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The Study on the Impact of Exchange Rate and Inflation on Nifty

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ABSTRACT: This study explores the impact of exchange rates (USD/INR) and inflation (CPI/WPI) on the performance of the Nifty index. By analysing historical data over the past 10 years, the research examines the individual and combined effects of these macroeconomic factors on stock market returns. Using correlation and regression analysis, the study identifies significant relationships, offering insights for investors and policymakers to make informed financial decisions.

KEYWORDS: Exchange Rate, Inflation, Nifty Index, USD/INR, CPI, WPI, Macroeconomic Factors.

INTRODUCTION

The stock market is highly sensitive to various macroeconomic variables, and among these, exchange rates and inflation play a crucial role in influencing market trends. Nifty 50, a benchmark index of the National Stock Exchange (NSE) of India, reflects the performance of the top 50 companies listed on the exchange. Given India's integration with the global economy, fluctuations in exchange rates and domestic inflation levels directly affect corporate earnings, investor sentiment, and market valuation. Exchange rates, which determine the value of the Indian Rupee against foreign currencies, have a significant impact on import-export dynamics, profitability of firms, and capital flows into the country. A depreciating rupee, for instance, increases the cost of imports, thereby affecting industries that are heavily dependent on imported inputs, while also potentially benefiting export-driven sectors.

Background of the Study

This study examines how exchange rates (USD/INR) and inflation (CPI/WPI) influence Nifty index performance, affecting corporate profits and investor sentiment.

Problem Statement

The research investigates the impact of exchange rate fluctuations and inflation on Nifty returns, aiding investors and policymakers.

Objectives of the Study

1. Analyse the relationship between USD/INR and Nifty.
2. Examine the effect of inflation on Nifty.
3. Assess the combined impact of exchange rates and inflation on Nifty.
4. Provide insights for investors and policymakers.

Hypotheses

The study will test two main hypotheses:

H0: Exchange rates have no significant impact on Nifty performance. H1: Exchange rates significantly impact Nifty performance.

H0: Inflation has no significant impact on Nifty performance. H1: Inflation significantly impacts Nifty performance.

LITERATURE REVIEW

Impact of Macroeconomic Indicators on the Indian Stock Market: A Study on NSE Nifty

Indrani Sengupta, Joyjit Patra, Subir Das Gupta

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The study found that the exchange rate and consumer price index (CPI) significantly impact the NSE Nifty stock prices. While the CPI positively influences stock prices, the exchange rate has a negative effect, with other indicators showing no significant impact.

- Impact of Macroeconomic Variables on Nifty Private Bank Index and Nifty PSU Index

Dr. M. Jegadeeshwaran,Navitha P 22 Aug 2022-International Journal of Advanced Research in Science, Communication and Technology

The study found that the exchange rate is positively correlated with the Nifty Private Bank Index and negatively correlated with the Nifty PSU Index. Additionally, the inflation rate is negatively correlated with both indices, indicating significant impacts on their performance.

- Effect of Exchange Rate volatility and inflation on stock market returns Dynamics - evidence from India

Nenavath Sreenu 5 May 2023-International Journal of Systems Assurance Engineering and Management

The study examines the significant long-term relationship between exchange rate, inflation, and stock market returns in India, specifically highlighting the negative short-term effects on market returns, which can inform investors regarding Nifty's dynamics during varying macroeconomic conditions.

- Impact of Exchange Rate and Inflation Rate on Stock Market Return Volatility In India

01 Jan 2022 - Academy of Marketing Studies Journal - Vol. 26

The study reveals a significant long-term relationship between NSE returns and the currency exchange rate, while inflation also impacts stock market returns negatively in the short run. Long memory properties in these variables can benefit investors in India.

- An Empirical Study on Impact of Macroeconomic Factors on Nifty

Ceenia Cidar,Stella Mary 01 Mar 2016 - Imperial journal of interdisciplinary re... - Vol. 3, Iss: 3

The study examines the relationship between the Nifty index and macroeconomic variables, specifically focusing on the Forex Rate and inflation, using Johansen's co-integration test to analyse their long-run equilibrium relationship from 2001 to 2015.

RESEARCH METHODOLOGY

Study Design:

- **Quantitative**: To analyse numerical data on exchange rates, inflation, and Nifty Index values.

Data Collection:

- **Sources**: Secondary data from financial databases like NSE, RBI, World Bank and government inflation reports.
- **Tools**: Historical data retrieval tools, financial data platforms (e.g., Yahoo Finance).

Sampling Techniques:

- **Population**: Historical data on exchange rates, inflation rates, and Nifty Index.
- **Sampling Unit**: Monthly data points.
- **Sample Size**: Data from the past 10 years (~120 data points for monthly).
- **Sampling Method**: **Non-Probability Sampling** – Using all available historical data (time-series analysis).

DATA ANALYSIS AND INTERPRETATION

Correlation

		Nifty	HANGE RATE	LATI ON
Nifty	Pearson Correlation	1	.908**	.082
	Sig. (2-tailed)		.000	.350

	N	131	131	131
HANGE RATE	Pearson Correlation	.908**	1	.147
	Sig. (2-tailed)	.000		.092
	N	131	132	132
INFLATION	Pearson Correlation	.082	.147	1
	Sig. (2-tailed)	.350	.092	
	N	131	132	132

1. **Correlation Analysis**

The correlation table provides insights into the strength and direction of relationships between Nifty, Exchange Rate, and Inflation.

Key Observations:

✅ **Exchange Rate & Nifty (0.908, p < 0.01)**

A strong positive correlation (0.908) exists between the Exchange Rate (INR/USD) and Nifty 50.

This suggests that when the Rupee depreciates (INR weakens against USD), Nifty tends to rise.

✅ **Inflation & Nifty (0.082, p = 0.350)**

A weak and statistically insignificant correlation (0.082) between Inflation and Nifty. This means inflation does not have a direct linear impact on Nifty movements.

✅ **Exchange Rate & Inflation (0.147, p = 0.092)**

A low correlation (0.147), slightly insignificant (p > 0.05) between Exchange Rate and Inflation.

This indicates that inflation and exchange rate fluctuations are not strongly linked in this dataset.

📌 Conclusion: The exchange rate has a much stronger influence on Nifty than inflation.

Regression

Model Summary

Model	R	R Square	Adjusted R Square	d. Error of the Estimate
1	.909a	.826	.823	2123.89761

a. Predictors: (Constant), INFLATION, EXCHANGE RATE

ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2742534530.060	2	1371267265.030	303.987	.000b
	Residual	577400453.004	128	4510941.039		
	Total	3319934983.064	130			

a. Dependent Variable: Nifty

b. Predictors: (Constant), INFLATION, EXCHANGE RATE

2. **Regression Analysis**

The regression model helps quantify the impact of exchange rate and inflation on Nifty's movements.

Model Summary:

R-Square = 0.826 → 82.6% of Nifty's variation is explained by Exchange Rate & Inflation.

High explanatory power suggests that these factors significantly impact Nifty's performance.

ANOVA Test (Model Significance)

$F(2,128) = 303.987$, $p < 0.01$ → The model is statistically significant, meaning the independent variables (exchange rate, inflation) together influence Nifty.

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Coefficient

	Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-31420.806	1865.303		-16.845	.000
	EXCHANGE RATE	628.448	25.593	.914	24.556	.000
	INFLATION	-149.625	123.998	-.045	-1.207	.230

a. Dependent Variable: Nifty

3. **Coefficients**

✅ **Exchange Rate** (B = 628.448, $p < 0.01$)

A unit increase in INR/USD leads to a 628.45-point increase in Nifty.

This confirms that rupee depreciation benefits Nifty, possibly due to export-driven sectors like IT and Pharma.

✅ **Inflation** (B = -149.625, p = 0.230, Not Significant) Inflation has a negative but insignificant impact on Nifty.

A 1% increase in inflation reduces Nifty by 149.63 points, but this is not statistically significant.

📌 Conclusion: Nifty's movement is primarily driven by exchange rate fluctuations, while inflation plays a minimal role.

RESULT AND FINDING

The analysis reveals a strong positive correlation between the Nifty Index and the exchange rate, with a Pearson correlation coefficient of **0.908** (significant at the 0.01 level), indicating that fluctuations in the exchange rate have a substantial impact on Nifty movements. In contrast, inflation shows a weak and statistically insignificant correlation (**0.082**) with the Nifty Index.

The regression analysis further supports these findings. The model demonstrates a high explanatory power, with an **R^2 of 0.826**, indicating that **82.6%** of the variation in the Nifty Index can be explained by the exchange rate and inflation combined. The exchange rate emerges as a significant predictor (**β = 0.914**, $p < 0.01$), whereas inflation has a negligible and statistically insignificant impact (**β = -0.045**, p = 0.230).

Overall, the study concludes that the exchange rate has a significant and strong influence on the Nifty Index, while inflation appears to have minimal direct impact based on the statistical evidence.

LIMITATION OF THE STUDY

The study has certain limitations that may affect the scope and accuracy of its findings. One major constraint is the limited access to comprehensive historical and real-time data, which may influence the depth of the analysis. The study focuses specifically on the relationship between exchange rates, inflation, and the Nifty Index, potentially overlooking other significant macroeconomic factors that could impact market behaviour. Additionally, the 10 year time frame, while extensive, may introduce bias by missing short-term anomalies or structural economic changes. Methodological limitations, such as reliance on historical data and statistical models, may not fully capture the complexities and dynamic nature of the market. Furthermore, external factors like global economic events, policy shifts, or market shocks that indirectly influence the studied variables may not be fully accounted for, which could impact the overall conclusions of the study.

CONCLUSION

The study on the impact of exchange rates and inflation on the Nifty Index reveals a complex and dynamic relationship between macroeconomic factors and stock market performance. Exchange rate fluctuations directly influence the profitability and competitiveness of companies, especially those involved in international trade, leading to corresponding movements in the Nifty Index. A depreciating rupee often results in higher import costs and inflationary pressures, negatively affecting market sentiment. Conversely, inflation plays a dual role; moderate inflation may signal economic growth, supporting stock prices, while high inflation erodes purchasing power and increases input costs, leading to market volatility. The study highlights that both exchange rates and inflation significantly impact investor behaviour, sectoral performance, and overall market trends, emphasizing the need for investors and policymakers to closely monitor these indicators when making strategic decisions.

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