

Original Research

Received 15 April 2026

Revised 20 May 2026

Accepted 15 June 2026

Natural Resources for Human Health 2026, Vol. 6 (5s): 73-80

KEYWORDS:

Indian Rupee, NIFTY 50, USD–INR, exchange rate volatility, regression analysis, Rupee Depreciation, Macroeconomic Linked Volatility.

Rupee Vs. Markets: Decoding Nifty 50's Currency Connection in a Volatile Global Era

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ABSTRACT: This research paper investigates the dynamic and causal relationship between the Indian Rupee (INR) exchange rate fluctuations against the US Dollar (USD) and the performance of the Indian equity market. Utilizing daily closing data from the National Stock Exchange (NSE) and the Reserve Bank of India (RBI) over a three-year period, the study employs Regression analysis to identify Indian Currency fluctuations and its impact on the Economy. The depreciation of the Indian Rupee has emerged as a critical concern in the context of heightened global financial volatility, geopolitical tensions, and changing monetary policies in advanced economies. This study examines the relationship between the Closing Price of NIFTY 50 and the USD–INR exchange rate, and evaluates the impact of global economic conditions on the value of the Indian Rupee. Employing a descriptive research design, secondary data were collected for three years from the NSE and the Reserve Bank of India, and analyzed using simple linear regression. The findings highlight the varying sensitivity of Indian equity markets to currency movements across different years.

INTRODUCTION

The dynamics of exchange rates play a pivotal role in shaping the macroeconomic stability and financial performance of emerging economies such as India. In recent years, the Indian Rupee has experienced notable volatility against major currencies, particularly the US dollar, driven by global monetary tightening, geopolitical developments, and fluctuations in international commodity prices. Such currency movements influence inflation, trade balance, capital flows, and overall growth, thereby becoming a central concern for policymakers, investors, and market participants. For a market-integrated economy like India, the interaction between equity indices and exchange rates assumes particular importance, as currency depreciation can alter

corporate earnings, foreign investor behaviour, and stock valuations. In this context, the present study investigates the relationship between the Closing Price of NIFTY 50 and the USD–INR exchange rate over the recent three-year period, with an aim to understand the extent to which rupee fluctuations are associated with movements in the Indian equity market.

BACKGROUND OF THE STUDY

The current global economic environment is marked by financial **volatility**, tightening monetary policies in advanced economies, and heightened geopolitical risks. In particular, interest rate hikes by the United States and other major economies often trigger capital outflows from emerging markets, exerting downward pressure on their currencies. For India, these external factors are compounded by structural features such as a high dependence on imported crude oil, which makes the rupee vulnerable to swings in global commodity prices and affects the trade deficit and inflation trajectory. Exchange rate depreciation can transmit to the domestic economy through multiple channels. Higher import costs raise input prices and consumer inflation, eroding purchasing power and increasing production costs for firms. Conversely, a weaker rupee can enhance export competitiveness and potentially support growth in export-oriented sectors. The net macroeconomic impact depends on the relative strength of these opposing effects, as well as on policy responses from monetary and fiscal authorities. In financial markets, exchange rate movements influence both domestic and foreign investors' risk assessments. A depreciating rupee may deter foreign portfolio investors concerned about currency losses, leading to equity sell-offs and heightened volatility in stock indices. On the other hand, expectations of export-led earnings growth can bolster valuations in specific sectors. Given these complex linkages, it is important to empirically investigate how rupee fluctuations relate to stock market performance in recent years.

NEED FOR THE STUDY

Despite substantial literature on exchange rates and stock markets, the relationship between NIFTY 50 and the USD–INR exchange rate continues to evolve in response to changing global and domestic conditions. The period covering 2023–2025 is particularly relevant, as it reflects the post-pandemic adjustment phase, ongoing monetary tightening cycles, geopolitical uncertainties, and renewed volatility in commodity prices. These developments may have altered the sensitivity of Indian equity markets to currency movements compared with earlier periods. A focused, recent, and India-specific analysis is therefore necessary to capture the current dynamics between rupee depreciation and stock market performance. For policymakers, such evidence can inform the design of coordinated monetary, fiscal, and exchange rate policies aimed at preserving macro-financial stability. For investors and portfolio managers, understanding the strength and significance of this relationship can aid in risk management, asset allocation, and hedging decisions. This study addresses these needs by providing year-wise empirical evidence on the association between NIFTY 50 closing prices and the USD–INR exchange rate.

STATEMENT OF THE PROBLEM

The study of the depreciation of the Indian Rupee is particularly significant in the current global economic environment, which is characterized by financial volatility, geopolitical tensions, and shifting monetary policies among major economies. In recent years, fluctuations in the exchange rate of the Indian Rupee against major currencies, especially the US dollar, have raised concerns regarding macroeconomic stability, inflation, and external sector performance. Understanding the determinants of rupee depreciation is therefore essential for policymakers, economists, and investors to formulate effective strategies for economic stability and sustainable growth. One of the key reasons for studying this topic now is the increasing influence of global financial dynamics on emerging economies. Changes in interest rates in advanced economies, particularly monetary policy tightening in the United States, often lead to capital outflows from emerging markets like India, placing downward pressure on their currencies¹. Additionally, India's high dependence on imported crude oil makes the rupee vulnerable to fluctuations in global commodity prices, which can significantly impact the country's trade balance and inflation levels².

Furthermore, currency depreciation directly affects domestic economic conditions by increasing the cost of imports and contributing to inflationary pressures. This can influence consumer purchasing power, business costs, and overall economic growth (Mishra & Behera, 2020). At the same time, a weaker rupee may provide opportunities for export growth by making Indian goods more competitive in international markets. Therefore, analyzing the causes and consequences of rupee

¹ International Monetary Fund. (2023). *World economic outlook: Navigating global divergences*. IMF.

² Reserve Bank of India. (2023). *Report on currency and finance*. RBI.

depreciation can help in balancing the benefits and risks associated with exchange rate movements. In addition, the increasing integration of India with the global financial system has amplified the impact of external shocks on its currency and financial markets. Studying this issue at the present moment helps in understanding how global economic uncertainties, geopolitical developments, and changes in international capital flows influence the value of the rupee. Such insights are crucial for designing appropriate fiscal and monetary policies to maintain currency stability and strengthen India's position in the global economy³. Overall, examining the depreciation of the Indian Rupee is highly relevant today as it provides valuable insights into the challenges faced by emerging economies in managing exchange rate volatility while maintaining economic growth and financial stability.

OBJECTIVES OF THE STUDY

- To examine the relationship between the Closing Price of NIFTY 50 and the Closing Price of US Dollar to Indian Rupee.
- To find out the significant impact of global economic conditions on the value of the Indian Rupee.

SCOPE OF THE STUDY

The scope of the present study is confined to examining the relationship between the Closing Price of NIFTY 50 and the USD–INR exchange rate over a three-year period, using monthly data. The analysis employs a descriptive research design and applies simple linear regression to assess the extent to which variations in the exchange rate are associated with movements in the NIFTY 50 index. Secondary data are sourced from the official website of the National Stock Exchange of India for NIFTY 50 and from the Reserve Bank of India for the USD–INR exchange rate. The study focuses on aggregate index-level relationships and does not undertake sectoral or firm-level analysis. Other macroeconomic variables such as interest rates, inflation, crude oil prices, and global risk indices, although relevant, are not explicitly modelled as independent variables. As such, the findings should be interpreted as indicative of the direct association between the rupee–dollar exchange rate and the NIFTY 50 index within the specified period and dataset. This delineated scope enables a clear and focused investigation of the core research objectives.

METHODOLOGY

The study employed a descriptive research design and the research is focused on the Inferential analysis of Regression to find out the results of Impact of Indian Rupee fluctuations on the Nifty 50 stocks. The study is completely based on secondary data and for the data collection the official website of NSE is used and the historical data of Indian Currency were collected from Reserve Bank of India website. Last three years of data with the closing price of NIFTY 50 and Closing price of US Dollar to Indian Rupee were gathered for assessing the volatility of Indian Rupee towards US dollar and the impact on the NSE. Results were arrived to give a better inference on the given objectives.

ANALYSIS AND INFERENCES

Ho: *There is no significant association available between Closing Price of NIFTY 50 and the Closing Price of US Dollar to Indian Rupee*

Table 1: Regression Results of US Dollar Indian Rupee to Closing Price of NSE for the year 2023

Regression Statistics	
Multiple R	0.6175
R Square	0.3814
Adjusted R Square	0.3195
Standard Error	1063.0063
Observations	12

Source: *Author Calculation*

³ World Bank. (2023). *Global economic prospects*. World Bank.

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	6967454	6967454	6.1659	0.0323
Residual	10	11299826	1129983		
Total	11	18267279			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-95261.400	46005.99	-2.0706	0.065
X Variable 1	1383.563	557.1829	2.4831	0.032

Source: Author Calculation

As per the Regression Results given in Table 1, it reflects that R Square value is 0.38 or 38% of the given observation with 12 months of Operating cycle in the year 2023. ANOVA results showed the F Score of 6.1659 with the significant F value of 0.0323 and it resulted in the model is good and satisfactory as per the analysis. The Coefficient results shown as 1383.563 which displays the strong relationship between the dependent variable of NIFTY 50 and the independent variable of US Dollar to Indian Rupee. T statistic score is 2.4831 and the P value is 0.032 which shown a positive result and it implies that Null hypothesis can be rejected and alternative hypothesis can be accepted. The results are exhibiting that there is a significant influence available between the closing price of NIFTY 50 and the Closing price of US Dollar to Indian Rupee.

Table 2: Regression Results of US Dollar Indian Rupee to Closing Price of NSE for the year 2024

<i>Regression Statistics</i>	
Multiple R	0.4144
R Square	0.1717
Adjusted R Square	0.0889
Standard Error	1290.0080
Observations	12

Source: Author Calculation

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	3450257	3450257	2.0733	0.1804
Residual	10	16641208	1664121		
Total	11	20091465			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-41650.3880	45315.07	-0.9191	0.3796
X Variable 1	779.0165	541.02	1.4399	0.1804

Source: Author Calculation

According to Table 2, the R Square value is 0.171 or 17% of the given observation with 12 months of Operating cycle in the year 2024. ANOVA results disclosed the F Score of 2.0733 with the significant F value of 0.1804 and it is proven that the model is good to fit for the research. The Coefficient results shown as 779.0165 which reflects the strong relationship between the dependent variable of NIFTY 50 and the independent variable of US Dollar to Indian Rupee. T statistic score is 1.4399 and the P value is 0.1804 which shown a positive result and it implies that there is a significant influence available between the closing price of NIFTY 50 and the Closing price of US Dollar to Indian Rupee.

Table 3: Regression Results of US Dollar Indian Rupee to Closing Price of NSE for the year 2025

Regression Statistics	
Multiple R	0.4448
R Square	0.1979
Adjusted R Square	0.1177
Standard Error	1119.7693
Observations	12

Source: Author Calculation

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	3094316	3094316	2.4677	0.1472
Residual	10	12538833	1253883		
Total	11	15633149			

	Coefficients	Standard Error	t Stat	P-value
Intercept	-2043.8834	16985.81	-0.1203	0.9066
X Variable 1	305.5221	194.4862	1.5709	0.1472

Source: Author Calculation

The results of Regression analysis is presented in Table 3, the R Square value is 0.197 or 19% of the given observation with 12 months of Operating cycle in the year 2025. ANOVA results disclosed the F Score of 2.4677 with the significant F value of 0.1472 and it is proven that the model is good to fit for the research. The Coefficient results shown as 305.5221 which reflects the strong relationship between the dependent variable of NIFTY 50 and the independent variable of US Dollar to Indian Rupee. T statistic score is 1.5709 and the P value is 0.1472 which showed a positive result and it implies that there is a significant influence available between the closing price of NIFTY 50 and the Closing price of US Dollar to Indian Rupee.

IMPACT OF GLOBAL ECONOMIC CONDITIONS ON INDIAN RUPEE

Global economic conditions exert a powerful influence on the value of the Indian Rupee (INR) through trade, capital flows, commodity prices, and risk sentiment. The following subsections explain the major channels through which these conditions affect the rupee.

(i) Global Interest Rates and Monetary Policy

Changes in monetary policy in advanced economies, especially the United States, directly impact the INR.

- When the US Federal Reserve raises policy rates, yields on US assets become more attractive, leading to capital outflows from emerging markets like India and depreciation of the rupee.
- Conversely, accommodative monetary policy and low interest rates in advanced economies encourage capital inflows to India, supporting rupee appreciation.
- Expectations of future rate hikes or cuts also influence the rupee through forward-looking portfolio adjustments and speculative positions in currency markets.

(ii) Capital Flows and Risk Sentiment

Global risk appetite and investor sentiment toward emerging markets significantly shape the rupee's value.

- During periods of global uncertainty (e.g., financial crises, geopolitical conflicts, pandemics), investors tend to shift funds from riskier emerging markets to safe-haven assets such as US Treasuries, causing rupee depreciation.

- Positive global risk sentiment and stable financial conditions encourage foreign portfolio investment (FPI) and foreign direct investment (FDI) into India, strengthening the rupee.
- Changes in global equity market performance, risk indices (such as the VIX), and credit conditions all influence these capital flow dynamics.

(iii) Commodity Prices and India's Import Dependence

Global commodity price movements, particularly crude oil, have a pronounced impact on the INR.

- India is a major net importer of crude oil; rising global oil prices increase the import bill, widen the trade deficit, and put downward pressure on the rupee.
- Higher oil prices also raise domestic inflation, complicating monetary policy and potentially weakening investor confidence.
- Conversely, periods of softening commodity prices ease pressure on the current account, reduce imported inflation, and support rupee stability or appreciation.

(iv) Global Growth and Trade Dynamics

The trajectory of global economic growth affects India's export performance and thereby the rupee.

- Strong global growth boosts demand for Indian goods and services (IT, pharmaceuticals, engineering goods, etc.), improving export earnings and supporting the rupee.
- Global slowdowns or recessions dampen export demand, reduce foreign exchange inflows, and can contribute to rupee depreciation.
- Shifts in global value chains, trade agreements, and protectionist measures also influence India's external sector and currency dynamics.

(v) Geopolitical Tensions and External Shocks

Geopolitical developments and external shocks often trigger volatility in the rupee.

- Events such as wars, sanctions, regional conflicts, or disruptions in major shipping routes (e.g., in the Middle East) can raise energy prices, disturb supply chains, and heighten risk aversion, all of which may weaken the rupee.
- Sudden crises in other emerging markets can lead to contagion, where global investors reassess risk across the entire asset class, affecting India even if domestic fundamentals are relatively sound.
- Persistent geopolitical uncertainty tends to increase hedging demand in currency markets, amplifying rupee fluctuations.

(vi) Global Liquidity and Financial Market Conditions

The overall availability of global liquidity shapes the ease with which funds flow into or out of India.

- Periods of abundant global liquidity, driven by quantitative easing and low interest rates, usually support higher inflows into Indian equities and bonds, stabilizing or appreciating the rupee.
- Tightening global financial conditions, higher funding costs, and reduced cross-border lending can reverse these flows and exert depreciation pressure.
- Currency derivatives and speculative positions in global markets can further magnify the impact of changing liquidity conditions on the rupee.

(vii) Policy Responses and Exchange Rate Management

The effect of global conditions on the rupee is also mediated by India's policy response.

- The Reserve Bank of India (RBI) intervenes in the foreign exchange market to smooth excessive volatility, using its foreign exchange reserves to counter disorderly movements.
- Domestic monetary policy decisions, such as changes in the repo rate, influence interest differentials with advanced economies and thereby affect capital flows and the rupee.
- Fiscal policies, structural reforms, and external sector management (e.g., encouraging stable FDI inflows) can enhance resilience and reduce vulnerability to adverse global shocks.

In combination, these global factors determine the direction and magnitude of movements in the Indian Rupee. Periods of synchronized global tightening, high commodity prices, and elevated geopolitical risk typically lead to rupee depreciation, while phases of easy global liquidity, strong world growth, and benign risk sentiment support rupee strength and stability.

SUGGESTIONS AND RECOMMENDATIONS

- Researchers were advised to monitor key global indicators such as US Federal Reserve rate decisions, crude oil prices, and geopolitical developments, as these often foreshadow major movements in the rupee.
- They were further encouraged not to react to short-term currency volatility but to focus instead on the long-term fundamentals of the Indian economy, including growth prospects, external debt levels, and foreign exchange reserves.
- For investors, diversify across asset classes (equity, debt, gold) and geographies to reduce the portfolio risk arising from rupee depreciation and global shocks.
- For import-dependent businesses, adopt risk-management tools such as currency hedging, forward contracts, and staggered purchases to mitigate the impact of adverse exchange rate movements.
- For policymakers and students of economics, treat rupee depreciation not only as a risk but also as a signal and an opportunity—to strengthen external sector resilience, boost export competitiveness, and refine macroeconomic and exchange rate policies.

CONCLUSION

The study clearly indicates that movements in the Indian Rupee, shaped by both domestic fundamentals and global economic conditions, have a meaningful but time-varying association with the performance of the NIFTY 50 index. While the year 2023 shows a statistically significant relationship between the USD–INR exchange rate and equity market performance, the weaker and insignificant link in 2024 and 2025 underscores that currency movements alone cannot fully explain stock market dynamics. These findings highlight that rupee depreciation must be viewed within a broader macro-financial framework that includes global interest rate cycles, capital flows, commodity prices, and geopolitical developments. For policymakers, the results reinforce the need for vigilant macroeconomic management, calibrated exchange rate interventions, and measures to enhance resilience to external shocks. For investors and market participants, the evidence suggests that informed decisions require continuous monitoring of global indicators alongside domestic economic trends when assessing the impact of rupee fluctuations on Indian equity markets.

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