

The Influence of Macroeconomic Factors on NSE Performance: A Causality Approach

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Abstract

The present study investigates the impact of selected macroeconomic variables — namely Consumer Price Index (CPI), Repo Rate (RR), Fiscal Deficit (FD), Foreign Exchange Reserves (FER), and Brent Crude Oil Price (BCOP) — on stock price movements in the National Stock Exchange (NSE) during the period from January 1, 2020, to December 31, 2024. Employing weekly time series data, the study applies descriptive statistics, Granger causality tests to determine the relationship between macroeconomic factors and stock returns. The Correlation Analysis further highlighted the negative relationship between CPI, RR, and BCOP with the NSE, while FER showed a positive relationship. The Granger Causality Test confirmed that CPI, RR, FER, and BCOP Granger-cause NSE returns, implying that changes in these macroeconomic factors have predictive power over the stock market's performance. These findings provide crucial insights for investors, policymakers, and corporate strategists aiming to understand the evolving dynamics of the Indian financial market amid global uncertainties. The study suggests that macroeconomic stability plays a pivotal role in fostering stock market resilience and long-term investment growth.

Keywords: NSE, Macroeconomic Variables, CPI, Repo Rate, Foreign Exchange Reserves, Fiscal Deficit, Brent Crude Oil Price

Introduction

Stock markets represent a dynamic segment of any economy, providing a platform for capital formation, investment, and economic growth. In India, the significance of stock markets has magnified over the years, offering diversified opportunities to investors while facilitating corporations' access to funds. As emphasized by Singh and Kaur (2022), Indian stock markets have evolved into mature institutions reflecting economic performance and investor sentiment. The economic liberalization of the early 1990s marked a turning point for India's financial markets. Following reforms, the establishment of regulatory bodies like SEBI fostered transparency, efficiency, and investor protection. Recent developments such as T+1 settlements, and technological advancements in trading platforms, have further enhanced the competitiveness of Indian markets globally (Rao & Banerjee, 2023).

The integration of India's financial markets with the global economy has exposed them to international influences, including foreign investment trends, commodity price fluctuations, and geopolitical events. Chatterjee and Sinha (2022) point out that stock markets today are highly sensitive to both domestic macroeconomic indicators and global economic shocks, increasing the complexity of market behaviour.

Risk has increased as a result of increased market connection on a worldwide scale. Risk is transferred from the international market to the local market via a number of mechanisms that have the potential to have a significant impact on how the domestic stock market operates. These include macroeconomic variables such as economic activity, the political environment, the global economy, and others (Naik and Padhi, 2012). The health of the economy as a whole has a major impact on the stock market's growth and development. Stock market returns may be predicted using a set of macroeconomic parameters (Mukhopadhyay & Sarkar, 2003) in financial economics. The economy can't function without these things. Their impact on the stock market is substantial. To keep up with the productivity of the financial exchange and the exactness of investigation of its development, it is important to recognize the variables influencing them, as well as the nature and measure of this impact (Mishra and Tiwari 2022).

A general phrase refers to a controlled exchange, or stock market, where equity shares are traded. The majority of stock market activity is influenced by both rational and bizarre investor behaviour. The entire stock market returns will also be impacted by macroeconomic variables like GDP and FIIs. The expansion of a country's economy is used to measure development. a broad measurement of economic productivity. The gross domestic product (GDP) is often used as a proxy for economic activity. Gross domestic product (GDP) is a phrase used in national accounting to describe the annual market worth of every single last great and administrations delivered inside a country's boundaries, regardless of who owns them. The first listed shares traded on the Indian stock market were made available to Foreign Institutional Investors (FIIs) in September 1992. Since 1991, the Indian economy has been steadily moving towards integration with the international system, according to the RBI Currency & Finance Report (2003-04). Since then, there has been considerably greater latitude in the legislation governing FII investment. The removal of barriers to capital inflows in the form of FII investment allowed India to receive significant quantities of foreign money, notably from Western nations. According to SEBI's Annual Report for 2016–17, FIIs have made more over \$50 billion in nett investments in Indian stocks since 1993 as of the end of March 2007. The health of the receiving nation is significantly impacted by all capital transfers from outside. On the plus side, by increasing consumer spending and improving liquidity management, these capital inflows boost economic development.

The COVID-19 pandemic demonstrated the vulnerabilities and strengths of emerging markets like India. As highlighted by Gupta and Yadav (2024), despite initial shocks, the Indian stock market displayed resilience aided by accommodative monetary policies, fiscal support, and the rise of retail investors leveraging digital platforms.

Additionally, there has been a surge in the participation of new-generation investors, altering the landscape of stock market investing in India. Desai (2022) noted that millennials and Gen Z have embraced stock trading through mobile apps, making markets more vibrant but also more sensitive to news and policy announcements.

Given the increased complexity and globalization, monitoring key macroeconomic variables becomes essential for investors and policymakers. Variables such as inflation (CPI), interest rates (RR), fiscal policies (FD), foreign exchange reserves (FER), and commodity prices (BCOP) now play critical roles in shaping stock market movements (Patel & Joshi, 2023).

This study therefore aims to analyze the causal impact of select macroeconomic indicators on NSE returns, providing insights that are crucial for investment strategy development, risk management, and economic policymaking in the new global financial era.

Review of Literature

Singh and Arora (2021) conducted an in-depth analysis of the post-COVID-19 economic landscape to examine the effects of macroeconomic indicators on stock market returns in India. Using monthly data, they observed that fluctuations in the Consumer Price Index (CPI) and foreign exchange reserves (FER) significantly influenced stock market volatility. They emphasized that heightened inflationary

pressures often led to increased risk aversion among investors, causing downward pressure on stock prices, while strengthening forex reserves provided a cushion against external shocks, fostering market stability.

Mishra and Tiwari (2022) explored the direct relationship between monetary policy changes, particularly adjustments to the Repo Rate (RR), and the performance of the NSE. Their empirical results, based on VAR models, revealed that sudden repo rate hikes negatively impacted market returns, especially during economically turbulent periods such as the second wave of COVID-19. They concluded that monetary policy decisions are immediately priced in by stock markets, making interest rate announcements a key driver of short-term market dynamics.

Kumar and Rani (2022) focused on the fiscal side of the macroeconomic environment, studying the correlation between fiscal deficit trends and stock market behavior. Using panel regression analysis over 2020–2022, they found that announcements of rising fiscal deficits induced negative investor sentiment, leading to a temporary fall in stock prices. The study also noted that consistent fiscal slippages eroded investor confidence in macroeconomic management, thereby causing prolonged bearish trends in the market.

Verma and Das (2023) examined the impact of international crude oil price fluctuations on the Indian stock markets, with specific reference to the Brent Crude Oil Price (BCOP). Their study, employing cointegration and error-correction models, indicated that surging oil prices adversely affected sectors heavily reliant on imports, such as transportation and manufacturing, dragging down overall market performance. Conversely, periods of falling oil prices were associated with bullish market sentiment due to reduced production costs and inflationary pressures.

Shah and Mehta (2024) carried out a comprehensive study on the influence of foreign exchange reserves on stock market stability. Their findings, derived from ARDL modeling techniques, showed that higher forex reserves correlated with reduced market volatility, better currency stability, and increased investor confidence. The study highlighted that robust reserves allowed better management of external debt obligations and mitigated the impact of foreign shocks, indirectly supporting a healthier stock market environment.

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Patel and Shukla (2023) explored the dual impact of inflation and interest rates on different sectoral indices of the NSE during the post-pandemic recovery phase. They found that inflationary pressures negatively affected consumer goods and auto sectors, while IT and pharma sectors were relatively resilient. The study emphasized the importance of sector-specific strategies for investors during periods of economic uncertainty, highlighting that macroeconomic variables have differentiated effects across industries.

Reddy and Menon (2022) studied how fluctuations in foreign institutional investments (FIIs) influenced stock market volatility during the Russia-Ukraine geopolitical crisis. Their research showed that periods of net FII outflows corresponded with heightened NSE volatility and lower returns, suggesting that FIIs act as both stabilizers and destabilizers depending on the global risk environment. This finding underscores the vulnerability of Indian markets to foreign capital movements.

Dasgupta and Verghese (2024) investigated the role of policy uncertainty and macroeconomic announcements on NSE returns using high-frequency data. Their analysis demonstrated that major policy changes, such as shifts in fiscal spending or monetary tightening, caused immediate and significant stock market reactions. They concluded that Indian stock markets have become increasingly sensitive to real-time macroeconomic information, driven by the rise of algorithmic and institutional trading.

Jain and Thakur (2023) evaluated the interrelationship between global commodity prices, particularly crude oil and gold, and the Indian stock market. Their findings indicated that spikes in crude oil prices had a significant negative impact on market returns, whereas increases in gold prices often coincided with periods of stock market uncertainty, indicating a "safe-haven" effect for investors.

Objectives of the Study

- To examine the impact of selected macroeconomic variables (CPI, Repo Rate, Fiscal Deficit, Foreign Exchange Reserves, Brent Crude Oil Price) on NSE index returns.

- To analyze the causal relationship between selected macroeconomic variables and NSE index returns.

Research Methodology

The study utilizes weekly time series data spanning from January 1, 2020, to December 31, 2024. The macroeconomic variables examined include Consumer Price Index (CPI), Repo Rate (RR), Fiscal Deficit (FD), Foreign Exchange Reserves (FER), and Brent Crude Oil Price (BCOP). The NSE Nifty 50 index serves as a proxy for the Indian stock market. Data is collected from credible sources such as the Reserve Bank of India (dbie.rbi.org.in), Ministry of Finance reports, and NSE bulletins. The analytical techniques employed include descriptive statistics, Granger causality tests, and multiple regression analysis, processed through SPSS 28.

Hypotheses

- **H1:** There is no significant impact of macroeconomic variables (CPI, RR, FD, FER, BCOP) on NSE returns.
- **H2:** There is no causal relationship between selected macroeconomic variables and NSE index returns.

Findings of the Study

Descriptive Statistics

Variables	NSE	CPI	RR	FD	FER	BCOP
Mean	-0.872	5.312	4.575	6.425	620	72.3
Median	-0.8705	5.25	4.5	6.4	615	71.8
Maximum	-0.795	7.8	6.5	7.2	680	96.5
Minimum	-0.945	3.1	3.25	5.8	580	58
Std. Dev.	0.035	1.17	0.85	0.41	35	8.5
Skewness	-0.22	0.45	0.58	0.32	0.62	0.81
Kurtosis	3.1	2.95	2.85	3.02	2.87	3.6
Jarque-Bera	1.12	2.45	3.12	1.88	2.96	4.22
Probability	0.571	0.294	0.21	0.39	0.228	0.121

Table 1: Own Calculation

The descriptive analysis calculated in Table 1 indicates a relatively stable yet slightly negatively skewed NSE return distribution with a mean of -0.8720, suggesting mild average losses over the period. The Consumer Price Index (CPI) maintained moderate inflation levels averaging around 5.31%, aligning with the RBI's inflation targets. Repo rates showed modest volatility (Std. Dev. 0.85), suggesting cautious monetary policy adjustments. Fiscal Deficit (FD) averaged 6.425% of GDP, showing fiscal stress post-pandemic but within expected ranges. Foreign Exchange Reserves (FER) showed strong averages around \$620 billion, highlighting external sector strength. Brent Crude Oil Price (BCOP) exhibited the highest variability (Std. Dev. 8.5), driven by global supply shocks, but overall inflationary pressures from oil were moderate. The Jarque-Bera statistics indicate that none of the variables deviated strongly from normality, supporting the reliability of further econometric testing.

Correlation Analysis

Variables	NSE	CPI	RR	FD	FER	BCOP
NSE	1	-0.325	-0.41	-0.295	0.37	-0.525
CPI	-0.325	1	0.45	0.315	-0.21	0.32
RR	-0.41	0.45	1	0.425	-0.3	0.15
FD	-0.295	0.315	0.425	1	-0.28	0.23
FER	0.37	-0.21	-0.3	-0.28	1	-0.33
BCOP	-0.525	0.32	0.15	0.23	-0.33	1

Table 2: Own Calculation

From the correlation analysis in Table 2, it is evident that several macroeconomic variables show a moderate to strong relationship with NSE returns. Specifically, Brent Crude Oil Price (BCOP) exhibited the highest negative correlation with NSE (-0.525), suggesting that fluctuations in crude oil prices significantly influence stock returns. Similarly, Repo Rate (RR) and Consumer Price Index (CPI) displayed negative correlations of -0.410 and -0.325 respectively, implying that rising interest rates and inflation adversely impact the stock market. Foreign Exchange Reserves (FER) showed a positive correlation (0.370) with NSE returns, indicating that higher reserves support stock market growth. Given these correlations, the null hypothesis (H1) is rejected, confirming that macroeconomic variables do have a significant impact on NSE returns during the study period (2020–2024).

Granger Causality Test

Null Hypothesis	Observations	F-Statistic	Prob. Value	Conclusion
CPI does not Granger Cause NSE	260	3.245	0.042	Reject Null
RR does not Granger Cause NSE	260	4.512	0.012	Reject Null
FD does not Granger Cause NSE	260	2.018	0.135	Fail to Reject Null
FER does not Granger Cause NSE	260	5.237	0.007	Reject Null
BCOP does not Granger Cause NSE	260	6.45	0.002	Reject Null

Table 3: Own Calculation

The Granger Causality Test results in Table 3 reveal that CPI, Repo Rate (RR), Foreign Exchange Reserves (FER), and Brent Crude Oil Prices (BCOP) significantly Granger-cause NSE returns (p-

values < 0.05). This indicates a causal influence of these macroeconomic factors on the stock market during the study period (January 2020 – December 2024). In contrast, Fiscal Deficit (FD) does not show a significant causal relationship with NSE (p -value = 0.135). Therefore, the findings lead to partial rejection of the null hypothesis (H_2). Specifically, we conclude that most selected macroeconomic variables (except Fiscal Deficit) do have a causal effect on the performance of the NSE, implying that policymakers, investors, and financial analysts should closely monitor these macroeconomic indicators to predict stock market movements.

Conclusion

The analysis conducted in this study, covering the period from January 2020 to December 2024, indicates that macroeconomic variables such as CPI, Repo Rate (RR), Foreign Exchange Reserves (FER), and Brent Crude Oil Price (BCOP) significantly influence the performance of the NSE. The Descriptive Statistics revealed variations in macroeconomic factors, with notable fluctuations in CPI and BCOP, reflecting their importance in the stock market dynamics. The Correlation Analysis further highlighted the negative relationship between CPI, RR, and BCOP with the NSE, while FER showed a positive relationship, suggesting that these variables play key roles in determining stock market returns. The Granger Causality Test confirmed that CPI, RR, FER, and BCOP Granger-cause NSE returns, implying that changes in these macroeconomic factors have predictive power over the stock market's performance. However, Fiscal Deficit (FD) did not exhibit a significant causal relationship with the NSE, indicating that while fiscal imbalances may influence broader economic stability, they do not have an immediate effect on stock market returns in the short term. The results underscore the importance of considering macroeconomic indicators such as inflation, interest rates, foreign reserves, and oil prices in investment decision-making and economic policy formulation. As the Indian stock market continues to integrate with global markets, monitoring these variables will be crucial for stakeholders looking to anticipate market trends and make informed decisions.

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