

An Econometric Analysis of Demand for Money in Nepal**

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Introduction

Demand for money is one of the critical variables that affect and determine the level of aggregate economic activity in the economy and plays an important role in the literature of monetary theory. An accurate understanding and description of money demand equation is essential for the analysis of past monetary policies and for the formulation of contemporary policies. Especially, when the effectiveness of monetary policy is under consideration, the estimation of the demand function for money is an unavoidable task of economists.

Systematic studies of money demand functions for the developing countries have been few because of the unavailability of data on their monetary systems. The study of the demand for money function is important because unless the amount of cash balances desired by the economy is estimated with some observable aggregates the change in the stock of money will not be able to affect the macro-economic variables as desired by the policy makers. In order to achieve desirable affect of money stock on the macro-economic variables like output, employment and prices, the demand function for money should be a stable function of certain observable variables so that the policy makers could give proper considerations.

This paper examines the stability of demand for money function to examine whether it is satisfied within Nepalese institutional structure.

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The Model

In classical theory, the demand for money is related to income only. In neo-classical monetary theory, the demand for money is functionally related to the income, interest rate and some types of wealth. The question of the nature of the income in the money demand function is still under debate : the current nominal income, real income or the permanent income. The nature of interest rate also commands our attention ; the short - run or the long run government bond rate, the money market rate on private debt etc. By considering the availability of data on the hand, for example, the data on wealth is not available, we define the demand function for money at time t as

$$M_t = F (Y_t, r_t)..... (1)$$

Where M_t is the demand for money, Y_t is nominal GDP and r_t is the short-term rate of interest. The literature available on demand for money is dominated by three functional forms. Some use linear additive forms, thereby assuming that the marginal change in the demand for money due to unit changes in the independent variables are constant while allowing for changes in marginal effects of independent variables on demand for money over time. Others use a log linear demand function, there by assuming elasticities of demand for money to remain constant over time while allowing for changes in marginal effects of independent variables on demand for money over time. As there is no *a priori* reason for choosing any of these forms, for our purpose we use the log-linear form as it allows to test some of the important hypothesis easily. Thus, we may also rewrite equation (1) as

$$M_t = A Y_t^\alpha r_t^{-\beta} = A \left\{ \frac{Y_t^\alpha}{r_t^\beta} \right\} \dots \dots \dots (2)$$

By taking logarithm of equation (2) we obtain

$$\ln M_t = \ln A + \alpha \ln Y_t - \beta \ln r_t - \dots \dots (3)$$

In the case of equation (3), α and $-\beta$ stand for the income elasticity and interest elasticity of demand for money.

The Monetary Structure of Nepal

The monetary system of Nepal is guided and controlled by Nepal Rastra Bank (the Central Bank of Nepal), two Commercial Banks with about 300 branch offices and a few financial institutions. This study of demand for money in Nepal relates the period of

15 years from 1965 to 1980. During this period Nepalese economy experienced considerable changes in its economic structure in general and monetary sector in particular. The period since 1965 is also remarkable for it coincided with the phenomenal growth of deposit liabilities of the banking system. Inspection of the monetary data show that the pace of expansion of certain assets and liabilities was fairly moderate between 1965 to 1980. All the monetary aggregates showed upward trend in their behaviour. Currency in circulation grew from Rs. 315.6 millions in 1965 to Rs. 1908.7 millions in 1980. Demand deposits increased from Rs. 296.3 millions to Rs. 1522.6 millions during the same period. Time deposits also showed continuous upward trend during the same period. Developing Nepal thus provide a suitable ground for the analysis of demand for money.

Constituents of Money

The money stock in Nepal is defined as to include total currency in circulation outside banks and all deposits with commercial banks other than public sector deposits. In fact there is no unanimity among economists on the monetary component to be included in the empirical definition of money. Economists have favoured narrow concept to evolve empirical measures of money stock which includes currency in circulation outside banks plus deposits (M_1). They have emphasised the medium of exchange function of money. Many other economists have advocated broad concept (M_2) which includes time deposits besides the components included in M_1 definition of money (Friedman: 1959) It is argued that time deposits are money as they satisfy functions of money. The controversy still persists and there is no satisfactory definition of money. For our purpose we have used both narrow and broad concepts of money separately as empirical measure to find out their relevance in the Nepalese Economy.

Selection of Interest Rate

Use of interest rate in the demand function for money is another controversial area. Empirical studies have used call money rate, bond yield, treasury bill rates and some others have tried short-term rates. In Nepal, interest rates have not been very much controlled by Nepal Rastra Bank. This creates difficulty in selecting a particular rate of interest. So while estimating the demand for money in Nepal, the most serious difficulty one has to face is the choice of interest rates. For our purpose, we have chosen annual fixed deposit rate (FDR) of interest in commercial banks which is relatively market rate in Nepal.

Keeping in view the nature of problem under study all the relevant statistical data are collected from various *Quarterly Bulletins of Nepal Rastra Bank* and *Central Bureau of Statistics*. Necessary adjustments in the data have been made to evolve continuous and comparable series. In the following section we have made an attempt to present regression analysis of the demand for money in Nepal using 15 years data from 1965 to 1980.

Regression Results:

Table 1

Nominal Money Demand Equation for M_1 Definition of Money

Intercept term	Co - efficient's of		R^2	\bar{R}^2	F
	GDP	FDR			
-3.70	1.13*		0.97	0.97	405.3*
	(20.13)				
-4.54	1.24*	-0.11	0.97	0.97	197.6*
	(2.39)				

Figures in parentheses are respective t - ratios

* Significant at 5 per cent level.

Table 2

Nominal Money Demand equations for M_2 Definition of Money

Intercept term	Co - efficient's of		R^2	\bar{R}^2	F
	GDP	FDR			
. 6.85	1.50*	—	0.98	0.97	480.5*
	(21.92)				
- 8.70	1.75*	-0.25	0.98	0.98	274.4*
	(10.40)	(-1.62)			

(t-ratios are bracketed * significant at 5 per cent level)

From Table 1 and 2 the over all conclusion that emerges is that there is virtually no difference in the explanatory powers between M_1 and M_2 definition of money. Further we draw the following inferences:

1) For both definitions of money, the simple classical version of the demand for money with income as the only determinant of demand for money seems to do as well as another equation using interest argument. In terms of \bar{R}^2 , simple classical model performs slightly better than the rest. If we accept the classical version as the most appropriate among others, then one finds the classical assertion that the income elasticity of the demand for money is unity also seems

to be valid, as the estimates are not significantly different from unity for both definitions of money

2) The interest elasticity, though statistically insignificant for both equations (for M_1 and M_2 definitions) is very small supporting Friedman's view that interest rate is an unimportant variable. It invalidates the contention of Tobin - Bamoul models which predict a value of 0.5 (Tobin : 1956). Another noteworthy result is that, inclusion of interest rate leads to increment in income elasticity parameter though still keeps the magnitude around unity.

Table 3
Real Money Demand Equations for M_1 Definition of Money

Intercept term	Co - efficients of		R^2	\bar{R}^2	F
	GDP	FDR			
-4.44	1.46*	—	0.69	0.67	27*
	(5.20)				
-3.31	1.17*	0.09	0.70	0.65	13*
	(2.08)	(0.60)			

For M_2 Definition of Money

-9.79	2.71*	—	0.80	0.78	48.3*
	(6.95)				
-6.72	1.93*	0.24	0.83	0.79	25.9*
	(2.59)	(1.23)			

(t - ratios are bracketed * Significant at 5 per cent level).

From Table 3 which report on the results pertaining to real money demand equations for both definitions of money we can infer the following:

1) Here the classical theory does not seem to do better compared to the neo - classical model. Inclusion of interest variable seemed to improve the explanatory power of the model. But interest rate variable is statistically insignificant and having wrong algebraic sign indicating some specification problems.

2) The inclusion of interest rate depresses the magnitude of income elasticity parameter. In general, the magnitude of income elasticity parameter exceeds unity as high as Friedman's estimate of 1.8 for M_2 definition of money. For M_1

definition of money the value is around unity. In terms of explanatory power M_2 , definition of money performs M_1 definition of money. The value of R^2 is satisfactorily high. The significant F-value indicates that there is a good association between the variables.

The regression results are rather tentative and inclusion of more or better interest rate may change our conclusion about the role played by interest rate in Nepal. However, this does not subscribe to the views that interest rate is not likely to play significant role (Panta : 1983).

Considering our results, we suggest that monetary authority should give fair trial to various interest rates to visualise their impact on monetary variables rather than to be contended by merely a brief about its insignificance in a developing economy of Nepal which has been experiencing structural changes with the pace of monetization.

Conclusion

1. Demand for money in Nepal is positively and statistically significantly related to money income and negatively to interest rate.
2. Income elasticity of demand for money is unity which strongly supports the monetarist's view that quantity theory is a theory of demand for money.
3. Interest elasticity of demand for money is though very low and statistically insignificant, it may be due to the high movement of dependent variable compared to the movement of interest rate during the period 1965 - 1980.
4. Money demand function in Nepal is stable in the sense that it can be estimated with variables like income and the rate of interest with higher explanatory power and greater association and hence it provides suitable basis for monetary analysis in a developing economy of Nepal where getting continuous and reliable data is itself a problem.

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Book Review

Pradhan, R. S. : Industrialisation in Nepal : A Macro and Micro Perspective, NBO Publishers' Distributors, 1984, Rs. 125 (I. C.).

'Industrialisation in Nepal', even if it is a book by itself, seems to be very much like a research document based on survey works under which both public and private agencies were brought under questionnaire. The author is stated to have visited the industrial complexes of Biratnagar and Kathmandu for keeping himself posted with the prevailing conditions of industries. The research methodology has guided him most for his identifications with prospects, potentials and problems of industrialisation in Nepal. Field survey in concomitant with the desk work has helped him to have initial as well as final readings about industrialisation in Nepal.

The book under reference is termed as Treatise in the Foreword by Dr. C. D. Wadhva, Professor of Economics and Marketing, Indian Institute of Management, Ahmedabad. The constituents of this Treatise are : evolution and evaluation of industrial policy, role of agriculture versus industry, public sector versus private sector, import substitution versus export promotion, role of balanced regional development, foreign capital, joint ventures, etc.

The foremost but the blunt conclusion of the author is the presumed fact that industrialisation is a must, irrespective of too many difficulties to be surmounted upon for industrialisation. For him industrialisation is the only alternative for raising income, increasing employment opportunities, curbing gap between rich and poor having fuller utilisation of human, natural, and financial resources of the country with improved behaviour of trade.

The author, on the basis of responses to his questionnaire, with a proviso of coverage of 162 industries, takes 'no industry districts' as places for industrial priority with agro-based—that too of cottage type having specific aims to boosting up local entrepreneurship to act as feeders to large enterprises and export after refinement are reported to be desirable.

The author is convinced that agriculture can in no way release people from chains of poverty since agriculture itself is overburdened by big pressure of population. For the author, role of agriculture, is not big to that of role of industry since latter can step up tempo of agricultural productivity if tubewells, pumps, tractors, threshers, milling and processing machines, insecticides, fertilisers, tools and equipments could be manufactured but at the indigenous level. Other way round of approach, i. e., increased agricultural products alone will be able to use the numerous but versatile industrial products to a greater extent. Agriculture and industry are very much an

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While recommending for initiation of industries in Nepal, the author seems to have devoted much of his space of the book with problems than with prospects and potentials. Industrialisation in Nepal is a mixed blessing because of these problems: small size of the market, traditional agricultural sector having less inclination on the part of its masters to shift to other than agriculture, deficiencies in infrastructures, lack in capital, unawareness about industrial potentials, less comparative cost advantage. The industrialists too suffer from good many lapses, which are: broken plants for want of spares and parts, under-utilised capacities (not exceeding overall 72 percent) with almost no annual plans and programmes.

Problems also arise out of government's fiscal measures (uncertainty in excise and customs duties).

Regarding about 30 joint ventures mostly by Indian entrepreneurs with isolationist cases of the German participation, the author cites examples of collaboration in hotel, rosin and turpentine, distillery, etc. His Majesty's Government of Nepal has taken up special steps to promote joint ventures in the form of Act Relating to Foreign Investment and Technology, 1982 with an objective not only to meet internal needs but also to export to E.E.C., U.S.A., and Japan. Prospect of collaboration is best shown in pumps, small-scale iron and steel plants, textiles, leather products, fruit processing, etc.

Regarding the industries that are developed in Nepal, he cites sugar, cigarettes, shoes, soap, tea - almost all those which come under import substitutes, except jute industries.

The author, on the basis of opinions polled from respondents, quotes the generally agreed industries like the agro-based (in the first order), the import substitutive (in the second order), export promoting (in the third order), mineral and forest based (in the last order).

And about goals of industrialisation, the author, on opinion poll basis, fixes an order of priority as: self-reliance in essential goods, more employment, promotion of exports, balanced industrial goods of various regions.

The publication is a new but a comprehensive venture on this subject. The readers of different quarters would be benefitted of this book.

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