AN ANLYTICAL STUDY OF INDIAN CURRENCY MARKET

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Dr. Gurendra Nath Bhardwaj	**Prajwal Brijesh Ainapur**
Professor,	**Student,**
NIIT University	**NIIT University**
gurendrabhardwaj@gmail.com	**prajwalainapur@gmail.com**

ABSTRACT

Currency price is one of the very few factors which has a very significant effect on every aspect of macro-economic environment such as balance of trade, inflation etc. The balance of trade is severely influenced by the sectors which play a major role in the imports and exports of a country. In the context of India, Gold and IT are two such sectors which hold a large chunk of imports and exports respectively. Currency fluctuations are a major driver of these imports and exports. From an investors perspective, currency has its association with many investment instruments be it gold, equity, debt derivatives or indices of stock market. Thus, the currency market plays a key and vital role in the economy of a country from all the frontiers be it the economic indicators or the commodities. Therefore, there is a need to analyze the factors which affect the strength of the currency with special reference to the Indian economy and to figure out the indicators which could be used to predict the currency fluctuations in the coming years. The extent of association of the currency with the indicators would help the economic decision makers to simulate the effects before passing any government policy. The primary indicators that would be focused in this paper are balance of trade, foreign reserves besides also analyzing the impact of government policies and gold prices. The study is descriptive in nature based on secondary data collected from a reliable source. Statistical tools like linear regression analysis and granger causality test etc. shall be used for the analysis of the obtained data.

Keywords: Indian currency market, Balance of trade, Gold prices, Foreign reserves.

Theme No and Name: Theme-5: Indian Financial Markets and Corporate Governance

INTRODUCTION

This study examines the various impacts of Indian currency market be it the economy or the International trade. Government policies and the way they shape the future of the currency market and the economy are discussed with the instances of Demonetization policy of 2016. The study has been conducted from FY'01 to FY'16 and using the statistical tools to meet the chosen objectives. The study mainly focuses on Forex reserves, Balance of trade and Gold prices over the mentioned duration to analyze the effects of rupee market and government policies. Foreign reserves are one of the main factors which indicates the strength of the economy. Balance of trade has been facing an increased negative net value for a considerably longer period of time due to excessive imports in exquisite products such as crude oil and gold.

REVIEW OF LITERATURE:

Rakesh et. al (2016) analyzed the impact of currency exchange rate fluctuations on the stock market. The study analyzed the conversion rates of Indian rupee (INR) with three major currencies namely GBP, USD and Euro along with their impact on the stock market Index, NIFTY 50. The study which took its sample data from the NSE, Yahoo money and finance for the period of five years from Jan'11 to Dec'15, utilized statistical tools such as regression analysis to support their statements. The paper arrived at two conclusions. Firstly, the stock market (NIFTY) is influenced by currency markets and is independent of the currency exchange considered. Secondly, the currency markets of USD, GBP and Euro have a direct and significant impact on the stock market. The paper though failed to analyze the impact of currency exchange on different categories of stock exchange such as FMCG, IT, Bank etc.

Salvi and Sengupta (2016) presented a paper on the depreciation of rupee and its impact on SME (Small and Medium Scale Enterprises) sector. This paper ascertains the fact the depreciation of rupee negatively impacts the importers while positively affects the exporters and vice versa. In India the import is significantly higher in comparison to the exports, depreciation is only going to have a negative impact on the economy as a whole. The strain that importers like Oil manufacturers face due to currency fluctuations are directly passed on to the consumers and thus results in inflation. The paper further explains the effect of currency depreciation on NRI's, As the rupee value gets weaker and weaker, they gain more on remitting the money back home. The paper concludes with the fact that exchange rates are purely driven by demand-supply concept and the strength of a currency in the exchange market is solely determined by the demand and supply concept of that particular currency.

Ghosh (2016) analyzed the impact of Oil Prices, Exchange Rate and the Indian Macro-economy and their impacts on each other. This paper investigates the dynamic relationship between the above two indices with

the macro economic variables such as Price, Output, Interest Rate and Money by using Structural Auto Regression Variable (SAVR) and Comparative analysis. As a result of the analysis, A percentage point reduction in the world oil price will reduce the inflation up to 0.045% and the effect shall last up to the next 11 months, favorable long-term effect on output and rupee appreciates. The paper stresses that the economy always behaves asymmetrical to price shocks in oil. The paper concluded that rupee's depreciation causes a medium to long term decline in output, demand for money and world price of oil. It also concluded that the India's output and inflation levels are more influenced by oil prices rather than exchange rates of INR in the world currency market.

Saravanan (2015) studied the deprecation of Indian rupee and its impact on Indian economy. The authors have studied the area of current growth, foreign investment and macro-economic factors which are the key components affecting the currency depreciation. The data collected for this study is a secondary one and was collected from RBI website and bulletin. The samples were taken annually from 1969-1970 to 2012-2013 and used statistical tools such as Mean, Standard Deviation(SD), Co-Efficient of variance(CV), Compound Annual Growth Rate(CAGR). The paper helps in concluding the empirical relationship among the various macroeconomic variables and foreign investment analysis and states that the performance of Indian rupee hasn't been satisfactory over the post liberalization period. The government has to take up corresponding measures to strengthen up the rupee and to stabilize the market.

Evans (2014) analyzed the economic aspects of decentralized public ledger currencies such as bitcoin on the economy. The author has studied the working of the public ledger currencies and the effects it could bring forward on the businesses, existing financial platforms, governance organizations and the security they provide to its users. The data collected for the analysis were secondary in nature from online sources such as quandl.com for the value of those cryptocurrencies. The major currencies taken for the study were bitcoin, litecoin and dogecoin. The paper states that the lack of proper growth during the early stages of the cryptocurrencies are due on the lack of trust sentiments among the public and also asserts that those sentiments have improved in the recent times and this is expected to see a major growth in it's values. The paper concludes that even in the presence of considerably good sentiments among the public there are many hurdles that makes it improbable to evolve into a general-purpose currency.

Younus (2014) examined the impact of Indian rupee depreciation on the economy of Bangladesh. The secondary data was collected for the time period of 2007-2013. The scale of import is almost 8 times to that of export in FY'13 for Bangladesh from India. This huge imbalance in trade between these two countries

is due on the fact that Bangladesh's primary export is in the textile industry while India is fairly self-sufficient in this segment. The paper employed OLS regression analysis and it resulted in two things. Firstly, that for a 1% increase in INR will reduce the export of Bangladesh to India by 2.7%. Similarly, for a price level change of 1% in India, the export levels increased by 5.69%. Secondly, for a 1% change in price level of INR will led to a change in the price level of Bangladesh by 0.76%. Thus, this paper highlights the extent to which the Bangladesh economy is dependent on Indian currency fluctuations.

Arora (2014) studied the real impacts of the depreciation of the rupee on the Indian economy and the results showed that in the long run, the Indian economy will have more disadvantages than advantages with weaker rupee. The study concluded that the Indian Rupee has depreciated significantly against the US Dollar stressing on the risk for Indian economy. Some of the many reasons responsible for this fall being high inflation, increasing current account deficit and FII outflows. RBI has taken up timely interventions by selling up the FOREX reserves. But during the times of global uncertainty, investors prefer USD as a safer choice. In order to attract investments, RBI can ease the capital controls by increasing the limit on FII investment in government and corporate debt instruments and also by introducing higher ceilings in ECB's. Government can still create a stable environment with their policies and measures. However, the fate of the currency markets also depends on the global economic outlook and also the future of European Union.

Kaur and Sirohi (2013) presented the effect of rupee depreciation on common man. This paper studies the real-time implications of the depreciation of the Indian rupee and its impact on the common man and the corresponding steps taken by the government of India to curb the depreciation. This paper cleverly explains how a government action to curb the depreciation has affected the common man by analyzing the change in pattern of spending and savings over various commodities. The paper highlights that even though recession is far less in India compared to USA, dollar is getting stronger than rupee and the reason behind it being the peoples profound interest in buying foreign branded goods thus increasing the import creating a deficit in FOREX reserves. One another main reason for the same is the sentimental preference of Indians to buy more and more gold.

Mousavi and Leelavathi (2013) investigated the relationship between agricultural exports and exchange rates of INR. The long run relationships between the fore-mentioned factors are analyzed by using co-integration analysis. A Granger Causality Analysis has been carried on to determine the influence of one over the other. This paper aims at establishing the proper relation between the two factors so as to give a

better understanding of the agricultural sector for the policy makers. The granger-causality test reports indicated that in the case of Indian F-statistics for Qx->ER and ER->Qx are insignificant even at 95 percent level of confidence. Thus, the data suggests there is no causality in both the direction and that both these factors are not co-integrated. Though exchange rates are supposed to influence the export levels, agricultural exports in particular are found to be elastic to exchange rate fluctuations. The paper also agrees to the fact that the same trend can't be applied to all the sub sectors of agricultural exports.

Mahanta (2012) conducted an analytical study on the performance of Indian currency futures. The study analyzed the futures since its inception in 2008 to 2012 over the four currency contracts namely, INRUSD, INRGBP, INREUR, INRJPY. The parameters which were quantitatively analyzed were open interest and contract traded. The analysis concluded that the currency futures would provide greater transparency for the end user. The fact that the government has taken up both the stock market as well as the commodity exchange for the currency future contract is seen has a big positive step towards a better economy and it is also expected to grow in the coming years.

Hutchinson et. al (2012) analyzed the Financial Liberalization, Exchange rates and Monetary Policy which is often mentioned as the Trilemma. The principle of trilemma arose as the nations started to give a greater focus on exchange rates, macroeconomic stability while also integrating themselves into the world market. The author has used linear model for trilemma configuration by regressing a constant on three indices namely Monetary Independence (MI), Exchange Rate Stability (ERS) and Capital account openness (KO). This paper describes that when one of the indices increases, it has to be balanced by the decrease in other indices and for the more preferable economical system would be the one in which all the three indices are increased considerably. The paper concluded that Indian economy has witnessed a significant increase in the MI, ERS indices over the time period which has resulted in a lower inflation volatility. This is also countered by a greater financial integration which beings about higher inflation volatility.

Agarwal (2011) reviews the probable causes for the depreciation of Indian rupee and also the policies taken up to prevent the depreciation of the rupee. The variables which are discussed in the paper are namely Balance of Payments, Interest rate differentials, Inflation, Fiscal deficit and global economic conditions. The author also analyses the possible available options with the RBI to prevent further depreciation. Raising policy rates, using forex reserves, easing capital controls and administrative measures are some of the

alternatives proposed to help prevent further depreciation and their feasibility. While the first one, raising policy rates is not possible in India as the RBI has increased it significantly. Thus, RBI is currently left with not many but three options. Some of the key factors behind such high fiscal deficits is put upon the increasing imports of oil and non-oil products. The only possible method to curtail this is to increase the exports. Though the IT industry has been supporting the cause with increased revenue, oil prices have also substantially increased there by nullifying the effect. And the paper concludes that rupee is set to be volatile at lease till the near future until some policy turns the game around.

Dua and Sinha (2007) attempts at explaining the impact of East Asian crisis on India's Exchange rate. The index of currency pressure of four countries namely, Thailand, South Korea, Malaysia and India were taken up for analysis. The East Asian financial crisis of 1997-1998 was triggered by the fall of Thai Bhat. The paper discusses on the causes that led to the crisis in detail such as financial liberalization policies taken by these countries and their current account deficits. The authors have also described on how India managed to insulate itself from the great East Asian financial crisis. RBI played a key role on this event with its many intervention policies in the spot and forward exchange rate markets helped the country to curb speculative pressures and excessive volatility. This paper tried to analyze the East Asian financial crisis on the Indian exchange rate vis-à-vis with three other countries as mentioned before. The paper concluded that financial markets in India has seen a paradigm shift in its policies ever since the 1991 liberalization policies.

OBJECTIVE OF THE STUDY:

1. To understand the currency market and to analyze the growth driver of this market.
2. To study the impact of the currency market on macro-economic factors.
3. To analyze the impact of balance of trade on product pricing.
4. To analyze the impact of government policies on the currency market.

METHODOLOGY:

1. Source of data:

   The present study is depending on secondary data only. The currency values and all other required data for the defined time period have been derived from RBI and other reliable sources.

2. Sample Size:

The study has been conducted for a period of sixteen years from FY 2001 to FY 2016.

3. Tools and Techniques:
    i. Regression analysis
    ii. Granger Causality Test

HYPOTHESIS:

Following are the hypotheses considered for this study.

H00: The Currency market has a significant effect on the forex reserves of the country.

H01: The Currency market has no effect on the forex reserves of the country.

H10: The balance of trade can be used to forecast the prices of a major import product.

H11: The balance of trade cannot be used to forecast the prices of a major import product.

H20: Government policies have significant effect on the currency market.

H21: Government policies have no effect on the currency market.

H30: Currency market has a significant impact on the import products.

H31: Currency market has no significant impact on the import products.

What is the currency market?

The market where, participants can trade in on the value of a currency similar to a stock market. The value of the currency is crudely driven by the demand-supply principle. Just like the stock market, higher the demand, higher would be the price. But the advantages these derivative markets hold is that unlike stocks, currency market cannot be driven by any body, due to the size and volume of the market. These currency markets are also considered to be superior tools as they provide a greater transparency, accessibility, counter party guarantee and liquidity.

Causes and Effects of the currency market

Whether the investors are aware or not, the economy as a whole is exposed to the currency market as it determines the value of all the international trade transactions. The currency in return is simple effected upon by the demand-supply principle, thus government policies, monetary decisions etc. significantly

effects the prices of the currency in the market. The INR values being taken up in this study are all against the USD.

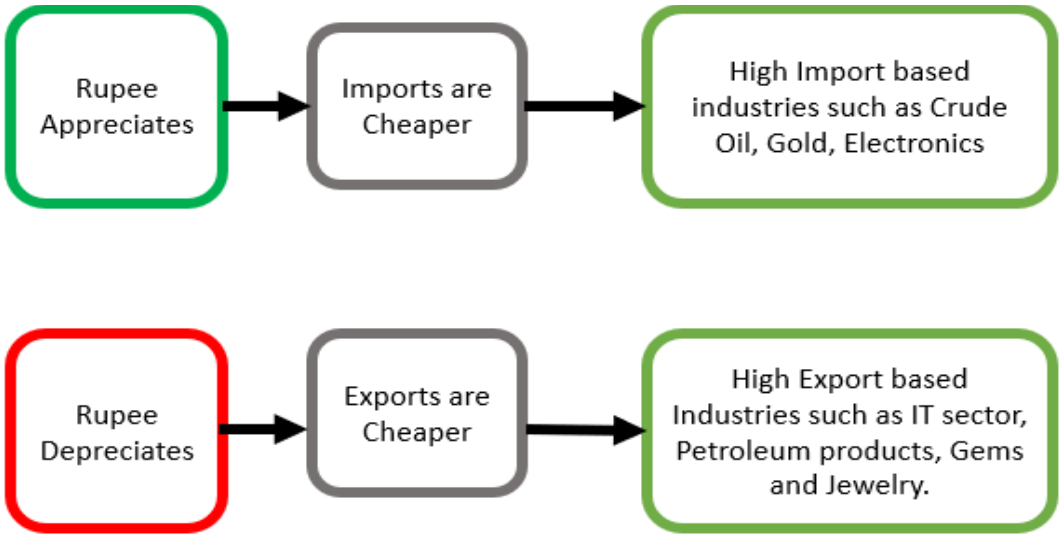
i- Stronger Rupee

Stronger Rupee directly translates to India having to shell out a significantly lesser chuck of money to buy goods from other countries. Thus, a stronger rupee is always favorable for import. But in the context of India, this is a majorly import country and so on a short term, this might be favorable but as more rupee is being given out in the market and less of foreign currencies is taken in, this affects the equilibrium of the rupee value thus weakening it in return.

ii- **Weaker Rupee**

A weaker rupee is favorable for export based companies such as the IT sector. In India, as the exports are much lesser than imports by a considerable margin, a weaker rupee might help in setting up the balance of trade.

Figure 1: Rupee appreciation and depreciation



iii- Volatility

The reason why USD is always taken as a base is on the fact that its less volatile in comparison to the other currencies such as Euro, GBP due to its strong financial structure.

Higher the volatility of a currency, higher is the portfolio value volatility and thus increases the risk of investor's returns

iv- **Government Policies**

Government policies are some major game changers in this economic world. India has witnessed two major such policies in the last few years they being the demonetization of November,2016 and GST tax policy of July 2017. These policies have a larger extent of effect on the macro-economic and micro-economic factors.

Linear Regression Analysis

Linear regression analysis is used to correlate how two variables are related to each other. The correlation coefficient, r describes the correlation extent of the two variables. Higher the r value, the stronger the two variables are related to each other.

$$Y = a + bX$$

$$r = \frac{S_{xy}}{\sqrt{S_{xx} \cdot S_{yy}}}$$

Granger Causality Test

The granger causality test is a statistical hypothesis used to determine if one of the time series is useful to forecast the other time series.

$$P[Y(t+1)\epsilon A|x(t)] \neq P[Y(t+1)\epsilon A|x_{-x}(t)]$$

i- INR and Foreign Reserve Assets

Table 1: Linear Regression Analysis Results

Function	**Value**
Mean of x	**50.80016408**
Mean of y	**11,173.37313**
Correlation coefficient, r	**0.808639568**

Table 2: Granger Causality Test Results

Granger Causality Test: Y=f(X)				
Model	Res. DF	diff. DF	F	p-value
Complete Model	12			
Reduced Model	13	-1	0.62691	0.44385
Granger Causality Test: X=f(Y)				
Model	Res. DF	diff. DF	F	p-value
Complete Model	12			
Reduced Model	13	-1	4.42546	0.05717

The high r value of 0.808639568 indicates that both these time series are strongly corelated with each other. This means a considerable change in one of them will have a significant change in the others time series. The p-value of 0.443877 indicates that the value of INR can be used to forecast the forex reserves of India.

ii- Balance of Trade and Gold Prices

Table 3: Granger Causality Test Results

Granger Causality Test: Y=f(X)				
Model	Res. DF	diff. DF	F	p-value
Complete Model	12			
Reduced Model	13	-1	0.00603	0.93939
Granger Causality Test: X=f(Y)				
Model	Res. DF	diff. DF	F	p-value
Complete Model	12			
Reduced Model	13	-1	2.95579	0.11123

The significantly very high p-value of 0.93939 indicates that the prices of one of the major Import/Export product (e.g. Gold) can be used to forecast the balance of trade.

iii- INR and Gold Prices

Table 4: Linear Regression Analysis Results

Function	**Value**
Mean of x	**50.80016408**
Mean of y	**16,403.96875**
Correlation coefficient, r	**0.771870517**

The results of this regression test gave an r value of 0.77 indicating that gold prices and Indian rupee are strongly correlated.

iv- Effect of Demonetization on the value of INR

Table 5: Linear Regression Analysis Results

Function	Value
Mean of x	**67.3360202**
Mean of y	**67.05909495**
Correlation coefficient, r	**-0.080917**

This analysis done between the value of INR against USD between Nov'16 to Mar'17 to the same duration of time in the previous fiscal i.e. Nov'15 to Mar'16 is taken to compare the pre-demonetization and post-demonetization effects over the same period of time span over two different years. The negative r value indicates that both these series are not at all related to each other.

Conclusion

The study has been done in the context of India for the period of FY2001 to FY2016. The conclusion states that the value of INR against USD can be used to forecast the values of Foreign reserves and that both are strongly correlated. The balance of trade of India can be forecasted if only one of the values of major trade product (e.g. Gold) is known. The gold prices are said to be influenced highly by the currency market with reference to the high r value obtained. In the analysis done on the effect of demonetization, the negative r value indicates that government policies have a very significant effect on the currency market as the values of segments of the time series are usually correlated for the same quarter comparison.

The article covers the important economic indicators such as the balance of trade and foreign reserves and their relation to the currency market. All the analysis is done by taking up only one parameter like gold etc. There could be some exceptional products which might show different behaviors due to various other external factors and are not taken into account. If desired, the same analysis can be done for other economic indicators, other products and also different economic indicators.

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