

FLUCTUATIONS IN THE EXCHANGE RATE OF INDIAN RUPEES WITH U.S. DOLLAR

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Abstract

The exchange rate is very important monetary policy tool for emerging economies like India. India has adopted inflation targeting and has less flexible exchange rate arrangements. It intervenes quite frequently in the foreign exchange market than their advanced economy counterparts. The enhanced role of the exchange rate reflects these economies' greater vulnerability to exchange rate shocks and their less developed financial markets. Some of the principal factors that cause fluctuations in the exchange rate between two countries are interest rates, inflation rates, and current account deficits, public debt, trading terms, political stability and economic performance. This study aims to observe the impact of interest rates, inflation rates and current account deficit on exchange rate of rupee with U.S. dollar during the year between 1990 and 2011. This study hypothesis lower interest rate would decrease the rupee value, and higher inflation and higher current account deficit will lower the rupee value. To observe the impact of interest rates, inflation rates and current account deficit on exchange rate of rupee with U.S. dollar, the exchange rate is treated as dependent variable and regressed with independent variables (interest rates, inflation rates and current account deficit). The regression results show that all three independent variables taken together explained 79 per cent of variation in the exchange rate of rupee with U.S. dollar. The regression co-efficient of each independent variable individually also support the hypotheses of the study. This study has identified only three independent variables for analyzing the fluctuations in the exchange rate of rupee. We can further add other major factors to explain the volatility of Indian rupee's exchange rate. Certain factors like public debt, gold reserves, foreign direct investment, bank rates, trading terms, etc., can be added to the independent variables and a multiple regression of the same can give a better picture of the dependence of exchange rate on these factors.

Keywords

Interest rates, Inflation rates, Current account deficit, and their impacts on exchange rate of rupee with U.S. dollar.

Introduction

Exchange rates play a vital role in a country's levels of trade, which is critical to almost every free market economy in the world. Exchange rate affects trading relationships

between two nations. The exchange rate of the currency determines the real return of the portfolio that holds the bulk of its investment. The exchange rate influences purchasing power of income and capital gains derived from returns, income factors such as interest rates, inflation and even capital gains from domestic securities. The movements of exchange rates also influence foreign direct investment through relative wage channels, relative wealth channels, and imperfect capital market arguments.

The exchange rate is a very important monetary policy tool for emerging economies like India. India has adopted inflation targeting and has less flexible exchange rate arrangements. It intervenes quite frequently in the foreign exchange market than their advanced economy counterparts. In the international finance literature, various theoretical models are available to analyze exchange rate determination and behaviour. Most of the studies on exchange rate models prior to the 1970s were based on the fixed price assumption. With the advent of the floating exchange rate regime amongst major industrialized countries in the early 1970s, an important advance was made with the development of the monetary approach to exchange rate determination. With liberalization and development of foreign exchange and assets markets, variables such as capital flows, volatility in capital flows and forward premium have also become important in determining exchange rates. Furthermore, with the growing development of foreign exchange markets and a rise in the trading volume in these markets, the micro level dynamics in foreign exchange markets increasingly became important in determining exchange rates.

Statement of the problem

The persistent decline in rupee is a cause of concern. Depreciation leads to imports becoming costlier which is a worry for India as it meets most of its oil demand via imports. Apart from oil, prices of other imported commodities like metals, gold etc., will also rise pushing overall inflation higher. Even if prices of global oil and commodities decline, the Indian consumers might not benefit as depreciation will negate the impact. The depreciating rupee will add further pressure on the overall domestic inflation and since India is structurally an import intensive country, as reflected in the high and persistent current account deficits month after month, the domestic costs will rise on account of rupee depreciation. Exchange rate risk also drives away foreign investors which in turn depreciates the local currency. Indian rupee is currently caught in this vicious cycle it will have to find a stable level to regain investors' confidence. The depreciating rupee has serious effects on the external debt figures of the nation. Some of the principal factors that cause fluctuation in the exchange rate between two countries are inflation, interest rates, current account deficits, public debt, trading terms, political stability and economic performance. In this concern this study aims to explore the dynamics, factors influencing and effects of fluctuations in the exchange rate of Indian rupee.

Objectives

This is conceptual study based on Rupee -Dollar relationship in terms of rupee appreciation that is dollar depreciation and rupee depreciation that is dollar appreciation. In this study an attempt has been made to measure the impacts of interest rates, inflation rates and current account deficit on exchange rate between Indian rupee and American dollar.

Hypotheses

There are several factors affecting the exchange rate like the inflation rates, interest rates, current account deficit, public debt, and terms of trade, political stability and economic performance. From these factors, the study has identified three independent variables:

1. Interest rates
2. Inflation rates
3. Current account deficit

So, the study has constructed three Null Hypotheses:

1st .Ho : Interest rates do not have any effect on the exchange rate of Indian rupee.

2nd .Ho: Inflation rates do not have any effect on the exchange rate of Indian rupee.

3rd .Ho: Current account deficit does not have any effect on the exchange rate of Indian rupee.

The Corresponding Alternative Hypotheses are illustrated below.

1st .H₁: There is positive relationship between interest rates and value of the rupee with respect to other currencies. Rise in Interest rates would increase the value of rupee and lower interest rates decrease the rupee value.

2nd .H₁: There is negative relationship between inflation rates and external value of rupee. Higher inflation rates will lower the rupee value and lower inflation leads to raising the value of rupee.

3rd .H₁: Current account deficit is negatively associated with rupee value. Higher the current account deficit will lower the external value of rupee and lower deficit leads to raising rupee value.

Methodology

This study aims to observe the impacts of interest rate, inflation rate and current account deficit on fluctuations in external value of rupee with American dollar for the period between 1990 and 2011. For this purpose the yearly data on interest rate, inflation rate, current account deficit and exchange rate of rupee with dollar were collected from various sources such as Reserve Bank of India, world Bank and Indiastat.com for the study period. To measure the impacts of three independent variables (Interest rates, Inflation

rates, and current account deficit) on fluctuations in the exchange rate of rupee with dollar, the study employed multiple regression equation in the following form:

$$Y = a + bx_1 + bx_2 + bx_3 + U$$

Where Y - stands for exchange rate of India rupee with American dollar

X₁ - denotes interest rates

X₂ - denotes inflation rates

X₃ - denotes current account deficit and

U - stands for error term.

This study has assumed that all the other factors that influence rupee fluctuations besides interest rates, inflation rates and current account deficit are held constant.

Results

The study aims to observe the impacts of interest rate, inflation rate and current account deficit on exchange rate of rupee with American dollar. For this purpose interest rate, inflation rate and current account deficit are treated as independent variables and regressed with exchange rate of rupee with dollar. The co-efficient of multiple determinations (R²) indicate the percentage of variation in exchange rate that is explained, statistically, by the combination of all independent variables. The regression output is summarized in the following table.

Table 1 Factors affecting the fluctuations in exchange rate of Indian rupee with U.S. dollar

S.No	Independent Variables	Regression Co-efficient
	Intercept	73.025
1	Interest rates	0.397 (-1.231)
2	Inflation rates	-2.559 (-5.994)
3	Current account deficit	-1.106 (-1.196)
	Co-efficient of Multiple Determination	0.793

Note: Figures in parentheses denote t value of the co-efficient

The results reveal that all three independent variables (Interest rates, Inflation rates and Current account deficit) taken together, explained 79 per cent of variations in the exchange rate of Indian rupee with U.S. dollar during the period under study. Interest rate in India during the period of the study has fallen by more than 1.5 per cent per annum. Higher interest rate attracts foreign capital and cause the exchange rate to rise whereas lower interest rate decreases the exchange rate. The results reveal that one per cent fall in interest rate leads to a decrease of 0.39 per cent in the external value of rupee with U.S. dollar, supporting the hypothesis of the study. The results also reveal that one per cent increase in inflation rate and current account deficit leads to a decrease of 2.5 per cent and 1.1 per cent respectively in the external value of rupee with dollar, supporting the

hypotheses of the study. Higher inflation sees depreciation of domestic currency. Similarly, higher the current account deficit shows the country is spending more on foreign trade than it is earning and there is an excess demand for foreign currency which lowers the country's exchange rate.

Conclusion

The initial success story of India was clearly based on factor driven economy based on labour arbitrage that is providing low cost labour in comparison to another country. At this stage, development is sensitive to global business cycle and exchange rate fluctuation. We need to move towards being investment driven economy that is efficiency driven in the form of infrastructure development, improving skill of work force and make that investment which translate into tangible productivity across the board. Final stage which can make India to be developed economy is to be innovation driven economy that can create unique value of India at global economy level. We need to accelerate reform process that would make economy resistant to external shocks and changes in economy cycles and currency fluctuations. The bottom line is our policy should concentrate on enhancing our capability in manufacturing, promote entrepreneurship and provide incentive for innovations. We need to remember that the challenges which we are facing are not only about currency risk but it is about moving to growth and development. The Indian rupee has depreciated significantly against the U.S. dollar marking a new risk for Indian economy. Grim global economic outlook along with high inflation and widening current account deficit have contributed to this fall. The Government of India and Reserve Bank of Indian should take appropriate and adequate measures to control inflation rate and to reduce the current account deficit. Raising interest rate is ration able to prevent sudden capital outflows and ultimately lead to higher capital inflow. But Interest rates in India are already higher than most countries. This was done to tame inflationary expectations. So, further raising interest rate would lead to lower growth levels.

Due to the limitations in the number of words, the study was only able to perform regression on three factors (Interest rates, Inflation rates, and Current account deficit) affecting exchange rate of Indian rupee with U.S. dollar. We can further add other major factors to explain the volatility of Indian rupee's exchange rate. Certain factors like public debt, gold reserves, foreign direct investment, foreign exchange reserves, bank rate, trading terms, etc., can be added to the independent factors and a multiple regression of the same can give a better picture of the dependence of exchange rate on these factors. There are several other factors which influence the exchange rate like socio-economic policies, political scenarios, etc., but many of them are out of scope of mathematical correlations as they are not measurable easily.

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Appendix

Year	Exchange rate of rupee with dollar	Interest rates	Inflation rates	Current account deficit
1990	17.50	16.5	9	-3.33
1991	22.69	17.88	13.9	-2.21
1992	25.92	18.92	11.8	-2.27
1993	31.44	16.25	6.4	-3.84
1994	31.37	14.75	10.2	-2.36
1995	32.42	15.46	10.2	-2.14
1996	35.43	15.96	9	-1.98
1997	36.32	13.83	7.2	-2.74
1998	41.27	13.54	13.2	-3.25
1999	43.06	12.54	4.7	-3.24
2000	44.94	12.29	4	-3.76
2001	47.19	12.08	3.7	-4.29
2002	48.60	11.92	4.4	-4.59
2003	46.58	11.46	3.8	-3.38
2004	45.32	10.92	3.8	-3.20
2005	44.10	10.75	4.2	-3.18
2006	45.31	11.19	6.1	-2.24
2007	41.35	13.02	6.4	-0.47
2008	43.51	13.31	8.4	-4.87
2009	48.40	12.19	10.9	-5.42
2010	45.73	8.33	12	-3.64
2011	46.67	10.17	8.9	-3.68