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## DRG Study No. 39 -
## Modelling Currency Demand in India: An Empirical Study

The Reserve Bank of India released today the DRG Study titled, "Modelling Currency Demand in India: An Empirical Study". The study is co-authored by Dr. D. M. Nachane, A. B. Chakraborty, A. K. Mitra and Sanjib Bordoloi.

The main objective of the study was to examine evolving determinants of currency demand in the Indian context and develop a suitable framework for modelling currency demand at the aggregate level as well as for the denominational composition. Main features of the study are:

- The study conducted an extensive survey of literature on various aspects of currency demand from the central bank's perspective of currency management with the literature review focussing on international evidence due to paucity of studies in the Indian context.

- It identified various factors influencing currency demand in India and analysed the behaviour and characteristics of currency circulation and its relationship with the major determinants, such as, output growth, consumption, inflation, interest rates and growing usage of non-cash payment instruments.

- It examined the relationship between currency circulation and various explanatory variables and established existence of co-integrating relationship in a vector error correction model (VECM) framework for aggregate currency demand as well as for various currency groups.

- Its modelling of aggregate currency at both, annual and quarterly frequencies, allowed examination of long-term behaviour as well as short-term dynamics. In view of considerable volatility of circulation of individual denominations and limitations relating to the availability of quarterly data, the study also identified suitable denomination groups of banknotes that are amenable to the development of similar models based on annual data.

Some important findings of the study are:

- At the aggregate level, currency circulation has increased at a faster pace than growth in nominal GDP.

- Despite emergence of various alternatives to cash transactions, currency retains its pre-dominance.

- The increase in currency, broad money and household financial saving in relation to GDP reflects transition of a low income underdeveloped economy

into an economy characterised by increasing monetisation and commercialisation.

- During the past four decades, there has been a significant change in the composition of currency circulation across denominations. The average value of a currency note (for denominations of Rs. 10 and above) increased nearly eight-fold while there was a 18 fold rise in the price level. Thus, the average value of a note did not keep pace with inflation.

- Trends in currency circulation at individual denomination level show considerable fluctuations, due to which econometric modelling became complex. Its analysis needs further refinement to take into account other factors, such as, currency substitutes for payment (credit/debit cards, internet banking and cheque payments).

- Annual data indicated existence of co-integrating relationship between currency circulation, GDP, WPI and deposit rates. Income elasticity of currency was found to be somewhat higher in comparison to long-term elasticity observed in similar studies for advanced countries.

- It also established co-integrating relationships between different groups of currency notes with per capita GDP, WPI and other explanatory variables, although the findings were not very robust.

- A few limitations of the study arose from the non-availability of relevant data pertaining to, among other things, distribution pattern of the size of currency based transactions, shadow economy and regional dimensions of currency demand.

- The study also makes a few suggestions for future improvements in the framework for currency analysis in India. These are:

    o First, efforts may be made to design a system to capture the magnitude of mismatches between demand and supply of currency in the economy.

    o Second, a system of regular surveys to elicit information on public behaviour and preference for various denominations of currency may be useful. Also, changes in the micro level determinants of currency requirement, especially for smaller denominations, such as, transport tariff structure, etc., may be considered.

    o Third, estimation of regional demand for currency could be attempted though the data requirements for such an exercise would be formidable.


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                                                              Director