Accounts Statistics (Base Year 2004-05)'

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
1	(Constant)	-94.193	14.430	-6.528	.000
	GDP	.011	.000	33.122	.000
	Call rate	-6.950	2.064	-3.368	.012

Regression equation:

$$M^d = -04.193 + 0.011(GDP) - 6.950(Call\ Rate) \qquad \text{(III)}$$

Both Durbin-Watson statistic and p-value for all the coefficients are within acceptable range thereby making the money demand function using M3 more representative.

IV. Concluding remarks:

Equation III confirms to the theoretical underpinnings of money demand function, i. e. demand for money is positively correlated to GDP and negatively correlated to interest rate. That with regards to Indian economy, real demand for money increases by 0.011 points for every one point increase in real GDP and decreases by 6.950 for every one point increase in the call rate, the proxy for opportunity cost of holding money.

In keeping with the objective, it can be stated with a fair degree of confidence that broad money (M3) is far more significant in deriving money demand function as compared to narrow money (M1) in India, over the period 2004-2014. From an empirical point of view, if the policy objective is to influence money demand function in India, targeting M3 may yield better results.

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3. Bakhouche, A. (2006), '*Money demand in Algeria*', Savings and Development, Giordano Dell-Amore Foundation, Vol. 30, No. 3, pp. 221-246
4. R. Dornbusch, S. Fischer and R. Startz (2012), '*Macroeconomics*', Tata McGraw-Hill Publication, 10ed., 2012