



IMPACT OF FOREIGN EXCHANGE RESERVES ON FOREIGN EXCHANGE RATE

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ABSTRACT

Forex reserves has emerged as an important component in encompassing issues on policy, management and transparency in developing countries. It consist an important role in the design macro policies as well. In countries with fixed or partially flexible exchange rates, the reserves are mainly used to maintain competitiveness of the tradable sectors. India has accumulated unprecedented foreign exchange reserves and synchronously has been experiencing a large depreciation in its INR vies USD in last decade. This trend prompted to undertake the present study, which tries to measure the impact of foreign exchange reserve (FOREX) on exchange rate. To explain the association of foreign exchange reserve with exchange rate study uses weekly time series data of all the variables from October 2016 to September 2019. The study found out there is an existence of relationship between foreign exchange reserves and exchange rates (USDINR, GBPINR, EURINR and INRJPY).

Keywords: *Exchange Rate, Foreign Exchange Reserve, Model Fitness, Relationship, Regression analysis*

1. INTRODUCTION

In the age of globalized world, forex reserves have become an important factor of initiative taken by International Monetary Fund (IMF) and the Bank for International Settlements (BIS).such institutions are trying various strategies in international financial architecture in the context of the debt-banking-financial crisis in several countries. The subject is arose as a worldwide interest among policy makers and academicians

against increasing globalization of developing economies and integration of financial markets domestically as well as internationally.

India has experienced an unprecedented increase of foreign exchange reserves (currency assets considered) which stands at 122.48 billion dollars in 2010-11 which is consistent with the Asian trend of accumulating excessive foreign exchange reserves. On the current account balance front India has always faced current account balance deficit except between 2001 and 2003 when the current account balance was in surplus which was largely attributed to enhancement in the export of services. Here, the present study tries to investigate whether the independent variables under consideration namely foreign exchange reserves (FOREX) in INR and USD have a bearing on the dependent variable Indian exchange rate (EXR).

1.1 Foreign Exchange Reserves

The International Monetary Fund has recommended the definition of reserves (Balance of Payments Manual, and Guidelines on Foreign Exchange Reserve Management, 2001); as external assets that are readily available to and controlled by monetary authorities for direct funding of external payments imbalances, for indirectly regulating the magnitudes of such imbalances through intervention in exchange markets to have an effect on the currency exchange rate, and/or for other purposes.

There are three motives for holding reserve; transaction, speculative and precautionary. International trade provides rise to currency flows, which are assumed to be handled by personal banks driven by the transaction motive. Similarly, speculative motive is left to individual or corporates. Central bank reserves, however, square measure characterized primarily as a final resort stock of foreign currency for unpredictable flows, which is consistent with precautionary motive for holding foreign assets. Precautionary motive for holding foreign currency, just like the demand for money, may be completely associated with wealth and therefore the price of covering unplanned deficit, and negatively associated with the return from alternative assets. In the Indian context, the balance of payment crisis that surfaced in 1991 indicated the urgent need to build up adequate amount of reserves. Indeed, strengthening the capacity to intervene in the foreign Exchange market figured as one of the prime objectives of exchange rate management policy in the 1990s. In order to accomplish this, several administrative controls were put in place to discourage capital outflows and encourage inflows (Nayyar, 2000). Such asymmetric controls would minimize the probability of sudden reversal of capital flows. Therefore, precautionary motive is unambiguously the reason behind accumulation of reserves in the 1990s.

Indian objectives to keep forex reserve broadly summarized in; (a) Maintaining confidence in monetary and exchange rate policies, (b) Increasing capacity to interfere in forex markets, (c) Limiting external vulnerability by maintaining foreign currency liquidity to soak up shocks throughout times of crisis as well as national disasters or emergencies; (d) Providing confidence to the markets particularly credit

rating agencies that external obligations can invariably be met, so reducing the general prices at that forex resources are accessible to all or any the market participants, and (e) Incidentally adding to the comfort of the market participants, by demonstrating the backing of domestic currency by external assets.

Optimal level of reserves has additionally been indicated because the level wherever marginal productivity of reserves and interest attained on assets equals the marginal productivity of real resources and this framework encompasses rate of exchange stability because the predominant objective of reserve management.

Foreign reserves play an important role in the design and evaluation of current and future macro policies aimed at achieving the trade balance. Economies with fixed or partially flexible exchange rates, the reserves are mainly used to maintain competitiveness of the tradable sectors. They achieve this by preventing the appreciation of their currencies and by keeping the exchange rate at or close to the official target level. Beyond rate of exchange stabilization, foreign reserves are generally viewed as indicators of the strength of an economy, especially in particular its exporting industries. From a policy perspective, foreign reserves influence trade policies. A high level of foreign exchange reserves is associated with less restrictive policies. With regard to international trade, foreign currency is often an indispensable requirement to finance imports of goods and services. In this sense, anecdotal evidence suggests that foreign reserves play the role of an international liquidity constraint and any increase in reserves should thus have a positive impact on import demand.

1.2 Foreign exchange rate

A rate of exchange is that the value of one currency expressed in terms of another currency or cluster of currencies. Movements within the rate of exchange influence the choices of people, businesses and also the government. Collectively, this affects economic activity, inflation and also the balance of payments. In the international monetary markets Exchange rates are amongst the foremost necessary economic indices. For large international firms, that conduct substantial currency transfers inside the course of business, having the ability to accurately forecast exchange rate movements can result in substantial improvement in the firm's overall profitability. Exchange rates are affected by several extremely related to economic, political and even psychological factors. These factors interact in a very complex fashion. Exchange rate series exhibit high volatility, quality associated noise that result from an elusive market mechanism generating daily observations.

The exchange rate is very important and it has a crucial role in the international trade, because when the exchange rate of one currency appreciates that will make its products more expensive than previous and that may negatively affect the volume of its exports and consequently the aggregate demand in that economy. Furthermore, when a country currency depreciates that will make its products cheaper than what they were before and that may positively affect the volume of its exports. However, that will affect the imports volume, as it will become more expensive and consequently its aggregate supply. Therefore, there is vital importance of the exchange rate in monetary policy choosing either it will be contractionary monetary policy or expansionary

monetary policy under the free float system, as exports and imports and by extension the balance of payment significantly affected by it. Moreover, private business is highly affected by exchange rate, as it affects the cost of goods sold (Cost of operation) and hence affecting the profitability of the company and its fair value. Furthermore, it also affect the value of the company assets, which are hold in another currency than the local currency.

The exchange rate is considered as economic variable which is highly sensitive to the internal and external effects, especially because of both economic development and international financial markets evolution are highly affected by foreign trade, in addition the exchange rate has a great impact on the macroeconomic equilibrium, through its direct and indirect relationship of macroeconomic indicators. Therefore, paramount importance had gained by exchange rate as a macroeconomic tools, although the degree of their impact on the economy vary depending on the followed exchange system. Throughout the years 1950- 1960 theories revolved around comparing fixed and flexible regimes of exchange rate, and theories of the exchange rate has evolved continuously since the seventies and Bretton Woods breakdown, and that has caused a strong shake in exchange rates.

Exchange rate fluctuation over a wide range bi directionally (ceiling and floor) or in unidirectional way tends to have a debilitating effect on the overall trade. Nations following the policy of import linked export promotions will have a deep impact by currency depreciation on production costs there by triggering inflation. The firm level debt part rises increasing its liability. The appreciation of currency creates a dampening environment for the exporters. Today the worldwide trend in currency management is to arrest appreciation and permit depreciation among limits thereby rendering the economies export driven. The exchange rate fluctuation can be intuitively governed by umpteen parameters which may include economic and non-economic factors like the capital inflows, interest rates prevailing in the economy, the rate of inflation, volume of foreign exchange reserves, current account balances, GDP growth rate, fiscal deficit, import to GDP ratios, export to GDP ratios, political stability, development indices, the corruption index, the health of global economy etc.

2. LITERATURE REVIEW

Heller (1966) introduced cost benefit perspective. Agrawal (1970) modified Heller's model on the ground that opportunity cost of reserve holding is value created by foreign currency held by monetary authority instead of imported productive goods. Bacchante, Racier and Roof (2006), found that real exchange rate volatility is harmful for the growth of the country and reduces it, this problem is more severe in countries with less financial development. Dooley, Folkerts– Landau and Garber (2003) viewed hoarding of reserves as a mechanism to facilitate growth and maintain undervalued real exchange rate in the context of China. M. Ramachandran and Naveen Srinivasan (June 2006) have taken a an weekly data for the period of 2001 to 2005 to test the existence of long run relationship which concluded that asymmetric exchange rate intervention

triggered, perhaps, by concerns about India's export competitiveness seems to have contributed to large stockpile of reserves. The research indicated that an asymmetry in central bank foreign exchange intervention responses to currency appreciations versus depreciations in the six emerging Asian economies, such as India, Korea, Philippines, Singapore, Thailand and Indonesia. (Victor Pontines et al, 2011) Additionally, the Asian central banks of India, Singapore and Thailand appear also to react much more strongly rather than the US dollar bilateral rate.

The quantum of foreign exchange reserves essentially does not exhibit a long run or short run correlation with the exchange rate in case of Indian economy. (Gokhale M. et al, 2013)

The relationship in long run is present among exchange rate reserves, interest rate and stock market development and foreign reserve have a positive effect on stock market growth. Bidirectional causality exists between interest rate and stock market growth (Olayinka Olufisayo Akinlo 2015). Study under gone to find over the period 1981-2011. Study uses statistical tools such as Unit Root Test, Granger Causality Test, and Johansen Cointegration Test.

3. RESEARCH OBJECTIVES

4. RESEARCH METHODOLOGY

The study aims at the relationship between foreign exchange reserve (INR & USD) with exchange rate (EURO, POUND, DOLLAR and YEN). Causal research design is used. The present study uses Foreign Exchange Reserves (INR & USD) as independent variables and Exchange rates (EURO, POUND, DOLLAR and YEN) as the dependent variables. Time series data of the above mentioned variables from October 2016 to September 2019 is collected, which contains 145 observations with non-probability convenience sampling design. Correlation and regression analysis were carried out in SPSS V20 on collected data.

5. DATA ANALYSIS

EXHIBIT: 4.1 CORRELATION MATRIX BETWEEN ALL VARIABLES

	USDINR	GBPINR	EURINR	INRJPY
Coefficient of Correlation				
Reserve in INR	.818	.585	.633	.482
Reserve on USD	-.187	.204	.286	.103
Level of Significance				
Reserve in INR	0.000*	0.000*	0.000*	0.000*
Reserve on USD	0.025**	0.014**	0.001*	0.219

*Correlation is significant at the 0.01 level

**Correlation is significant at the 0.05 level

Exhibit 4.1 shows the linear correlation between foreign exchange reserves and USDINR, GBPINR, EURINR and INRJPY. The correlation coefficient of foreign exchange reserve in INR with USDINR, GBPINR, EURINR and INRJPY is positively significant at 0.01 level. And that of foreign exchange reserve in USD with EURINR is positively significant at 0.01 level, with GBPINR is positively significant at 0.05 level. Correlation between Foreign exchange reserves in USD with USDINR is negatively significant at 0.05 level, with INRJPY is not significantly correlated.

**EXHIBIT: 4.2 REGRESSION ANALYSIS BETWEEN FOREIGN EXCHANGE RESERVE IN INR
AND FOREIGN EXCHANGE RATE**

Variable	Coefficient	t-Statistic	Adjusted R-squared	F-statistics	Level of significance
Impact of forex reserve in INR on EURO (Dependent Variable: EURO)					
Constant	-0.104		.396	94.690	0.000
Forex reserve in INR	0.633	9.731			
Impact of forex reserve in INR on POUND (Dependent Variable: POUND)					
Constant	-0.115		.338	74.019	0.000
Forex reserve in INR	0.585	8.603			
Impact of forex reserve in INR on USD (Dependent Variable: USD)					
Constant	-0.082		.667	286.902	0.000
Forex reserve in INR	0.818	16.938			
Impact of forex reserve in INR on YEN (Dependent Variable: YEN)					
Constant	-0.096		.226	42.861	0.000
Forex reserve in INR	0.482	6.547			

Exhibit 4.2, Shows the results of regression analysis. According to Adjusted R square values it is found out that USDINR explains forex reserve in INR by 0.667, followed by EURINR 0.396, GBPINR by 0.338 and lastly in INRJPY by 0.226. It is also found that all regression models are significantly fitted.

**EXHIBIT: 4.3 REGRESSION ANALYSES BETWEEN FOREIGN EXCHANGE RESERVE IN USD
AND FOREIGN EXCHANGE RATE**

Variable	Coefficient	t-Statistic	Adjusted R-squared	F-statistics	Level of significance
Impact of forex reserve in USD on EURO (Dependent Variable: EURO)					
Constant	-0.043		.075	12.652	0.01
Forex reserve in USD	0.286	3.557			
Impact of forex reserve in USD on POUND (Dependent Variable: POUND)					
Constant	-0.025		.035	6.170	0.014
Forex reserve in USD	0.204	2.484			
Impact of forex reserve in USD on USD (Dependent Variable: USD)					
Constant	0.079		.028	5.165	0.025
Forex reserve in USD	-0.187	-2.273			
Impact of forex reserve in USD on YEN (Dependent Variable: YEN)					
Constant	-0.009		.011	1.524	0.219
Forex reserve in USD	0.103	1.235			

Regression analysis results showed in Exhibit 4.3 Adjusted R square values suggests that USDINR explains forex reserve in USD by 0.028, followed by EURINR 0.075, GBPINR by 0.035 and lastly by INRJY by 0.011. It is also found that regression model of EURINR with forex reserve in USD is significantly fit at 0.01 level. Regression models of GBPINR with forex reserve in USD and USDINR with forex reserve in USD is significantly fit at 0.05 levels. And lastly regression model of INRJY with forex reserve in USD is not significantly fit.

6. CONCLUSION AND FUTURE SCOPE

The present study establishes a positively significant correlation between total foreign exchange reserve in INR and USDINR, GBPINR, EURINR and INRJPY, while on the other side, negatively significant correlation between foreign exchange reserve in USD and USDINR. Foreign exchange reserve in USD and GBPINR, EURINR and INRJPY are positively significant. Regression model of the study is limited to analyzing the foreign exchange reserve and the data collection is of three years. However, the future researcher can expand the study to other macro-economic factors such as inflation rate, current account deficit, political stability, recession, government debt affecting exchange rate.

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