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# IMPACT OF MACROECONOMIC INDICATORS ON NIFTY INDEX

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**ABSTRACT**
*The performance of stock indices, especially the Nifty Index, is closely linked with the macroeconomic indicators of the economy. This study examines the correlation between macroeconomic indicators and the Nifty Index. The findings highlight significant correlations, particularly those of interest rates, exchange rates, and unemployment rates with the Nifty 50 Index. Additionally, the study demonstrates the predictive power of macroeconomic variables in forecasting stock market movements, offering valuable insights for investors, policymakers, and financial analysts. The regression model, with an R-squared value of 0.948, indicates a high level of explanatory power. The study suggests that understanding macroeconomic trends can enhance investment strategies, inform policy decisions, and support corporate planning.*
**KEYWORDS**: *Nifty Index, Macroeconomic Indicators, Forecasting*

## INTRODUCTION

The stock market, a dynamic and multifaceted financial system, is a key barometer of economic performance, reflecting the overall health and vitality of an economy. Among the many indices that serve this role, the Nifty 50, one of India's premier stock market indices, stands out as a crucial benchmark for analysing the performance of the Indian equity market. Comprising 50 major companies across various sectors, the Nifty 50 offers an aggregate snapshot of corporate performance and investor sentiment, making it a crucial instrument for investors and financial analysts alike. However, the movements of the Nifty 50, like other stock indices, are not isolated from broader economic factors. Instead, they are intricately connected to the macroeconomic environment, which plays a pivotal role in shaping market dynamics.

Key macroeconomic indicators such as gross domestic product (GDP) growth, inflation rates, interest rates, unemployment rates, and industrial production collectively create a framework through which the overall health of an economy can be assessed. These indicators influence corporate profitability, investor confidence, and market liquidity, thereby driving stock prices and overall market trends.

Investor sentiment, which is often shaped by the macroeconomic outlook, plays a crucial role in stock market performance. Favourable economic data can boost confidence among investors, leading to increased demand for equities and driving up stock prices. Conversely, uncertainty or negative economic news can lead to a flight to safer assets, resulting in lower stock prices. The Nifty 50 Index, with its broad representation of various sectors, reflects these shifts in investor sentiment and serves as a barometer of market confidence

In addition to providing insights into current economic conditions, macroeconomic indicators serve as powerful forecasting tools for stock market performance. Analysts and investors closely monitor these indicators to predict future market trends and identify potential investment opportunities. For example, changes in interest rates set by the central bank, can signal shifts in the economic environment, prompting investors to adjust their portfolios accordingly. Similarly, trends in inflation, industrial production, and unemployment rates offer clues about future corporate earnings, sectoral performance, and overall market direction.

## REVIEW OF PREVIOUS STUDIES

Dr, Amit, Hedau (2024) - The study investigated the impact of macroeconomic variables on the performance of the Indian stock market, specifically the NIFTY 50 index. The primary objective is to identify key determinants influencing stock market performance through both primary and secondary data. The study concluded that

combining domestic and international factors provided a comprehensive approach to understanding NIFTY 50 index fluctuations, marking a novel contribution to the literature on the Indian stock market.

Indrani, Sengupta et.al (2023)- The study included analyzing the relationship between stock prices and key economic indicators such as foreign direct investment (FDI), money supply (M3), gold prices, exchange rates, and the consumer price index (CPI) over 36 quarters from 2012-2013 to 2020-2021 using descriptive statistics, normality tests, multiple regression analysis, and chi-square tests to assess the data. The study concluded that macroeconomic indicators played a crucial role in influencing stock market movements in India.

Rajveer, Rawlin et.al (2022)- The paper examined the interrelationships between the Indian stock market, represented by the Nifty index, and various asset classes, including Gold, Crude oil, government bond yields, the USD/INR exchange rate, and Bitcoin, over the period from January 2011 to December 2020. The objectives were to examine the causal interdependencies and co-integration among these asset classes. The methodology involved co-integration analysis to assess long-run relationships and Granger causality tests to determine the direction of causality. The study concluded that traders could benefit from monitoring shocks in these variables to adjust their trading strategies effectively.

Rakesh, Kumar, Verma et.al (2021)- The study investigated the influence of macroeconomic variables on stock market performance in both developed and emerging economies. The objectives included identifying key macroeconomic factors and analyzing their effects on broad and sectoral stock indices. The methodology involved a systematic review of literature from databases like Emerald Insight and JSTOR, covering publications from 1972 to 2021. The study concluded that while significant insights have been gained, further research is needed to explore additional variables and their effects on thematic and sectoral indices, particularly during economic downturns.

## STATEMENT OF THE PROBLEM

The performance of the Nifty Index, a key benchmark in the Indian stock market, is influenced by a variety of macroeconomic indicators such as inflation rate, interest rate, exchange rate, VIX, unemployment rate, industrial production index and GDP growth. Understanding the relationship between these macroeconomic variables and the stock market is significant for investors, policymakers. However, the extent to which these indicators directly impact Nifty Index performance remains unclear, particularly in terms of predicting trends and volatility. This study seeks to explore the correlation between key macroeconomic indicators and the Nifty Index, assess their influence on market volatility, and evaluate their predictive power in forecasting future market movements. By utilizing Correlation and other relevant tools, this research aims to enabling better investment strategies and policy decisions. With this background the present study aims to answer the following research questions.

## RESEARCH QUESTIONS

1. What is the correlation between key Macroeconomic Indicators and the performance of the Nifty Index?
2. To what extent can Macroeconomic Indicators be used to forecast trends and movements in the Nifty Index?

## OBJECTIVES OF THE STUDY

1. To examine the correlation between key Macroeconomic Indicators and the performance of the Nifty 50 Index.
2. To evaluate the predictive trends and movements of Macroeconomic Indicators and Nifty 50 Index.

## RESEARCH METHODOLOGY

Non-probability sampling is used in the study, with subjective financial records from the past 10 years (2014–2023). The purposive sampling technique is applied, as the data used in the research are based on specific characteristics aligned with the study's objectives. Secondary data were collected from the RBI Handbook of Statistics, the NSE website, Macrotrends, journal articles, magazines, and relevant online sources. The data were analyzed according to the study's objectives using statistical tools such as correlation and time series analysis to derive insights effectively.

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## ANALYSIS AND INTERPRETATION

**Correlation Matrix**

**Table 1**

| Variable | Index (B) | GDP (C) | Inflation Rate (D) | Interest Rate (E) | Exchange Rate (F) | Unemployment Rate (G) | VIX (H) | Industrial Production (I) |
|---|---|---|---|---|---|---|---|---|
| Index (B) | 1.000 | 0.099 | 0.072 | 0.687** | 0.938*** | 0.687** | -0.076 | 0.237 |
| GDP (C) | 0.099 | 1.000 | 0.068 | -0.254 | 0.055 | -0.254 | -0.106 | 0.538 |
| Inflation Rate (D) | 0.072 | 0.068 | 1.000 | -0.494 | -0.138 | -0.494 | -0.755** | 0.611 |
| Interest Rate (E) | 0.687** | -0.254 | -0.494 | 1.000 | 0.774** | 1.000 | 0.413 | -0.239 |
| Exchange Rate (F) | 0.938*** | 0.055 | -0.138 | 0.774** | 1.000 | 0.774** | 0.124 | -0.107 |
| Unemployment Rate (G) | 0.687** | -0.254 | -0.494 | 1.000 | 0.774** | 1.000 | 0.413 | -0.239 |
| VIX (H) | -0.076 | -0.106 | -0.755** | 0.413 | 0.124 | 0.413 | 1.000 | -0.676** |
| Industrial production Index | 0.237 | 0.538 | 0.611 | -0.239 | -0.107 | -0.239 | -0.676** | 1.000 |

*****significant at 1% level, **significant at 5% level**

Index (B): The Index shows a moderate positive correlation with the Interest Rate (E) and Unemployment rate (G) at R=0.687 (67.8%) is statistically significant (p=0.028). It also has a strong positive correlation with the Exchange Rate (F) (R=0.938) (93.8%), and this relationship is highly significant at 1% level. Conversely, the Index is statistically insignificant correlated with GDP (C) R=0.099 (9.90%) which is statistically insignificant (p=0.785), Inflation Rate (D) R=0.072 (67.8%) which is statistically insignificant (p=0.843), VIX (H) R=-0.076 (-7.6%) which is statistically insignificant (p=0.835), or Industrial Production (I) R=0.237 (23.7 %) which is statistically insignificant (p=0.510).

**Time Series Analysis**

**Table 2**

| R | R-squared | Adjusted R-squared | Standard Error of the Estimate | Durbin-Watson Statistic |
|---|---|---|---|---|
| 0.973 | 0.948 | 0.843 | 1620.870 | 1.873 |
| **F-statistic** | **p-value (Sig.)** | **Mean Absolute Error (MAE)** | **Mean Absolute Percentage Error (MAPE)** | **Root Mean Square Error (RMSE)** |
| 9.031 | 0.049 | 1039.102 | 9.399% | 1345.963 |

**Source: Secondary Data**

The regression analysis reveals strong model performance, with an R-squared value of 0.948, indicating that 94.8% of the variance in the index is explained by the independent variables. The Mean Absolute Error (MAE) of 1039.102 reflects an average deviation of 8.9% from the actual values, while the Mean Absolute Percentage Error (MAPE) of 9.399% confirms good predictive accuracy. The Root Mean Square Error (RMSE) of 1345.963 signifies an average prediction error of 11.5% of the average index value.

## SUGGESTIONS

- The study provides simplified insights that empower retail investors to grasp complex economic relationships. This understanding allows them to navigate the market more effectively, enhancing their investment strategies.
- Policymakers can effectively manage macroeconomic variables to achieve sustainable growth in the markets without extreme volatility. Additionally, having foresight regarding how policy changes will affect financial markets can enhance economic planning and strategy formulation.
- In light of economic trends, companies can adjust their corporate strategies—such as financing, expansion plans, or stock buybacks—to align with prevailing conditions. This strategic alignment is essential for maximizing shareholder value.

## CONCLUSION

This study has thoroughly examined the impact of macroeconomic indicators on the Nifty Index, highlighting the interplay between economic conditions and stock market performance. The findings indicate that robust economic growth, coupled with rising interest rates and inflation, creates higher borrowing costs and reduces disposable income, thereby exerting downward pressure on the Nifty Index. Fluctuations in exchange rates also affect the global competitiveness of Indian firms. Recognizing these macroeconomic trends is vital for investors and policymakers to make informed decisions.

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