

Abstract

This research analyzes the relationship between capital flows and its components to India and the real exchange rate; investigates the linkage between the real exchange rate volatility in India and the volatility of capital flows and that of its components and the direction of causality and based on results of the analysis draws inferences for policies for effective management of the capital account in India.

Two Models with log-linear specifications are employed to estimate the relation between the dependant variable i.e. real effective exchange rate and the net capital flows and its components along with other explanatory variables. In the first model net capital flows, government consumption expenditure, trade openness, terms of trade and proxy for productivity differential, current account balance, and change in foreign exchange reserves are used as explanatory variables and real effective exchange rate index as dependent variable. The second model uses the disaggregated components of net capital flows i.e. Foreign Direct Investment, Portfolio flows, Debt Creating flows and Other capital flows in place of net capital flows along with other explanatory variables and the real effective exchange rate index as dependent variable in order to analyze the impact of each of these types of components of capital flows on the real exchange rate and the related adverse effects.

The estimations in this research are conducted on the quarterly data on Indian economy from 1996-1997 to 2012-13. The Autoregressive Distributed Lag (ARDL) approach to cointegration is used to examine the relationship between capital flow, its various components and other macroeconomic fundamentals and the real exchange rate. This estimation procedure has the advantage that it allows for a mixture of explanatory variables which are integrated of different order and that they provide consistent estimates for small samples. In addition Unrestricted Vector Autoregressive (VAR) Models are used to study the dynamic relationship between the real exchange rate and its determinants. VAR based cointegration tests using the methodology developed by Johansen (1991, 1995) and Granger Causality Tests are employed to test the linkage between ARCH based, GARCH based, and four period moving standard deviation based measures of volatility of real exchange rates and net capital flows and its components.

The most significant findings of the research are that net capital flows in India have been found to have been associated with the real exchange rate appreciation and the association is statistically significant. Amongst the components of net capital flows, foreign direct investment flows are not found to be significantly associated with the real appreciation but portfolio flows and debt creating flows are found to be associated with real appreciation. Government consumption expenditure is not found to be significantly associated with real appreciation thereby limiting the role of fiscal policy in managing capital flows.

The empirical results further show that innovations of net capital flow have a significant effect on the real effective exchange rate and the effect remains significant for even 24 quarter forecast period. Unanticipated positive shocks to net capital flows are associated with sharp almost immediate appreciation of the real exchange rate over the first quarter and remains effective for next quarter before leveling off. The effect of positive shocks to current account balance on real exchange rate appreciation is relatively gradual and mute as compared to the net capital flow shocks. Amongst all components of the net capital flows innovations of net portfolio flow have the most significant effect on the real effective exchange rate and the effect remains significant for even 24 quarter forecast period. Unanticipated positive shocks to net portfolio flows are associated with sharp almost immediate appreciation of the real exchange and the appreciation for the first three months remains effective for next three months and that the impact of the shock on the real exchange rate is even more pronounced than the quantum of the shock itself. The effect of shock to Debt Creating flows on Real Exchange Rate is immediate though less intense and gradually levels off over four quarters (one year). Shocks to other components of capital flows do not have any significant dynamic impact on the Real Exchange Rate.

There is evidence to indicate a co movement between the volatility of real exchange rate and volatility of net capital flows as reflected by the cointegration relationship between the four period moving standard deviation based volatility measures. A unidirectional causality from volatility of real exchange rate to volatility of net capital flows is found to exist. No causality relation is found to exist between volatility of Net Foreign Direct Investment flows and volatility of real exchange rate in either direction. However, there is evidence of causality from volatility of Net Portfolio flows to volatility of real exchange rate. Further, causality from the volatility of

real exchange rate to the volatility of Net Debt Creating flows is found to exist while the reverse is not found to exist.

In the light of the empirical evidence presented here, the study draws inferences for policies for effective management of capital account in India and makes a strong case for a more accommodative policy on real exchange rate appreciation, encouragement to FDI flows, capital controls to restrict short term flows, further liberalization of capital outflows, stringent restrictions on foreign borrowings by banks, further strengthening of the banking regulations to control their lending standards, a cut in government expenditure and focus on public investment in infrastructure creation and human capital development (to be financed through broadening of tax base to the extent possible) to remove the supply constraints.

While most studies analyze the effect of aggregated capital flows or one particular type of capital flow on real exchange rate, the main contribution of this research lies in comprehensively analyzing the relationship between the net capital flows, and all its components on the real exchange rate in India consequent to the liberalization of the capital account. Further other fundamental determinants of real exchange rate like terms of trade, trade openness, productivity differential as suggested in the literature along with monetary and fiscal variables have been included in the analysis. In addition this study for the first time in the context of India attempts a detailed investigation into the linkage between volatility of the capital flows and that of its components with the volatility of the exchange rate and the direction of causality between them.