# *"A Study on Factors Affecting Foreign Exchange Rate of India (Interest Rates & GDP)"*

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**ABSTRACT:** In simple terms, the exchange rate represents the value of one nation's currency in relation to another. It determines how much of one currency be exchanged for another and plays a crucial role in international trade and finance. Often referred to as the foreign exchange rate or forex rate, it influences economic stability, trade competitiveness, and investment flows between countries. Exchange rates are determined in the forex market, a global marketplace where various participants engage in continuous currency trading, operating 24 hours a day except on weekends. The **spot exchange rate** represents the current value at which currencies are exchanged. In contrast, the **forward exchange rate** is an agreed-upon rate set today for a transaction that will be executed on a future date. In both developed and developing nations, various stakeholders such as foreign exchange investors, exporters, importers, banks, businesses, financial institutions, and travelers base their decisions on exchange rate fluctuations. Changes in exchange rates affect the value of international reserves, influence the competitiveness of exports and imports, determines the cost of repaying foreign debts, and impact travel expenses by altering the purchasing power of a currency. Therefore, fluctuations in exchange rates greatly influence the business cycle, trade dynamics, and capital movements within an economy. Understanding these changes is vital for analyzing financial trends and evaluating shifts in economic policy.

**Key Words:** Currency, Forex Market, Export & Import, Exchange Rates

## I. INTRODUCTION:

Mainly there are two types of exchange rates:

1. Fixed
2. Floating

In fixed exchange rate system, the central bank or financial regulatory authorities of a country determine and maintain the currency's value at a set rate. On the other hand, floating exchange rates are influenced by market forces, primarily supply and demand dynamics, without direct government intervention. When the **rupee appreciates** its value increases relative to other currencies. In the result of that, export becomes expensive and import becomes cheaper. On the other hand, when the **rupee depreciates** its value decreases relative to other currencies, which results the export becomes cheaper and import becomes expensive.

(Shah & Modi, A Study on factors affecting exchange rate in foreign exchange market, June, 2020)The foreign exchange market in India began in 1978 when banks were allowed to engage in intraday currency trading. However, significant transformation that shaped the modern foreign exchange market occurred during the 1990s. Up until 1992-1993, the Indian government maintained full control over the foreign exchange rates, import-export policies, foreign direct investment (FDI), foreign institutional investment (FII) among other aspects.

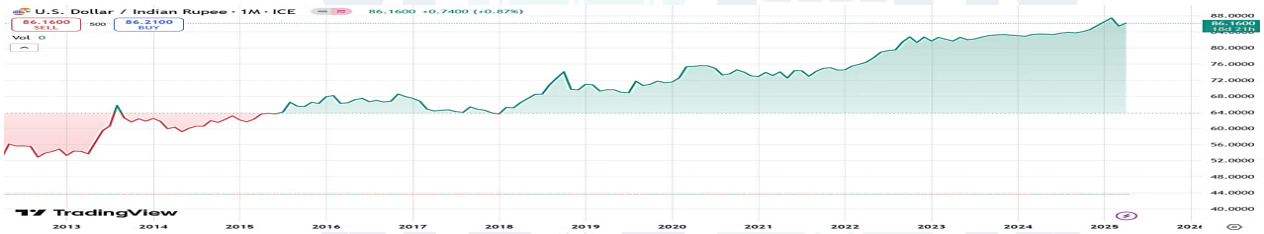
To facilitate government regulation of exchange rates, the Foreign Exchange Regulation Act (FERA), was enacted in 1973. However, following the economic reforms of 1991, the Indian government adopted a more liberal approach, leading to the introduction of the Foreign Exchange Management Act (FEMA) in 1999. This act eased restrictions on foreign exchange trading and streamlined import-export procedures, fostering a more open economy.

Despite these liberalizations, the Reserve bank of India (RBI) retains the authority to regulate exchange rates and oversee foreign exchange transactions. Since May 2013, the Indian foreign exchange market has experienced periods of significant volatility. To mitigate the depreciation of the Indian Rupee, policies have included adjustments to the Cash Reserve Ratio (CRR), trading restrictions, and market interventions.

The Indian foreign exchange market primarily operates with four major currency pairs, which account for a significant portion of transactions in the Multi Commodity Exchange. These pairs include USD/INR (Us Dollar/Indian Rupee), EUR/INR (Euro/Indian Rupee), JPY/INR (Japanese Yen/Indian Rupee), and GBP/INR (British Pound/Indian Rupee). Additionally, various other currencies can be traded in the international market.

**Here are the historical data of Indian Rupee with four major currencies of last 10 years**

1. **USD/INR**




2. **EUR/INR**


3. **JPY/INR**


4. **GBP/INR**


## II. LITERATURE REVIEW:

**(Soni, 2025)**This study aims to explore the relationship between trade and exchange rate fluctuations in India. It offers an empirical addition to the existing body of literature that has been analyzed to date. The study focuses on variables such as exports, imports of goods and services, and the exchange rate in India. While all components of foreign trade are considered explanatory variables, the nominal exchange rate of the Indian rupee against the US dollar serves as the dependent variable. The analysis relies predominantly on secondary data sourced from the Reserve Bank of India, covering a span of 32 years, from 1991 to 2022. A Multiple Regression model is employed to assess the extent of the relationship among these variables. The study's findings indicate that exports and imports are key factors in explaining fluctuations in the exchange rate. Notably, many previous studies have concentrated on understanding the impact of exchange rates on foreign trade in both developing and emerging economies, as highlighted in the literature review. However, this research emphasizes the significance of foreign trade's influence on the nominal exchange rate in India. It contributes to the existing literature by demonstrating that an increase in exports can lead to an appreciation of the exchange rate, and vice versa. Therefore, the Indian government should consider implementing measures to boost exports, which would help stabilize the nominal exchange rate.

**(Savani, 2024)** This study examines the issue of foreign exchange rate exposure in the Indian information technology (IT) sector. Foreign exchange exposure is particularly important for firms in the Indian IT sector, as a major part of their revenue is derived from exports.

**Dash and Madhava (2009)** found positive foreign exchange exposure for the sector in the period 2005-07, and alarmingly high level of exposure for some small-cap IT companies. Since then, in the aftermath of the global financial crisis, the nature of the IT sector has dramatically changed, with lower dependence on the US market in particular. The present study assesses whether there is still significant positive foreign exchange exposure in the Indian IT sector, and whether there is still a significant difference in foreign exchange exposure

**(Shah M. S., 2024)** The study gives an overview of the various determinants of the exchange rate movements in India. Out of the multiple factors affecting the Rupee-Dollar value the impact of Interest rate differential, Trade deficit of India, Foreign Net investment inflows to India, Oil prices, and Gold prices (in the short term) on the exchange rate has been studied using Regression analysis and correlation and the role they played by the above mentioned variables in determining the exchange rate during the Global Financial Crisis of 2008-2010 and during the Covid-19 Period from 2020-2023.

**(Joshi, Kulakarni, Pimplapure, Baral, & Gharpure, 2023)**This paper attempts to explore the effects of the exchange rate movement in India and its impact on Indian trade and economy. The circumstances which have been created for the economy due to the depreciation of the rupee against the dollar reveal that there has been a strong and significant negative impact of this currency volatility on many sectors.

**(Shah & Modi, A Study on factors affecting exchange rate in foreign exchange market, June, 2020)** The research focuses over factors that influence foreign exchange rate with increased focus over impact of crude oil prices over exchange rate and impact of NSE (Nifty 50) equity investment on share prices. For conducting analysis, the historical data of past 10 years is taken into consideration and results are derived by conducting univariate analysis, correlation analysis, regression, and R-square analysis. Upon analysis of the data collected findings suggest that crude oil prices have significantly less impact as compared to the impact

caused by the price and investment in Nifty 50. Since the past 10 years Indian rupee has faced depreciation. The continuous fall in Indian rupee is warning signal for the Indian economy and all its sectors.

**(Venkatesan & Ponnamma, March 2017)** The Indian Rupee is launching its foot print in global market, which can be characterized by the fact that Bhutan and Nepal peg their currencies to Indian Rupee. In this context, the research focuses to find and evaluate the various macroeconomic factors affecting the exchange rate and to model the factors using Auto Regressive Distributive Lag, to enable to forecast rate. The research focuses on finding the significant factors influencing the volatility of the exchange rate.

**OBJECTIVES OF THE STUDY:**

**General**

1. To study the relationship of each individual independent variable with exchange rate.
2. To formulate a statistically significant regression model depicting the impact of significant variables on exchange rate changes.
3. To study the statistically significance of each independent variable in determination on exchange rate individually.

Research:

1. To know Interest rate influences the exchange rate
2. To know the influences of GDP on the exchange rate

**RESEARCH STATEMENT:**

*"A Study on Factors Affecting Foreign Exchange Rate of India(Interest Rates & GDP)"*

## III. RESEARCH METHODOLOGY

**Research Design:**

The research design for this research is descriptive and casual.

**Sources of Data:**

The data used in this research report are secondary data which are collected from Statista websites. Other data for literature review and industry overview etc. are collected from the various sources like other research papers and various websites.

**Data Collection Method:**

For this report the secondary data collection method is used which are collected from the internet.

**Sample Design:**

In this research report the past 10 years data of foreign exchange rate and other factors which affects foreign exchange rate are taken for the study. So, this is retrospective study where we use data from past events.

**Data Analysis Technique:**

Here in this research, we have used the regression analysis model to know the relationship of various factors with the foreign exchange rate.

## IV. HYPOTHESIS

H1: Interest rate positively influences the exchange rate

H2: GDP positively influences the exchange rate

**Analysis & Interpretation**

**1. Interest Rate:**

H1: Interest rate positively influences the exchange rate

**Calculation:**

| Regression Statistics |
|---|

| | |
|---|---|
| Multiple R | 0.528755 |
| R Square | 0.279582 |
| Adjusted R Square | 0.199535 |
| Standard Error | 0.094442 |
| Observations | 11 |

**ANOVA:**

| | df | SS | MS | F | Significance F |
|---|---|---|---|---|---|
| Regression | 1 | 0.031153 | 0.031153 | 3.492744 | 0.094466 |
| Residual | 9 | 0.080274 | 0.008919 | | |
| Total | 10 | 0.111427 | | | |

**Coefficient:**

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|
| Intercept | 4.669123 | 0.233448 | 20.0007 | 9.08E-09 | 4.141027 | 5.197218 |
| Int. Rate | -0.24242 | 0.129715 | -1.8688 | 0.09446 | -0.53586 | 0.051013 |

**Interpretation:**

- The Multiple R value is 0.5287 which shows moderate positive relationship between these two variables.
- As indicated in above table of regression analysis, the R-Square value is 0.2795, which indicates that the independent variable interest rate causes 27.95% change in the dependent variable exchange rate.
- The ANOVA table shows that P-value is 0.0944 which is less than 0.10, hence there is significance relationship between interest rate and exchange rate.
- As per coefficient table, the coefficient is -0.2424 which means one unit change in independent variable interest rate will bring -0.2424-unit change in dependent variable.

Hence the hypothesis,

H1: Interest rate positively influences the exchange rate

Is accepted here in this case.

**2.Gross Domestic Product (GDP):**

H2: GDP positively influences the exchange rate

**Calculation:**

| Regression Statistics | |
|---|---|
| Multiple R | 0.204829 |
| R Square | 0.041955 |
| Adjusted R Square | -0.06449 |
| Standard Error | 0.10891 |
| Observations | 11 |

**ANOVA:**

| | df | SS | MS | F | Significance F |
|---|---|---|---|---|---|
| Regression | 1 | 0.004675 | 0.004675 | 0.394128 | 0.545735 |
| Residual | 9 | 0.106752 | 0.011861 | | |

| | | | | | |
|---|---|---|---|---|---|
| Total | 10 | 0.111427 | | | |

**Coefficient:**

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|
| Intercept | 4.300684 | 0.108 | 39.82105 | 1.98E-11 | 4.056371 | 4.544998 |
| GDP | -0.02704 | 0.043066 | -0.6278 | 0.54573 | -0.12446 | 0.070385 |

**Interpretation:**

- The Multiple R value is 0.2048 which shows weak positive relationship between these two variables.
- As indicated in above table of regression analysis, the R-Square value is 0.04195, which indicates that the independent variable GDP causes 4.20% change in the dependent variable exchange rate.
- The ANOVA table shows that P-value is 0.5457 which is higher than 0.10, hence there is no significance relationship between interest rate and exchange rate.
- As per coefficient table, the coefficient is -0.0270 which means one unit change in independent variable GDP will bring -0.0270-unit change in dependent variable.

Hence the hypothesis,

H2: GDP positively influences the exchange rate

Is not accepted here in this case.

## V. FINDINGS:

- Among all the factors studied, interest rate had the most visible impact on the value of the Indian Rupee. When interest rates change, it affects how investors move their money, which in turn impacts the exchange rate.
- Other factors like GDP, inflation, trade balance, foreign exchange reserves, and government debt were also analyzed, but their effect on the exchange rate was not strong enough to be considered significant in this study.

## VI. LIMITATIONS OF THE STUDY:

- The study used only 10 years of annual data, which may not fully capture long-term trends or the effects of sudden economic shocks.
- The research focused on a limited set of macroeconomic indicators, excluding several key factors like capital flows, investor sentiment, and global financial conditions.

## VII. CONCLUSION

This study aimed to understand the key factors that influence the foreign exchange rate of India, with a special focus on the INR/USD currency pair. Through a detailed analysis of variables such as interest rate, GDP, inflation, foreign exchange reserves, trade balance, and government debt, we found that the exchange rate is shaped by a combination of many economic elements.

Among all the factors studied, interest rate showed the most significant impact on the exchange rate. While other variables like GDP and trade balance did show some level of relationship, they were not statistically strong enough to be considered major influencers on their own in this study. This highlights the complex and interconnected nature of currency movements.

## VIII. REFERENCE

**[1]** Joshi, D., Kulakarni, D., Pimplapure, D. U., Baral, D., & Gharpure, D. (2023). *Changes in Exchange Rates and its implications on India.*

**[2]** Savani, D. J. (2024). *Foreign Exchange Rates: Factors That Determine and Influence* . Ahmedabad.

**[3]** Shah, M. S. (2024). Analysing the Factors Behind ExchangeRrate Fluctuation in India. *International Journal of Research in Applied Science and Engineering Technology*.

**[4]** Shah, Y., & Modi, K. (2020). *A Study on factors affecting exchange rate in foreign exchange.* Ahemdabad : IOSR Journal of Business and Management (IOSR-JBM).

**[5]** Shah, Y., & Modi, K. (June, 2020). *A Study on factors affecting exchange rate in foreign exchange market.* Ahemdabad : IOSR Journal of Business and Management.

## IX. Annexure

### 1. Interest Rate

| Year | Interest Rate |
|---|---|
| 2013 | 7.75 |
| 2014 | 8.00% |
| 2015 | 6.75% |
| 2016 | 6.25% |
| 2017 | 6.00% |
| 2018 | 6.50% |
| 2019 | 5.15% |
| 2020 | 4.00% |
| 2021 | 4.00% |
| 2022 | 6.25% |
| 2023 | 6.50% |

### 2. GDP

| Year | GDP |
|---|---|
| 2013 | 6.39% |
| 2014 | 7.41% |
| 2015 | 8.00% |
| 2016 | 8.26% |
| 2017 | 6.80% |
| 2018 | 6.45% |
| 2019 | 3.87% |
| 2020 | -5.78% |
| 2021 | 9.69% |
| 2022 | 6.99% |
| 2023 | 7.58% |