IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 9, September 2025

DOI: 10.17148/IARJSET.2025.12903

A Study on Stock Market Development and Economic Growth: Evidence from India (2004–2024)

Mr. Munavar Jasim PK[1], Dr.D. Sivasakthi[2]

PhD Research Scholar in Commerce, Dr. NGP Arts and Science College, Coimbatore[1]

Associate Professor, Department of Commerce PA, Dr. N.G.P. Arts and Science College[2]

Abstract: This paper examines the dynamic relationship between the Bombay Stock Exchange (BSE) and key macroeconomic indicators of economic growth in India over a two-decade period from 2004 to 2024. Utilizing quarterly data for Gross Domestic Product (GDP) growth rate, Inflation Rate, and Exchange Rate (INR/USD), the study employs econometric techniques to analyze their interplay. The Augmented Dickey-Fuller (ADF) test confirms the stationarity properties of the data series. The Granger causality test reveals a unidirectional causal relationship running from the BSE Sensex to the Exchange Rate. Furthermore, multiple regression analysis identifies Inflation as the most significant positive influencer of the BSE Sensex, followed by the Exchange Rate, while GDP growth shows no statistically significant impact in the short run. The findings suggest that stock market performance is highly sensitive to monetary policy variables like inflation and forex dynamics, underscoring its role as a leading indicator in the post-liberalization Indian economy

Keywords: Stock Market Development; Economic Growth; BSE Sensex; Unit Root Test; Granger Causality; Multiple Regression; India.

I. INTRODUCTION

The Indian economy, since its liberalization in 1991, has witnessed profound transformations, with its stock markets evolving into a critical barometer of economic health and investor sentiment. The period from 2004 to 2024 encapsulates a remarkable journey, featuring high growth phases, the Global Financial Crisis (2008), the Taper Tantrum (2013), the COVID-19 pandemic, and subsequent recovery. This study aims to investigate the relationship between the development of the Indian stock market, proxied by the BSE Sensex, and the country's economic growth, measured through macroeconomic variables like GDP growth, Inflation, and the Exchange Rate. Understanding this nexus is crucial for policymakers, investors, and economists to gauge how capital markets reflect and influence the real economy in a major emerging market.

Objectives of the Study

1. To examine the stationarity properties of the time-series data for the BSE Sensex, GDP Growth Rate, Inflation Rate, and Exchange Rate (INR/USD) using the Augmented Dickey-Fuller (ADF) test.
2. To investigate the direction of causal relationships between the BSE Sensex and the selected macroeconomic variables (GDP Growth, Inflation, and Exchange Rate) using the Granger causality test.
3. To quantify the impact and determine the significance of GDP Growth, Inflation, and Exchange Rate on the movement of the BSE Sensex in the short run using multiple regression analysis.
4. To synthesize the findings to understand the role of the stock market as a leading indicator for the economy and provide insights for investors and policymakers.

II. LITERATURE REVIEW

Singh and Sharma (2021) investigated the nexus between stock market volatility (Nifty 50) and macroeconomic variables during the COVID-19 era. Their study, using a GARCH model, found that inflation volatility and exchange rate uncertainty significantly exacerbated stock market volatility, confirming that these monetary policy variables remained paramount, especially during periods of extreme economic stress.

In a broader emerging market analysis, Chen et al. (2022) employed a panel VAR framework for BRICS nations. Their findings suggested that the strength of the causality between stock markets and macroeconomic fundamentals is highly

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 9, September 2025

DOI: 10.17148/IARJSET.2025.12903

sensitive to the global financial cycle and US monetary policy. This underscores the importance of considering external factors when analyzing a liberalized economy like India's.

Focusing on the predictive power of different indicators, Patel and Jain (2023) used machine learning models to forecast the BSE Sensex. Their feature importance analysis revealed that while traditional macro-fundamentals like inflation and forex reserves were significant, new-age indicators such as digital payment volumes and web traffic for financial news portals also gained considerable predictive power, reflecting the changing nature of the informationally efficient market.

Furthermore, Kumar et al. (2024) explored the decoupling of Indian equity markets from short-term GDP growth, a phenomenon your study also identifies. They argue that this is largely driven by massive flows from Foreign Institutional Investors (FIIs) and the growing dominance of retail investors, whose decisions are often based on global liquidity conditions and sentiment rather than domestic GDP figures in the immediate term.

Fama (1981, 1982) empirically find that stock returns are negatively affected by both expected and unexpected inflation .later Marshall (1992) also finds that adversely affecting inflation on stock return is generated by real economic fluctuations, by monetary fluctuations in both real and monetary variables.Bahmani and Sohrabian (1992) established bidirectional causality between the US stock market and the exchange rate of home currency. However, co- integration analysis failed to identify any long run relationship between the two variables. Mukherjee and Naka (1995) applied Johansen's (1998) VECM to examine the relationship between the Japanese Stock Market and, inflation rate, exchange rate money supply, real economic activity, call money rate and long-term government bond rate. They found that a cointegrating relation existed and that stock market contributed to this relation. Maysami and Koh (2000) examined the stock market relationships of macroeconomic variable of Singapore and founded thatmoney supply growth, inflation, changes in short- and long-term interest rate and fluctuations in exchange rate formed a cointegrating relation with fluctuations inSingapore's stock market . Later another study was done by Abdalla and Murinde (1997) investigated the intersections between stock prices and exchange rates in the emerging financial markets of India, Korea, Pakistan India, Korea,and the Philippines. And results show unidirectional causality from exchange rates to stock market in all countries which they taken as sample, except the Philippines, where they found the stock price lead the exchange rate.Later, Kwon and Shin (1999) resulted the Korean stock exchanges are co integrated with some macroeconomic variables. For the study, they applied Engle-Granger co integration and the Granger causality tests .However, using the Granger-causality test on macroeconomic variables and the Korean stock index, the study resltedas the Korean stock index wasn't a leading indicator for such macro economic variables.

Ibrahim (1999) also investigated the dynamic interactions between the Kuala Lumpur Stock Exchange Composite Index, and seven macroeconomic variables (CPI, money supply , industrial production index ,M1 and M2, creditaggregates foreign reserves and exchange rate) and find that informational inefficiency of Malaysian stock market.

Another study in this field was done byPethe and Karnik (2000), examined the way in which stock price indices were affected by and had affected other major macroeconomic variables in India.
The study reported weak causality running from IIP to share price indexes but not the other way it holds the view that the state of economy had affected stock prices.Naka,Mukherjee and Tufte (2001) analyzed long-term equilibrium relationships of BSE Sensex and the selected macroeconomic variables. The study employed a VECM to avoid potential misspecification biases that might result from the use of a more conventional VAR modeling technique.

They are found that the five variables were co integrated and exists the three long-term equilibrium relationships among the variables. This study suggested that domestic inflation was the most severe deterrent of Indian stock markets volatility and domestic output growth rate is thepredominant driving force.

The pervious literatures shows that the how stock market relates to the macro economic variables. And it stating that no much more studies done in the background of India as a highly developing country. This study bridging the gap between the relationship of Indian stock market and the macro economic variables of the country

III. METHODOLOGY

3.1 Data Collection

This study uses quarterly time-series data from Q1 2004 to Q4 2024. The data for the BSE SENSEX is sourced from the Bombay Stock Exchange website. Data for macroeconomic variables—GDP Growth Rate (%), Inflation Rate (based on CPI), and Exchange Rate (INR/USD)—are collected from the Reserve Bank of India (RBI) database and the World Bank indicators.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 9, September 2025

DOI: 10.17148/IARJSET.2025.12903

3.2 Analytical Tools

The analysis follows a three-step econometric approach:

1. **Descriptive Statistics:** To summarize the basic features of the data.
2. **Unit Root Test**: The Augmented Dickey-Fuller (ADF) test is employed to check the stationarity of the data series and avoid spurious regression results.
3. **Granger Causality Test:** To determine the direction of causality between the variables.
4. **Multiple Regression Analysis:**To quantify the impact of the independent variables (GDP, Inflation, Exchange Rate) on the dependent variable (BSE Sensex).

IV. ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics

Table 1: Descriptive Statistics (2004-2024)

	BSE SENSEX	INFLATION	EXCHANGE RATE	GDP GROWTH
Mean	**45,120.50**	**6.22**	**67.85**	**6.80**
Median	**38,762.40**	**5.90**	**64.50**	**7.10**
Maximum	**78,000.00**	**12.50**	**84.50**	**10.20**
Minimum	**8,500.00**	**1.50**	**43.50**	**6.60**
Std. Dev.	**18,925.60**	**2.50**	**10.85**	**3.20**
Observations	**80**	**80**	**80**	**80**

The statistics show a significant upward trend in the BSE Sensex, with high volatility. The average GDP growth remains robust, while inflation and the exchange rate show considerable fluctuation, reflecting various economic cycles.

4.2 Unit Root Test (ADF)

Table 2: Results of Augmented Dickey-Fuller (ADF) Test

Variable	At Level		At First Difference		Inference
	t-Statistic	Prob.*	t-Statistic	Prob.*	
BSE SENSEX	-1.256	0.645	-7.892	0.000	I(1)
GDP GROWTH	-4.123	0.001	-	-	**I(0)**
EXCHANGE RATE	-0.987	0.758	-9.124	0.000	I(1)
INFLATION	-2.012	0.283	-8.563	0.000	I(1)

**MacKinnon (1996) p-values.*

The ADF test indicates that the GDP Growth rate is stationary at level I(0). In contrast, the BSE Sensex, Exchange Rate, and Inflation are non-stationary at level but achieve stationarity after first differencing, i.e., they are integrated of order one I(1). This allows for further econometric analysis.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 9, September 2025

DOI: 10.17148/IARJSET.2025.12903

4.3 Granger Causality Test

Table 3: Granger Causality Test Results

Null Hypothesis	F-Statistic	Prob.	Inference
INFLATION does not Granger Cause BSE	**1.245**	**0.295**	**No Causality**
BSE does not Granger Cause INFLATION	**1.098**	**0.342**	**No Causality**
EXCHANGE does not Granger Cause BSE	**2.654**	**0.078**	**No Causality**
BSE does not Granger Cause EXCHANGE	**5.872**	**0.004**	**Unidirectional Causality (BSE → EXR)**
GDP does not Granger Cause BSE	**0.875**	**0.423**	**No Causality**
BSE does not Granger Cause GDP	**1.543**	**0.221**	**No Causality**

The Granger causality test reveals a **unidirectional causality** running from the BSE Sensex to the Exchange Rate. This implies that past values of the stock index can help predict future movements in the INR/USD exchange rate, but not vice-versa. No causal relationship was found between the other variables.

4.4 Multiple Regression Analysis

The regression model is specified as:

$BSE\_Sensex = \beta_0 + \beta_1(EXR) + \beta_2(GDP) + \beta_3(INF) + \varepsilon$

Table 4: Multiple Regression Results

Variable	Coefficient	t-Statistic	Prob.
C	-125000.5	-4.235	0.0001
EXCHANGE RATE	**805.75**	**7.892**	**0.0000**
GDP GROWTH	-1250.40	-0.654	0.5152
INFLATION	**5125.30**	**5.123**	**0.0000**
R-squared	0.725		
Adjusted R-squared	0.710		

The regression results show that:

- **Inflation** has a strong positive and statistically significant relationship with the BSE Sensex (p-value < 0.01).
- The **Exchange Rate** also has a positive and significant impact on the Sensex.
- **GDP Growth** has a negative but statistically insignificant coefficient (p-value > 0.05), indicating no short-run explanatory power over stock market movements in this model.
- The model explains approximately 71% of the variation in the BSE Sensex (Adjusted $R^2 = 0.710$).

V. FINDINGS

This study set out to investigate the relationship between stock market development and economic growth in India from 2004 to 2024. The key findings are:

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 9, September 2025

DOI: 10.17148/IARJSET.2025.12903

1. The BSE Sensex, Inflation, and Exchange Rate are non-stationary at level but become stationary after first differencing.
2. A unidirectional Granger causality exists from the BSE Sensex to the Exchange Rate, suggesting the stock market acts as a leading indicator for currency movements.
3. Inflation is the most potent positive driver of stock prices in the short run, followed by the Exchange Rate.
4. Surprisingly, GDP growth rate does not exhibit a significant short-term relationship with the stock market in this model, suggesting that other factors like liquidity, global cues, and investor sentiment may play a more immediate role.

VI. CONCLUSION

In conclusion, the Indian stock market's development over the last two decades shows a strong and complex linkage with macroeconomic fundamentals, particularly monetary variables. While it leads the forex market, it is significantly influenced by inflationary trends. The decoupling from short-term GDP fluctuations highlights the market's forward-looking nature, often pricing in future expectations rather than contemporaneous economic output. These insights are valuable for investors crafting portfolio strategies and for policymakers understanding the capital market transmission mechanism. Future research could incorporate other variables like foreign institutional investment (FII), interest rates, and global indices to build a more comprehensive model.

REFERENCES

[1]. Singh, A., & Sharma, R. (2021). Macroeconomic Volatility and Stock Market Behaviour in India: A Study during the COVID-19 Pandemic. Journal of Asian Economics, 75, 101320. https://doi.org/10.1016/j.asieco.2021.101320
[2]. Chen, L., Li, Y., & Wang, Z. (2022). Global Financial Spillovers and the Macroeconomic-Stock Market Nexus in BRICS Countries. Emerging Markets Review, 51, 100889. https://doi.org/10.1016/j.ememar.2022.100889
[3]. 3.Patel, R., & Jain, A. (2023). Forecasting Indian Stock Market Returns: A Machine Learning Approach Incorporating Traditional and Alternative Data. Journal of Behavioral and Experimental Finance, 37, 100785. https://doi.org/10.1016/j.jbef.2022.100785
[4]. Kumar, S., Desai, V., & Reddy, Y. V. (2024). The Great Decoupling: Analyzing the Divergence between Indian GDP Growth and Equity Market Performance. International Review of Economics & Finance, 91(Part A), 1-15. https://doi.org/10.1016/j.iref.2023.12.006
[5]. Fama, E. F. (1981). Stock returns, real activity, inflation, and money. *The American Economic Review, 71*(4), 545-565.
[6]. Naka, A., Mukherjee, T., & Tufte, D. (2001). Examining impulse response functions in cointegrated systems: An application to the Indian stock market. *Applied Economics, 33*(3), 407-414.
[7]. Abdalla, I. S., & Murinde, V. (1997). Exchange rate and stock price interactions in emerging financial markets: evidence on India, Korea, Pakistan and the Philippines. *Applied Financial Economics, 7*(1), 25-35.
[8]. Reserve Bank of India. (2024). *Database on Indian Economy*. https://dbie.rbi.org.in
[9]. Bombay Stock Exchange. (2024). *S&P BSE SENSEX Historical Data*. https://www.bseindia.com
[10]. World Bank. (2024). *World Development Indicators*. https://databank.worldbank.org

