



# A Study on the Impact of Macroeconomic Indicators on the Indian Stock Market, with Special Reference to BSE Bankex and Nifty Bank Index

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## ABSTRACT

This study investigates the influence of macroeconomic indicators—interest rates, inflation, GDP growth, and exchange rates—on the performance of the Indian banking sector, particularly the BSE Bankex and Nifty Bank Index. The research utilizes historical data from 2010 to 2024, employing statistical techniques such as correlation analysis, regression models, and Granger causality tests to evaluate these relationships. The findings indicate that GDP growth has a strong positive correlation with banking stock indices, reflecting that economic expansion enhances banking stock performance. Exchange rate fluctuations also exhibit a significant positive influence, underlining the role of currency valuation in shaping banking stock trends. Conversely, inflation demonstrates a moderate negative correlation with banking stocks, suggesting that inflationary pressures negatively impact financial performance. Interest rates show a weak inverse relationship with banking stock returns, implying a limited but negative impact of monetary policy decisions on banking sector performance. The study highlights the crucial role of macroeconomic stability in shaping stock market trends and provides valuable insights for investors, policymakers, and financial analysts to formulate effective economic and investment strategies.

**Keywords:** Macroeconomic Indicators, Stock Market, Banking Sector, BSE Bankex, Nifty Bank Index

## INTRODUCTION

The stock market is a key indicator of a nation's economic health, reflecting investor sentiment, economic stability, and growth potential. In India, the banking sector plays a crucial role in economic expansion by facilitating credit distribution, financial intermediation, and capital formation. Given its significance, banking stock performance is closely linked to macroeconomic conditions. This study examines the impact of key macroeconomic variables interest rates, inflation, GDP growth, and exchange rates on the BSE Bankex and Nifty Bank Index from 2010 to 2024. Interest rates set by the Reserve Bank of India (RBI) influence borrowing costs and banking profitability, with higher rates dampening credit demand and lower rates stimulating lending. Inflation affects banking margins and loan defaults, while GDP growth drives credit demand and financial stability. Exchange rate fluctuations impact foreign investments and banking sector exposure to currency risks. By analyzing historical trends, this study aims to uncover the relationship between these macroeconomic indicators and banking stock movements, offering valuable insights for investors, policymakers, and analysts. A clearer understanding of these dynamics can lead to more informed investment decisions, better financial regulations, and improved economic planning, ensuring sustainable growth in India's banking sector.

## REVIEW OF LITERATURE

**Satyendra Kushwaha (2024)** This study analyzes the impact of GDP per capita and economic growth on the BSE index from 1980 to 2022 using a multiple regression model. Findings reveal a strong positive correlation between GDP per capita and the BSE, while economic growth has a weaker influence. The model explains 83.4% of BSE index variations, emphasizing the significant role of these factors in stock market performance.

**Vaibhav V Desai (2024)** examines the impact of macroeconomic variables on the NIFTY Index from 2006 to 2016 using correlation and regression analysis. It finds that industrial production, exchange rate, interest rate, and gold price significantly affect CNX-NIFTY, while GDP growth, inflation, and crude oil price have a moderate impact. The study confirms that macroeconomic factors play a crucial role in shaping the Indian stock market.

**Saravanan. R, Dr. E. Muthukumar, R. Meena, S. Mahalakshmi, Nisha. K.G (2024)** examines the impact of macroeconomic variables on the NSE's Nifty 50 index from 2018 to 2022. It focuses on exchange rate, gold price, inflation, interest rate, and Nifty 50. Using statistical tools like descriptive statistics, the Augmented Dickey-Fuller (ADF) test, correlation analysis, and Granger causality test, the study analyzes these relationships. Findings show

that some variables are normally distributed and stationary, while others are skewed and non-stationary. Correlation analysis reveals significant relationships with the Nifty 50, and the Granger causality test shows bidirectional causality between the Nifty 50 and inflation, with no causality from the exchange rate, gold price, or interest rate.

**Dr P V Gurunath Reddy, Galla Venkataswamy & Battana Hari (2023)** examines the effects of fundamental factors—specifically interest rate risk, counterparty risk, and regulatory risk—on the share price movement of the top five performing public sector banks in India: SBI, Canara Bank, Union Bank of India, Punjab National Bank, and Bank of Baroda. The study highlights the significance of these factors amidst the backdrop of a declining GDP, which fell to 6.0 percent for Q1 FY23, indicating a slowdown in the domestic economy. The research employs a quantitative analysis approach to assess the influence of the identified risks on stock prices. The findings suggest that interest rate risk, counterparty risk, and regulatory risk significantly impact share prices, with a particular emphasis on interest rate risk as the most influential factor. The study underscores the importance of long-term investors focusing on fundamental analysis to make informed investment decisions during the ongoing economic slowdown in FY23.

**Satyendra Kushwaha, Sarad Chandra Kafle, Baburam Khanal (2023)** focuses on examining the impact of GDP and inflation on the Indian stock market, specifically the Bombay Stock Exchange (BSE). The study uses annual data from 1980 to 2021 and applies a multiple regression model to analyze the relationship between the BSE index and the macroeconomic variables, GDP and inflation. The results indicate a strong positive correlation between GDP and the BSE index, with a 1% increase in GDP leading to a 17.08% rise in the BSE index. Conversely, inflation shows a moderate negative correlation, where a 1% increase in inflation causes a 2.17% decline in the BSE index. The regression model explains 88.5% of the variation in the BSE index, highlighting the significant impact of these variables.

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## OBJECTIVE OF THE STUDY

- To identify and examine the nature of relationship between interest rate and its impact on stock market index which includes BSE Bankex and Nifty Bank index
- To study the impact of inflation on BSE Bankex and Nifty Bank Index
- To study the relationship between BSE Bankex and Nifty Bank Index with to Gross Domestic Product.
- To study the association between exchange rate and stock market returns of BSE Bankex and Nifty Bank Index

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## STATEMENT OF THE PROBLEM

Stock market is a reflection of the economic condition of the country. Performance of the stock market indicates the prosperous or weakening of the country's economy. Stock market now attracts many investors in terms of returns. These returns in the stock market are influenced by many factors. This study is an attempt to investigate the impact of Macroeconomic variables like Inflation, Interest rate, GDP and Exchange rate of Indian Rupee toward Dollar on the sectoral stock indices of Nifty Bank Index and BSE Bankex.

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## RESEARCH METHODOLOGY

### *Scope of study*

This study analyzes the impact of macroeconomic factors—GDP, interest rates, inflation, and exchange rates—on the performance of BSE Bankex and Nifty Bank Index from 2010 to 2024. Focusing on both public and private sector banks, it examines stock returns, volatility, and trading volume to understand how economic indicators influence market trends. The study offers insights for investors, policymakers, and analysts in making informed financial decisions.

### *Sources of data*

The source of data for this study is Secondary data. In the study, Macroeconomic variables such as Inflation rate, Interest rate, GDP and Exchange rate of Indian Rupee toward US Dollar are taken as Independent variables; and Nifty Bank Index and BSE Bankex stock indices are taken as Dependent variables. Annual Inflation rate in India is collected from World Bank Database. Bank rate of RBI is collected from the RBI Database. Annual average Exchange rate of Indian Rupee toward US Dollar is collected from International Financial Statistics. Index closing price of Nifty Bank Index and BSE Bankex is collected from NSE and BSE Website respectively.

### *Period of the Study*

The study is conducted for a period of fifteen years starting from 2010 to 2024.

### *Research design*

The analytical research method has been employed to examine the impact of macroeconomic factors—interest rates, inflation, GDP growth, and exchange rates—on the stock market performance of BSE Bankex and Nifty Bank Index. This method focuses on evaluating historical data to identify trends, relationships, and the extent to which these variables influence banking sector stock performance.

trends, relationships, and the extent to which these variables influence banking sector stock movements. It involves systematically analyzing annual data from 2010 to 2024 to assess market behaviour, investor sentiment, and financial stability. The analytical approach helps provide a structured and objective assessment of how macroeconomic conditions shape stock market performance, offering valuable insights for investors, policymakers, and financial analysts.

### STATISTICAL TOOL

- Descriptive statistics
- Unit root test
- Correlation
- Regression
- Granger Causality

## RESULTS AND DISCUSSION

### Descriptive statistics

Table 1 – Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BSE Bankex	15	9153.39	57741.99	29642.9393	15642.60796	.492	.580	-.920	1.121
Nifty Bank Index	15	7968.65	51060.60	26108.4233	13852.18788	.502	.580	-.886	1.121
GDP	15	7634472.00	18795095.00	12838816.53	3311773.306	.172	.580	-.793	1.121
Exchange Rate	15	44.65	85.56	66.7233	12.76265	-.356	.580	-.780	1.121
Inflation Rate	15	3.33	11.99	6.4833	2.54589	.855	.580	-.088	1.121
Interest Rate	15	3.07	8.50	6.0993	1.60583	-.389	.580	-.518	1.121
Valid N (listwise)	15								

### INTERPRETATION

The table shows the descriptive statistics of the variables. The average BSE Bankex is 29,642.93, with a standard deviation of 15,642.61. The minimum recorded value is 9,153.39, and the maximum is 57,741.99. The mean Nifty Bank Index is 26,108.42, with a standard deviation of 13,852.19, ranging from 7,968.65 to 51,060.60. The average GDP is 12,838,816.53 crores, with a standard deviation of 3,311,773.31 crores, ranging from 7,634,472.00 crores to 18,795,095.00 crores. The Exchange Rate has a mean of 66.72 and a standard deviation of 12.76, with values ranging from 44.65 to 85.56. The Inflation Rate averages 6.48%, with a standard deviation of 2.54%, fluctuating between 3.33% and 11.99%. The Interest Rate has a mean of 6.10% and a standard deviation of 1.61%, with a minimum of 3.07% and a maximum of 8.50%.

### Unit root test

Table -2 Unit root test

VARIABLES	LEVEL		FIRST DIFFERENCE	
	t-statistic	P Value	t-statistic	P Value
BSE Bankex	-3.082408	0.1474	-5.526006	0.0076
Nifty Bank Index	-3.011656	0.1633	-4.899034	0.0163
Exchange Rate	-2.447641	0.3437	-5.609626	0.0035
GDP	0.399072	0.9748	-3.161175	0.0466
Inflation Rate	-2.020861	0.5411	-4.738003	0.0126
Interest Rate	-3.395587	0.0924	-4.647082	0.0144

**INTERPRETATION**

**Null Hypothesis (H<sub>0</sub>)** – There is a unit root for the given variables, indicating non-stationarity.

**Alternative Hypothesis (H<sub>1</sub>)** – There is no unit root for the given variables, indicating stationarity

The result obtained from the ADF test shows that based on the p-values at the level (all greater than 0.05), the null hypothesis is accepted, and the alternative hypothesis is rejected. This indicates that all the variables have unit roots at the level, meaning they are non-stationary. Since there is a unit root at the level, the same test is performed for the first difference values. The obtained p-values at the first difference (all less than 0.05) indicate that the null hypothesis is rejected, and the alternative hypothesis is accepted. Hence, it is concluded that all the variables are stationary at their 1st differenced level.

**Correlation Analysis:****Table 3 – Correlation between Variables**

		<b>GDP</b>	<b>Exchange Rate</b>	<b>Inflation Rate</b>	<b>Interest Rate</b>
<b>BSE Bankex</b>	<b>Pearson Correlation</b>	.972**	.938**	-.538*	-.263
	<b>Sig. (2-tailed)</b>	.000	.000	.039	.343
	<b>N</b>	15	15	15	15
<b>Nifty Bank Index</b>	<b>Pearson Correlation</b>	.973**	.937**	-.540*	-.258
	<b>Sig. (2-tailed)</b>	.000	.000	.038	.353
	<b>N</b>	15	15	15	15

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**INTERPRETATION**

The above table indicates the correlation between independent variables and dependent variables. The relationship between Inflation rate and Nifty Bank Index is negative and significant; the relationship between Exchange rate and Nifty Bank Index is highly positive and significant; and the relationship between Interest rate and Nifty Bank Index is negative but not significant. Inflation rate and BSE Bankex are negatively correlated and significant; Exchange rate and BSE Bankex are positively correlated and highly significant; and Interest rate and BSE Bankex are negatively correlated but not significant. GDP and both indices (BSE Bankex and Nifty Bank Index) show a highly positive and significant correlation.

**Regression Analysis:****Regression analysis of BSE Bankex and Macroeconomic variables:**

**Null Hypothesis (H<sub>0</sub>)** – There is no significant effect of macroeconomic variables on BSE Bankex.

**Alternative Hypothesis (H<sub>1</sub>)** – There is a significant effect of macroeconomic variable on BSE Bankex

**Table 4 Regression analysis of BSE Bankex and Macroeconomic Variables**

<b>MODEL SUMMARY</b>				
<b>R<sup>2</sup></b>	<b>ADJUSTED R<sup>2</sup></b>	<b>DURBIN WATSON STATISTIC</b>	<b>F-STATISTIC</b>	<b>PROB.(F-STATISTIC)</b>
0.972377	0.961327	2.582138	88.00287	0.00000
<b>COEFFICIENT TABLE</b>				
<b>VARIABLE</b>	<b>COEFFICIENT</b>	<b>STD. ERROR</b>	<b>T- STATISTIC</b>	<b>P VALUE</b>
C	-50065.65	11522.47	-4.345044	0.0015
GDP	0.004824	0.000978	4.932246	0.0006

Exchange Rate	131.9102	265.9612	0.495976	0.6306
Inflation Rate	1394.012	471.0068	2.959643	0.0143
Interest rate	-11.457	554.943	-0.020645	0.9839

#### INTERPRETATION

The regression analysis shows that GDP and inflation significantly impact BSE Bankex, with p-values of 0.0006 and 0.0143, meaning they strongly influence the index. However, exchange rate and interest rate do not have a significant effect, as their p-values are much higher (0.6306 and 0.9839). The model explains 96.13% of the variation in BSE Bankex, and the F-statistic confirms a good fit for the model, indicating reliable results..

#### *Regression analysis of Nifty Bank Index and Macroeconomic variables:*

**Null Hypothesis (H<sub>0</sub>)** – There is no significant effect of macroeconomic variables on Nifty Bank Index.

**Alternative Hypothesis (H<sub>1</sub>)** – There is a significant effect of macroeconomic variable on Nifty Bank Index.

**Table 5 Regression analysis of Nifty Bank Index and Macroeconomic variables**

MODEL SUMMARY				
R <sup>2</sup>	ADJUSTED R <sup>2</sup>	DURBIN WATSON STATISTIC	F-STATISTIC	PROB.(F-STATISTIC)
0.973181	0.962453	2.539697	90.71692	0.00000
COEFFICIENT TABLE				
VARIABLE	COEFFICIENT	STD. ERROR	T- STATISTIC	P VALUE
C	-44214.59	10054	-4.397713	0.0013
GDP	0.00435	0.000853	5.096726	0.0005
Exchange Rate	95.87746	232.0659	0.413148	0.6882
Inflation Rate	1218.333	410.9795	2.964461	0.0142
Interest rate	29.38909	484.2185	0.060694	0.9528

#### INTERPRETATION

The regression results show that GDP (p = 0.0005) and inflation rate (p = 0.0142) significantly impact the Nifty Bank Index, while exchange rate (p = 0.6882) and interest rate (p = 0.9528) are not significant. The model explains 96.25% of the variation (Adjusted R<sup>2</sup> = 0.9625), and the F-statistic (90.72, p < 0.001) confirms a strong model fit.

#### *Granger Causality Test*

**Null Hypothesis (H<sub>0</sub>)** – The independent variable does not Granger-cause the dependent variable.

**Alternative Hypothesis (H<sub>1</sub>)** – The independent variable Granger-causes the dependent variable

**Table 6 Granger Causality test of Nifty Bank Index and Macroeconomic factors**

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause GDP	14	4.55322 449.329	0.0562 3.E-10
INFLATION_RATE does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause INFLATION_RATE	14	8.00030 0.95717	0.0164 0.3489
INTEREST_RATE does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause INTEREST_RATE	14	13.7705 38.4148	0.0034 7.E-05
NIFTY_BANK_INDEX does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause NIFTY_BANK_INDEX	14	5.12891 0.13865	0.0447 0.7167
INFLATION_RATE does not Granger Cause GDP GDP does not Granger Cause INFLATION_RATE	14	1.01011 0.45142	0.3365 0.5155
INTEREST_RATE does not Granger Cause GDP GDP does not Granger Cause INTEREST_RATE	14	5.93279 1.59944	0.0331 0.2321
NIFTY_BANK_INDEX does not Granger Cause GDP GDP does not Granger Cause NIFTY_BANK_INDEX	14	13.1138 0.35008	0.0040 0.5660
INTEREST_RATE does not Granger Cause INFLATION_RATE INFLATION_RATE does not Granger Cause INTEREST_RATE	14	0.55546 2.78633	0.4717 0.1233
NIFTY_BANK_INDEX does not Granger Cause INFLATION_RATE INFLATION_RATE does not Granger Cause NIFTY_BANK_INDEX	14	2.51233 0.89658	0.1413 0.3640
NIFTY_BANK_INDEX does not Granger Cause INTEREST_RATE INTEREST_RATE does not Granger Cause NIFTY_BANK_INDEX	14	4.90311 0.93451	0.0489 0.3545

**INTERPRETATION**

The Granger causality test reveals several directional relationships among the macroeconomic variables and the Nifty Bank Index. Unidirectional causality is observed from the exchange rate to GDP, from the inflation rate to the exchange rate, from the interest rate to GDP, from the Nifty Bank Index to the exchange rate, from the Nifty Bank Index to GDP, and from the Nifty Bank Index to the interest rate, indicating that changes in these variables help predict movements in their respective dependent variables. Bidirectional causality is found between interest rate and exchange rate, showing mutual influence. However, no causality is observed between inflation rate and GDP, interest rate and inflation rate, and Nifty Bank Index and inflation rate, suggesting no predictive relationship between these pairs. These findings highlight the varying degrees of influence among macroeconomic variables and the banking sector index.

**Table 7 Granger Causality test of BSE Bankex and Macroeconomic factors**

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCHANGE_RATE does not Granger Cause BSE_BANKEX BSE_BANKEX does not Granger Cause EXCHANGE_RATE	14	0.00704 4.97177	0.9347 0.0475
GDP does not Granger Cause BSE_BANKEX BSE_BANKEX does not Granger Cause GDP	14	0.09628 14.0826	0.7621 0.0032
INFLATION_RATE does not Granger Cause BSE_BANKEX BSE_BANKEX does not Granger Cause INFLATION_RATE	14	1.11694 2.76904	0.3132 0.1243
INTEREST_RATE does not Granger Cause BSE_BANKEX BSE_BANKEX does not Granger Cause INTEREST_RATE	14	0.47595 5.38532	0.5046 0.0405
GDP does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause GDP	14	4.55322 449.329	0.0562 3.E-10
INFLATION_RATE does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause INFLATION_RATE	14	8.00030 0.95717	0.0164 0.3489
INTEREST_RATE does not Granger Cause EXCHANGE_RATE EXCHANGE_RATE does not Granger Cause INTEREST_RATE	14	13.7705 38.4148	0.0034 7.E-05
INFLATION_RATE does not Granger Cause GDP GDP does not Granger Cause INFLATION_RATE	14	1.01011 0.45142	0.3365 0.5155
INTEREST_RATE does not Granger Cause GDP GDP does not Granger Cause INTEREST_RATE	14	5.93279 1.59944	0.0331 0.2321
INTEREST_RATE does not Granger Cause INFLATION_RATE INFLATION_RATE does not Granger Cause INTEREST_RATE	14	0.55546 2.78633	0.4717 0.1233

**INTERPRETATION**

The Granger causality results indicate unidirectional causality from BSE Bankex to exchange rate, GDP, and interest rate. There is no causality between inflation and BSE Bankex. A unidirectional relationship also exists from exchange rate to GDP, inflation to exchange rate, and interest rate to GDP. Bidirectional causality is observed between interest rate and exchange rate. No causality is found between inflation and GDP, or between interest rate and inflation. These findings reveal how macroeconomic factors and banking indices influence each other in specific directions..

**FINDINGS**

- The ADF test results show that all variables are non-stationary at level ( $p > 0.05$ ) but become stationary at their first difference ( $p < 0.05$ ), indicating they are integrated of order one, I(1).
- There is a strong positive correlation (0.972) between BSE Bankex and GDP, indicating that the performance of banking sector stocks tends to improve with economic growth.
- A strong positive correlation (0.938) exists between BSE Bankex and the exchange rate, suggesting that fluctuations in the exchange rate are closely associated with upward movements in banking stocks.
- The correlation between BSE Bankex and inflation rate is moderately negative (-0.538), implying that higher inflation generally leads to a decline in the banking sector's stock performance.
- A weak negative correlation (-0.263) is observed between BSE Bankex and interest rates, indicating that increases in interest rates may slightly dampen banking stock performance.
- A strong positive correlation (0.973) between Nifty Bank Index and GDP shows that banking stocks perform better in times of economic expansion.
- The correlation between Nifty Bank Index and exchange rate is strongly positive (0.937), meaning that changes in the exchange rate positively influence banking sector stock prices.

- A moderate negative correlation (-0.540) exists between the Nifty Bank Index and inflation rate, suggesting that rising inflation adversely affects banking stock performance.
- A weak negative correlation (-0.258) between Nifty Bank Index and interest rates indicates that increases in interest rates may have a slight downward effect on banking stocks.
- The regression analysis reveals that GDP and inflation significantly influence BSE Bankex ( $p = 0.0006$  and  $0.0143$ ), while exchange rate and interest rate have no significant effect; the model demonstrates a strong fit, explaining 96.13% of the variation.
- The regression analysis indicates that GDP and inflation significantly impact the Nifty Bank Index ( $p = 0.0005$  and  $0.0142$ ), while exchange rate and interest rate show no significant effect; the model explains 96.25% of the variation, confirming a strong and reliable fit.
- The Granger Causality Test reveals several unidirectional causal relationships: Exchange Rate causes GDP, Inflation causes Exchange Rate, Interest Rate causes GDP, Nifty Bank Index causes Exchange Rate, GDP, and Interest Rate. Bidirectional causality exists between Exchange Rate and Interest Rate, while no causality is found between GDP–Inflation, Inflation–Interest Rate, Inflation–Nifty Bank Index, and Exchange Rate–Nifty Bank Index.
- The Granger Causality Test for BSE Bankex and macroeconomic factors reveals unidirectional causality from BSE Bankex to Exchange Rate, GDP, and Interest Rate, while no causality is found with Inflation. Additionally, Exchange Rate causes GDP, Inflation causes Exchange Rate, and Interest Rate causes GDP, with bidirectional causality observed between Exchange Rate and Interest Rate. No causality is found between GDP–Inflation, Interest Rate–Inflation, and GDP–Exchange Rate in the reverse directions, indicating selective causal linkages.

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## SUGGESTIONS

- Investors should monitor key macroeconomic indicators like GDP, inflation, interest rates, and exchange rates, as they significantly impact banking stock performance.
- Focusing on long-term investments in fundamentally strong banks is advisable, as GDP growth positively influences banking indices.
- During high inflation periods, investors should exercise caution and consider diversifying to reduce risks affecting banking stocks.
- Understanding interest rate movements is essential, as they influence bank profitability and credit demand, albeit to a lesser extent.
- Staying informed on exchange rate fluctuations helps manage risks, as currency changes can affect foreign investment flows in banking stocks.

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## CONCLUSION

This study examines the impact of key macroeconomic factors—GDP growth, inflation, interest rates, and exchange rates—on the performance of banking stocks in India, specifically the BSE Bankex and Nifty Bank Index from 2010 to 2024. Using data from RBI, BSE, and NSE, and employing correlation, regression, and Granger causality tests, the analysis reveals that GDP has a strong positive influence on banking stock performance, while inflation shows a moderate negative impact. Interest rates and exchange rates do not have a statistically significant effect. Granger causality results indicate unidirectional relationships where exchange rates influence GDP, inflation affects exchange rates, and banking indices predict GDP and interest rates. The study highlights the importance of GDP growth and inflation control for the stability of the banking sector, offering useful insights for investors, policymakers, and future research.

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