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Trends in Exchange Rate of Indian Rupee as against Euro

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Abstract: **The foreign exchange market is an important element of the financial market of any country. It is the market where exchange rates are determined. An exchange rate regime is the way at which one currency may be converted into another currency. Exchange rate mechanism can be classified as fixed exchange rate and floating exchange rate. In fixed exchange rate the value of currency is determined and controlled by the Government and central banks, whereas, in floating exchange rate the value of currency is determined by the market and in which government and central banks do not interfere. The study examined the trends in exchange rate of Indian Rupee as against Euro in pre-recession period as well as in post- recession period. The trend analysis revealed that the value of rupee as against Euro depreciated during the period 2001-02 to 2016-17. The trends in exchange rate of Indian Rupee as against Euro in the pre- recession period and the post- recession period were polynomial trends which showed that there were fluctuations in the exchange rate during the period.**

Keywords: **Exchange Rate, Indian Rupee, Euro, Growth Rate, Trends, Pre- Recession Period, Post- Recession Period.**

I. INTRODUCTION

The nominal exchange rate is expressed as a domestic country's currency price in relation to a foreign country's currency. The real exchange rate is the rate at which goods and services in the domestic country can be exchanged for the goods and services in a foreign country. The exchange rates are quoted either in direct quotation or in indirect quotation. The direct quotation is the quotation in which exchange rates are expressed as number of units of domestic currency per unit of foreign currency. In indirect quotation, exchange rates are expressed as number of units of foreign currency per unit of domestic currency. An exchange rate mechanism is the way at which one currency may be converted into another currency. Exchange rate mechanism can be grouped as fixed exchange rate and floating exchange rate. One of the most integral features of Flexible Exchange Rate system is the high volatility of Exchange rate. Volatility represents the degree or the extent to which one variable changes over a time period. The larger the magnitude of a variable change, or the more quickly it changes over time, the more volatile it is.

The exchange rate of a country's currency plays an important role in that country's trade because a country with a high value of currency will spend more on exports rather than imports. An increase in exports gives rise to demand for a domestic currency and this will lead to appreciation in the exchange rate of domestic currency in relation to foreign currency. A lower value currency makes country's exports cheaper in foreign exchange market whereas country's imports will be expensive. If there is an increase in imports, all other things being equal, there will be an increase in demand for foreign currency. This will lead to appreciation in the exchange rate of foreign currency rather than domestic currency. Kurihara (2013) examined that there were no negative effects on international trade in developing countries due to exchange rate fluctuations; however, this relationship was not found in developed countries. Jayachandran (2013) revealed that real exports and imports are co-integrated with exchange rate volatility and real exchange rate.

II. REVIEW OF LITERATURE

Prakash (2012) in his paper analysed major episodes of volatility in Indian foreign exchange market in the past two decades from 1993 to 2013, caused either by exogenous or endogenous factors, or a combination of both. The analysis revealed that there had been a significant increase in exchange rate volatility in the aftermath of the global financial crisis, signifying the greater influence of volatile capital flows on exchange rate movements. An important aspect of the policy

response in India to the various episodes of volatility had been market intervention combined with monetary and administrative measures to meet the threats to financial stability. The paper emphasised on the need to address the structural problems present in India's external sector, especially the persistence of large trade and current account deficits, for a sustainable solution to the problem of exchange rate volatility.

Sahu (2012) in his paper analyzed the volatility spillovers from the exchange rates of the Brazilian Real, the Russian Ruble, the South Korean Won, the Singapore Dollar, the Japanese Yen, the Swiss Franc, the British Pound Sterling and the Euro to the exchange rate of the Indian Rupee during the period from 2005 to 2011. The study employed a two-step multivariate GARCH framework to examine the dynamics of exchange rate volatility and its spillovers. The study found evidence of conditional autocorrelation and persistence of volatility in daily exchange rates of all nine currencies. The study further viewed that volatilities observed in the exchange rate of the leading currencies transmit to volatility in the daily exchange rate of the Indian Rupee.

Suresh (2012) analyzed the impact of appreciation of Chinese Renminbi on India's trade with China. The time series econometrics tools like vector error correction model, unit root test, augmented dickey fuller test and co- integration techniques were used to analyzed the data. The study revealed that appreciation in RMB affected the bilateral trade between India and China. It had been seen that revaluation of Chinese Renminbi had impact on the India's trade. The share of imports from China had significantly risen to 10.7 per cent during 2009-10 from 7.3 per cent in 2004-05.

Ullah *et al*. (2012) investigated the impact of exchange rate volatility on foreign direct investment in Pakistan during the period 1980 to 2010. The study was based on secondary data. The time series econometrics tools like unit root test, volatility analysis, co-integration technique and causality analysis were used to analyze the data. The study revealed that foreign direct investment is positively associated with Rupee depreciation and exchange rate volatility deters foreign direct investment. The Granger Causality test suggested that exchange rate volatility granger causes foreign direct investment, while, foreign direct investment not granger causes exchange rate volatility.

Jayachandran (2013) in his research paper examined the impact of exchange rate fluctuations on the real imports and exports in India using annual time series data. The empirical analysis had been carried out for the period 1970 to 2011. The study revealed that real exports and imports are co-integrated with exchange rate volatility, real exchange rate, gross domestic product and foreign economic activity. The study further showed that the exchange rate had significant negative impact on real exports imports, implying that higher exchange rate fluctuations tends to reduce real exports in India. The study revealed that in the long run, GDP had a significant and positive impact on India's real exports, but in the short-run impact turns out to be insignificant.

III. OBJECTIVES OF THE STUDY

The main objectives of the study are:

- To analyze the trends in exchange rate of Indian Rupee as against Euro in pre-recession.
- To analyze the trends in exchange rate of Indian Rupee as against Euro in post- recession period.

IV. RESEARCH METHODOLOGY

The present study is based on secondary data. The daily exchange rates of Indian Rupee as against Euro for the period from 2001-02 to 2016-17 have been collected from the monthly archives of Reserve Bank of India.

To measure the trends in exchange rate of Indian Rupee the study divided the entire sample period into two sub periods, namely in pre- recession period (2001-02 to 2008-09) and post- recession period (2009-10 to 2016-17).

To analyze the trends on year- to- year basis percentage growth rate over the base year is calculated and to check the overall trend pattern of exchange rate of Indian Rupee as against Euro exponential growth rate is calculated. The coefficient of variation is calculated to see the variability in exchange rate.

V. DATA ANALYSIS AND RESULTS

Table I presents the trends in exchange rate of Rupee as against Euro during the pre- recession period i.e. from 2001-02 to 2008-09 as well as during the post- recession period i.e. from 2009-10 to 2016-17.

Table I:

Trends in Exchange Rate of Indian Rupee as against Euro

(Per Unit of Euro)

Pre- Recession Period				Post- Recession Period			
Year	**Exchange Rate of Indian Rupee**	**%**	**Percentage Change**	**Year**	**Exchange Rate of Indian Rupee**	**%**	**Percentage Change**
2001-02	42.1811	100	-	2009-10	67.0513	158.96	-
2002-03	48.0901	114.01	14.01	2010-11	60.2325	142.79	-10.17
2003-04	53.9896	127.99	12.27	2011-12	65.8939	156.22	9.40
2004-05	56.5523	134.07	4.75	2012-13	70.0693	166.12	6.34
2005-06	53.9124	127.81	-4.67	2013-14	81.1745	192.44	15.85
2006-07	58.0514	137.62	7.68	2014-15	77.5209	183.78	-4.50
2007-08	57.0599	135.27	-1.71	2015-16	72.2894	171.38	-6.75
2008-09	65.0581	154.24	14.02	2016-17	73.6080	174.50	1.82
E.G.R.	-1.46			E.G.R.	6.59		
Mean	54.36			Mean	70.98		
C.V.	12.59			C.V.	9.42		
t-value	5.51			t-value	2.17		
E.G.R.(Total Period)	3.52						
Mean(Total Period)	62.67						
C.V.(Total Period)	17.21						

The table I reveals that the exchange rate of Indian Rupee as against Euro depreciated from 42.18 in the year 2001-02 to 73.61 in the year 2016-17. The Indian Rupee recorded average exchange rate of 62.67 per cent and coefficient of variation of 17.21 per cent as against Euro during the period 2001-02 to 2016-17. The value of Indian Rupee as against Euro showed a decline (E.G.R.=3.52%) during the period of study.

The table also revealed that in the pre- recession period, the exchange rate of Indian Rupee depreciated from 42.18 in the year 2001-02 to 65.06 in the year 2008-09 and in the post- recession period, the exchange rate of Indian Rupee also depreciated from 67.05 in the year 2009-10 to 73.61 in the year 2016-17. The value of Indian Rupee was lower ($\bar{X} = 70.98$) in the post- recession period as compared to that of the pre- recession period ($\bar{X} = 54.36$). The exchange rate of Indian Rupee as against Euro remained more volatile in pre- recession period (C.V.= 12.59%) as compared to that in the post- recession period (C.V.= 9.42%). The table further reveals that the Indian Rupee recorded negative insignificant growth rate of 1.46 per cent as against Euro during pre- recession period (2001-02 to 2008-09) and recorded significant growth rate of 6.59 per cent during post- recession period (2009-10 to 2016-17).

The trend analysis revealed that the value of rupee as against Euro depreciated during the period 2001-02 to 2016-17. The depreciation of Indian Rupee was highest as against Euro in the year 2013-14 (192.44), followed by 2014-15 (183.78), 2016-17 (174.50) and in the year 2015-16 (171.38) while it was lowest in the year 2002-03 (114.01), followed by 2005-06 (127.81), 2003-04 (127.99) and in the year 2004-05 (134.07). In the post- recession period, the depreciation was highest (174.50) as compared to that of the pre- recession period (154.24).

The trends in exchange rate of Indian Rupee as against Euro in the pre- recession period and the post- recession period have been shown diagrammatically in figure I and II, respectively. The figures represent that the value of R^2 was 0.854 and 0.531 which shows that there were many fluctuations in exchange rate during the period 2001-02 to 2008-09 and 2009-10 to 2016-17, respectively. The value of coefficient of determination R^2 was found to be higher that represents that the polynomial model of trend line is best fitted model of trend line in both periods.

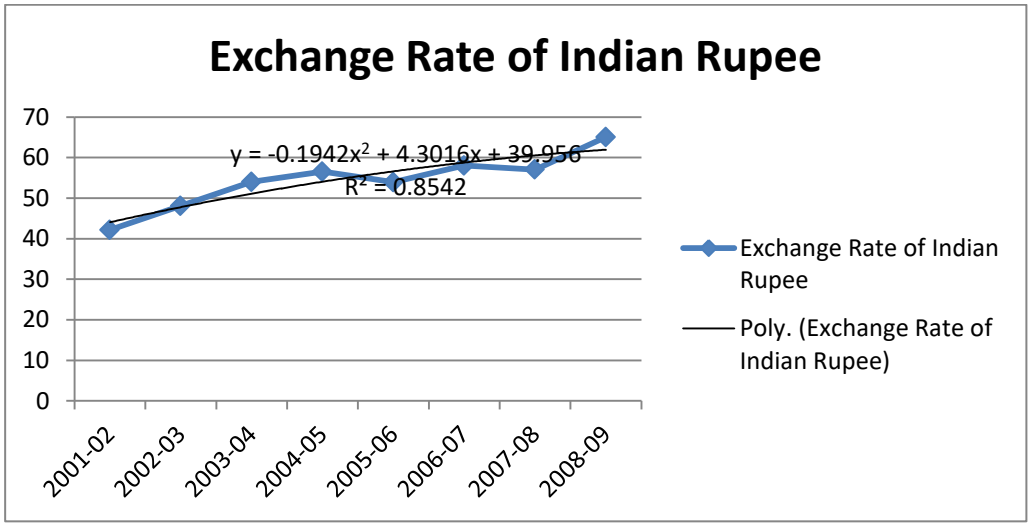

Figure I: Trends in Exchange Rate of Indian Rupee as against Euro in Pre- Recession Period

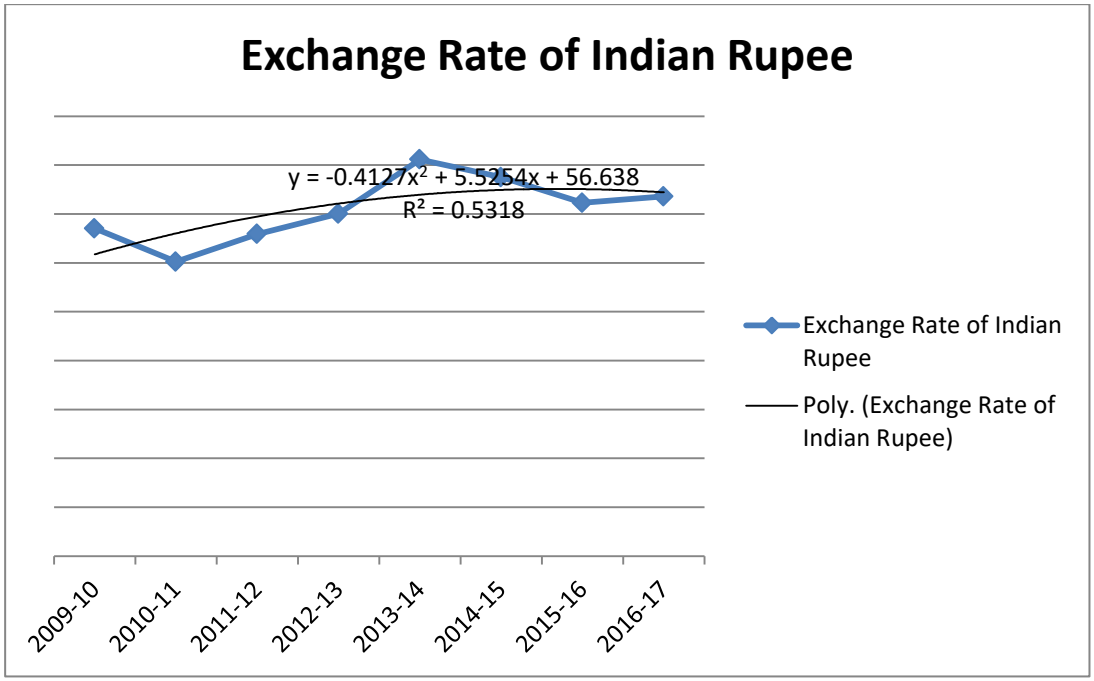

Figure II: Trends in Exchange Rate of Indian Rupee as against Euro in Post- Recession Period

VI. CONCLUSION

- The exchange rate of Indian Rupee depreciated from 42.18 in the year 2001-02 to 65.06 in the year 2008-09 in the pre-recession period and in the post- recession period, the exchange rate of Indian Rupee also depreciated from 67.05 in the year 2009-10 to 73.61 in the year 2016-17.
- The value of Indian Rupee was lower ($\bar{X} = 70.98$) in the post- recession period as compared to that of the pre-recession period ($\bar{X} = 54.36$).
- The exchange rate of Indian Rupee as against Euro remained more volatile in pre- recession period (C.V.= 12.59%) as compared to that in the post- recession period (C.V.= 9.42%).
- The trend analysis revealed that the value of rupee as against Euro depreciated during the period 2001-02 to 2016-17. The depreciation of Indian Rupee was highest as against Euro in the year 2013-14 (192.44), followed by 2014-15 (183.78), 2016-17 (174.50) and in the year 2015-16 (171.38) while it was lowest in the year 2002-03 (114.01), followed by 2005-06 (127.81), 2003-04 (127.99) and in the year 2004-05 (134.07).
- In the post- recession period, the depreciation was highest (174.50) as compared to that of the pre- recession period (154.24).

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