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A Study on the Impact of Macroeconomic Factors on Exchange Rate with Reference to Indian Economy

[1] Namithkumar Nair, [2] Dr. M.S. Suganthiya

[1] BBA B & F Amity Business School, Amity University Mumbai Email: namithkumarnair@gmail.com

[2] Assistant professor Amity Business School, Amity University Mumbai Email: mssuganthiya@mum.amity.edu

ABSTRACT :

This research investigates the dynamic relationship between key macroeconomic variables, namely interest rate, inflation rate, GDP growth rate, and foreign direct investment (FDI) and the exchange rate of the Indian Rupee from 2014 to 2023. This paper attempts to give a thorough grasp of how these macroeconomic indicators affect currency valuation in the Indian context, given the growing globalization of financial markets and the strategic significance of exchange rate stability for economic growth. Using secondary data from reliable sources including the World Bank, the Reserve Bank of India (RBI), and other financial databases, the study takes a quantitative approach. The study, which uses SPSS for multiple regression and correlation analysis, concludes that interest rates are the most important factor. They have a significant negative relationship with fluctuations in exchange rates, suggesting that higher interest rates draw in foreign capital, which strengthens the value of the home currency. Conversely, the effects of FDI, GDP growth, and inflation are less pronounced or statistically insignificant, indicating that they might have an indirect effect or be influenced by other intervening factors. The results highlight how crucial sound monetary policy and interest rate control are as a means of managing currency fluctuations. To obtain a comprehensive understanding of the factors influencing exchange rates in developing nations like India, the study also emphasizes the necessity for more investigation that takes into account other aspects.

Keywords : Exchange Rate, Macroeconomic Factors, Interest Rate, Inflation Rate, GDP Growth Rate, Foreign Direct Investment (FDI), Indian Economy, Statistical Analysis.

Introduction

The exchange rate plays a pivotal role in shaping a country's economic health, influencing trade balances, capital flows, and monetary stability. Inflation, interest rates, foreign investment, and economic growth are all greatly impacted in India by changes in the value of the Indian Rupee relative to major world currencies. In recent decades, exchange rate volatility has increased due to a confluence of external global trends and internal macroeconomic fundamentals. Important factors that influence exchange rate changes include GDP growth, inflation, interest rates, and foreign direct investment (FDI). In the past, incidents such as the 2008 global financial crisis and the COVID-19 epidemic have shown how susceptible developing nations like India are to external shocks, which frequently lead to significant currency devaluation. Currency stability is further complicated by geopolitical uncertainty and changes in central bank policies, especially those of the US Federal Reserve. Understanding the dynamic interconnections between these macroeconomic indicators is crucial because India's shift to a market-determined exchange rate regime has increased sensitivity to them. In order to provide insights into how both domestic and international factors work together to influence exchange rate behavior and have an impact on the larger Indian economy, this study intends to examine the effects of various macroeconomic variables on the Indian Rupee.

Problem Statement

Despite India's growing integration with the global economy, the Indian Rupee continues to exhibit significant volatility influenced by multiple macroeconomic factors. Economic planning, commerce, and investment are all hampered by this volatility. There is still a lack of knowledge regarding the combined and relative effects of important macroeconomic factors including interest rates, inflation, GDP growth, and foreign direct investment on the Indian Rupee, despite the fact that many research have examined the individual factors that influence exchange rates. By examining the dynamic correlations between these variables and the exchange rate, this study aims to close this gap and offer financial experts, investors, and policymakers useful information.

Objectives

1. To analyze the influence of inflation, interest rate, GDP growth, and FDI on the Indian Rupee.
2. To determine the strength and direction of these relationships.
3. To assess the relative contribution of each variable to exchange rate fluctuations.

Limitations of the Study

1. The study focuses only on four macroeconomic variables, omitting others such as political risk or external debt.
2. Data availability is restricted to the 2014–2023 period.
3. Possibility of multicollinearity among independent variables.

Conceptual Framework

The underlying assumption of this study's conceptual framework is that macroeconomic factors are important in influencing a nation's exchange rate. This framework focuses on four key variables and how they affect the value of the Indian Rupee: interest rates, inflation rates, GDP growth rates, and foreign direct investment (FDI). According to the underlying theory, changes in interest and inflation rates have an impact on the dynamics of currency demand and supply, whereas GDP growth indicates economic stability and productivity and hence affects investor confidence. In a similar vein, foreign confidence in the home economy is signaled by FDI inflows, which could strengthen the currency by increasing the amount of money available. The external value of a currency is shaped by the complex interactions between these macroeconomic variables rather than their independent actions. The exchange rate varies in tandem with changes in these variables, according to the framework's assumption of a cause-and-effect relationship. The study intends to test these links over a certain time period in the Indian setting by using econometric analysis. It is anticipated that the knowledge gained from this framework will improve forecasting, investment choices, and the development of economic policy by illuminating the extent and direction of each variable's influence. It serves as the foundation for developing hypotheses and conducting empirical research in the chapters that follow.

Review of Literature

Lakshmanasamy (2022) examined data from 1986 to 2016, the money supply and GDP have a major impact on inflation in India. It showed an inverse relationship with GDP and a direct association with the money supply. The results highlight the necessity of controlling fiscal deficits and the money supply in order to support economic stability.

Swati Modi and Maitrey Bhagat (2021) analyzed that key factors influencing Sensex fluctuations are GDP, lending rates, and exchange rates; the latter two have a negative impact. Lower loan rates typically draw in investment, which improves market performance. Favorable exchange rates, meanwhile, boost profitability and raise stock prices.

Aviral Kumar Tiwari et al. (2019) analyzed that India's inflation and growth between 1992 and 2015 reveals a robust long-term relationship, particularly after 2002. Unlike WPI inflation, CPI inflation exhibits a causal relationship with economic growth. The nature of this link changes throughout time, with both unidirectional and bidirectional affects, according to wavelet analysis.

Vishal Sharma and Ashok Mittal (2019) found that India’s fiscal deficit has an adverse effect on economic growth over both short and long terms. It influences GDP indirectly through rising inflation, interest rates, and weakened net exports. Granger causality supports this linkage, consistent with the neo-classical perspective.

Verma et al. (2018) analyzed that more than 81% of the volatility in the USD-INR exchange rate may be explained by its strong long-term correlation with important macroeconomic factors. Crude oil, gold, and the current account deficit have little immediate impact. Nonetheless, there are significant short-term relationships between FII, GDP, interest rates, inflation, and foreign exchange reserves.

Madhu Sehrawat and Giri (2017) found that real interest rates, trade openness, foreign direct investment, and economic growth are all correlated over the long run. While trade openness and growth have a reciprocal effect, FDI promotes both short- and long-term growth. Financial development has a one-way effect on growth, highlighting its supportive function.

Thomas and Asha (2016) found that FDI has a major impact on GDP and stock market trends and is essential to India's economic progress. By introducing cutting-edge skills and technology and bolstering local capital formation, it promotes development. All things considered, FDI promotes market dynamism and long-term economic growth.

Anita Mirchandani (2013) analyzed that due to shifting capital inflows and varying domestic economic outlooks, the Indian Rupee has seen tremendous volatility. Due to decreased foreign investment and investor fears, depreciation pressures have increased. Despite worldwide price trends, this has increased the cost of imports, particularly those of commodities and energy, which has led to rising inflation.

Methodology

This study adopts a quantitative research approach, utilizing secondary data to examine the impact of macroeconomic variables- interest rate, inflation rate, GDP growth rate, and foreign direct investment on India’s exchange rate. Reputable organizations, including the World Bank and the Reserve Bank of India, provided the data for the years 2014–2023. To determine the direction and degree of associations, a historical research design was used, and SPSS was used to use statistical procedures such as multiple regression and correlation analysis. This approach guarantees a data-driven assessment of macroeconomic factors influencing exchange rate swings in the Indian context.

Hypothesis:

- **H1:** Inflation negatively influences the exchange rate, though the impact is statistically insignificant.

- **H2:** Interest rates have a significant negative effect on the exchange rate.
- **H3:** GDP positively and significantly affects the exchange rate.
- **H4:** FDI inflows exert a positive but statistically insignificant influence on the exchange rate.

Analysis

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Average USD/INR	**10**	**62.33**	**81.94**	**71.4270**	**6.97964**
Inflation (CPI by year%)	**10**	**3.33**	**6.70**	**5.1620**	**1.24808**
Interest Rate (lending rate per annum)	**10**	**8.25**	**10.25**	**9.3025**	**.63786**
GDP growth (annual%)	**10**	**-5.78**	**9.69**	**5.9835**	**4.40162**
Foreign Direct Investment, net inflows (%of GDP)	**10**	**.79**	**2.41**	**1.6670**	**.43756**
No. of observations	**10**	**10**	**10**	**10.00**	**.000**
Valid N (listwise)	**10**				

Table 1: Descriptive Statistics

Findings

Different levels of effect between macroeconomic variables on India's exchange rate are revealed by the regression analysis. The most important component is the interest rate, which has a strong negative relationship with the exchange rate. This suggests that higher interest rates draw in foreign investment and make the currency stronger. Despite having a positive coefficient, inflation is statistically negligible, indicating that its effects might be conditional or absorbed by other economic processes. Although there isn't much statistical evidence to back it, GDP growth and the exchange rate have a somewhat negative association that suggests possible currency appreciation during times of economic boom. Contrary to popular belief, foreign direct investment (FDI) has no discernible effect, suggesting that its impact may be indirect or contingent on the type and allocation of investments. Overall, the results show that although interest rates are a major factor in currency movements, other factors such as GDP, inflation, and foreign direct investment may have more subtle or situation-specific effects.

Recommendations

The study's conclusions lead to a number of important suggestions for interested parties. Effective interest rate management should be a top priority for policymakers since it has a big impact on capital inflows and exchange rate stability. Additionally, in order to stop currency depreciation, prudent budgetary policies must be adopted to preserve low and steady inflation. Even while FDI had little direct effect, it can strengthen the economy and currency by focusing these investments on export-oriented industries. To reduce currency risk, companies that trade internationally should use hedging techniques like options or forward contracts. Keeping an eye on interest rate movements can also help manage foreign exchange risk and make the best borrowing choices. When choosing a portfolio, investors should, however, keep a careful eye on macroeconomic indicators like GDP growth, inflation, and interest rates, especially in sectors of the economy that are sensitive to fluctuations in exchange values.

Conclusion

According to the study's findings, interest rates have the biggest impact on changes in exchange rates in the Indian setting, supporting traditional economic theories. Higher interest rates attract foreign capital, which strengthens the Rupee, according to the strong negative correlation. FDI, GDP growth, and inflation, on the other hand, all exhibit statistically negligible effects, indicating that their influence may be more indirect or situation-specific. These results highlight how important monetary policy is to preserve exchange rate stability, especially when it comes to interest rate management. Although investment inflows and economic growth are essential for overall development, they don't seem to have a direct impact on short-term currency swings. This emphasizes to policymakers how crucial interest rate decisions are as a crucial instrument for controlling currency value. Future research with larger datasets and more variables, according to the report, may provide a more sophisticated understanding of how different economic factors interact to influence exchange rate dynamics in developing nations like India.

Future Implications

By emphasizing the need to investigate other macroeconomic and geopolitical factors that could affect exchange rate movements, this study creates opportunities for future research. A more thorough knowledge of currency swings might be provided by taking into account variables including trade balance, external debt, political stability, and international market circumstances. Using high-frequency data and extending the time period may also highlight short-term patterns and structural changes. Comparative research with other growing economies can also be useful in spotting trends or variations among nations. Economists, investors, and officials looking to improve exchange rate forecasts and policy development would all benefit from such insights.

REFERENCES :

1. Lakshmanasamy. (2022). Macroeconomic Stability in India: Vector Error Correction Estimation of the Causal Relationship between Inflation, GDP, Money Supply, Interest Rate, Exchange Rate, and Fiscal Deficit.
2. Swati Modi, M. B. (2021). A Study On Impact Of Macro Economic Variables On Indian Stock Market.
3. Aviral Kumar Tiwari, R. O. (2019). The Indian inflation–growth relationship revisited: robust evidence from time–frequency analysis.
4. Vishal Sharma, A. M. (2019). Macroeconomic Effects of Fiscal Deficit on Indian Economy: An Empirical Analysis.
5. Verma, P. M. (2018). An investigation of the factors affecting Indian exchange rate: an analysis.
6. Madhu Sehrawat, G. (2017). Financial Structure, Interest Rate, Trade Openness and Growth: Time Series Analysis of Indian Economy.
7. Thomas, A. (2016). IMPACT OF FDI ON INDIAN ECONOMY – AN ANALYTICAL STUDY.
8. Anita Mirchandani. (2013). Analysis of Macroeconomic Determinants of Exchange Rate Volatility in India.