



## A STUDY ON IMPACT OF MACRO ECONOMIC VARIABLES ON INDIAN STOCK MARKET

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### **Abstract:**

The stock market is a platform where investors allocate their capital in hopes of earning returns. However, stock markets are influenced by various micro and macroeconomic variables. This study focuses on the impact of specific macroeconomic variables—namely, the exchange rate, GDP, and the Index of Industrial Production (IIP)—on the Indian stock market, represented by the Nifty 50 index. This research is exploratory in nature and utilizes secondary data for analysis. The study employs correlation and regression analysis tools to examine the relationships between the selected macroeconomic variables and the Nifty 50 index. The findings reveal that the exchange rate and GDP are more positively correlated with the Nifty 50 index, whereas the IIP shows a weaker correlation. Furthermore, the study concludes that these macroeconomic variables significantly impact the Indian stock market. Based on these findings, it is recommended that investors consider these macroeconomic factors when making investment decisions, as they play a crucial role in influencing stock market performance.

**Keywords:** Exchange rate, GDP and IIP

### **Introduction of the study:**

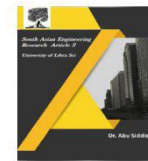
The stock market is a platform where individuals can invest in various financial instruments, including shares, bonds, futures, and derivatives. Regardless of one's investment preferences, the stock market provides a wide range of options and significant opportunities for profit. However, it is important to understand how the market operates to make informed investment decisions.

Macroeconomics is the study of the overall behavior of a national or regional economy.

### **Need of the study:**

It aims to understand large-scale economic events, such as the total production of goods and services, unemployment levels, and general price trends. To analyze these broad economic dynamics, macroeconomists use not only microeconomic tools like supply-and-demand analysis but also aggregate measures such as Gross Domestic Product (GDP), unemployment rates, and the Consumer Price Index (CPI). These tools help in assessing the wide-ranging effects of decisions made at the micro level.

The need for this study arises from the necessity to understand how fluctuations in



key macroeconomic variables—specifically, the exchange rate, Index of Industrial Production (IIP), and Gross Domestic Product (GDP)—impact the Indian stock market. By analyzing these relationships, the study aims to provide insights into how these economic factors influence market

**Scope of the study:**

The scope of this study is focused on analyzing the relationship between the Nifty 50 index and three key macroeconomic variables: the exchange rate, Index of Industrial Production (IIP), and Gross Domestic Product (GDP). The study is

#### Objectives of the study

- To study the concept of macroeconomic variables
- To examine the relationship between the selected macroeconomic variables and the Nifty 50 index
- To analyze the impact of the selected macroeconomic variables on the Nifty 50 index

#### Research and methodology:

Nature of the study: The study is based on the Exploratory analysis were used

#### Tools and techniques

##### Correlation

**Correlation** refers to a process for establishing the relationships between two variables. You learned a way to get a general idea about whether or not two variables are related, is to plot them on a “scatter plot”. While there are many measures of

performance, helping investors make more informed decisions. Understanding the correlation between these variables and the Nifty 50 index is crucial for anticipating market trends and managing investment risks in a dynamic economic environment.

specifically limited to data from the last six months, covering the period from January 2024 to June 2024. By narrowing the scope to this timeframe and these specific variables, the study aims to provide a detailed understanding of the short-term impacts of these economic factors on the Nifty 50 index.

#### Sources of data:

Secondary data were used for the research and it has been collected from NSE website, RBI Data base

**Nature of the study:** the study is based on exploratory research

**Sources of data:** the data has been collated from the secondary sources like different websites (i.e. NSE, RBI)

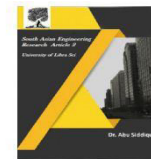
**Study period:** the study period is only 6 months (i.e. JAN to JUNE 2024)

Number of variable: GDP, IIP, Exchange rate and Nifty 50 Index

association for variables which are measured at the ordinal or higher level of measurement, correlation is the most commonly used approach.

Correlation Coefficient Formula

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$



## Regression analysis

Regression is a statistical technique that relates a dependent variable to one or more independent variables. A regression model is

## Limitations of the study:

The study is confined to examining the selected macroeconomic variables—exchange rate, Index of Industrial Production (IIP), and Gross Domestic

Product (GDP)—and is exclusively focused on the Nifty 50 index. It does not consider other economic indicators, stock market indices, or broader market variables, thus providing a targeted analysis within these specific parameters.

## Review of literature:

**Sarika Keswani and Bharti Wadhwa (2019)** conducted a study evaluating the influence of macroeconomic variables on the Indian stock market. Their research focused on the effects of factors such as disposable income, interest rates, government policies, inflation, and exchange rates on the performance of securities in the NSE and BSE. The study utilized methods like the ADF test, correlation analysis, multiple regression, and Granger causality tests to examine the relationships between these variables.

**Megaravalli (2018)** investigated the long- and short-term relationships between macroeconomic variables and stock markets in three major Asian countries: India, China, and Japan. This study focused on exchange rates and inflation, employing the Unit root test, Co-integration test, Granger causality test, and pooled mean group estimator to conduct the analysis.

**Chandrasekhar (2018)** explored the connection between macroeconomic

variables and stock markets in India and Brazil. The study analyzed variables such as the Index of Industrial Production (IIP), consumer price index as a proxy for inflation (INF), lending rate as a proxy for interest rate (LR), and the Real Effective Exchange Rate (REER) as a proxy for exchange rates.

**Amith Vikram Megaravalli and Gabriele Sampagnaro (2018)** conducted a study on macroeconomic indicators and their impact on stock markets in three major Asian countries using a Pooled Mean Group Approach. The research applied the Unit root test, Co-integration test, Granger causality test, and pooled mean group estimator to understand the long- and short-term dynamics.

**Aniruddha Das (2017)** examined the relationship between macroeconomic variables and the stock market in India. The study considered four variables: exchange rate, foreign institutional investment, call money rate, and consumer price index, to assess their impact on the Indian Stock Exchange.

**Ms. Aanchal (2017)** studied the effect of macroeconomic variables on the growth of the Indian stock market, analyzing factors like GDP, inflation, exports, imports, and market indices of CNX Nifty 50.

**Priyanka Aggarwal and Najia Saqib (2017)** explored the impact of various variables, including FIX, exchange rate, gold price, fiscal deficit, IP, and inflation measured by WPI, as well as U.S. interest rates, U.S. inflation, and U.S. GDP on the Indian stock market

### Data analysis and interpretation:

#### Table of NIFTY AND GDP

Months	Nifty 50 Index	GDP
Jan	21725.7	6.1
Feb.	21982.8	6.1
Mar	22326.9	6.1
Apr.	22604.85	6.5
May	22530.7	6.5
Jun	24010.6	6.5

#### Correlation between Nifty 50 Indexes vs. GDPs

	Nifty 50 Index	GDP
Nifty 50 Index	1	
GDP	0.711558	1

**Interpretation:** Based on the analysis, the data Reveals a positive correlation between the Nifty 50 index and GDP.

#### Regression summary of the Nifty 50 Index vs GDP

H (0): There is no significant impact between Nifty 50 index vs GDP

H (1): there is a significant impact between Nifty 50 index vs GDP

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.630933							
R Square	0.398076							
Adjusted R Square	0.197435							
Standard Error	695.1692							
Observations	5							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	958797.1	958797.1	1.984018	0.253719			
Residual	3	1449781	483260.3					
Total	4	2408578						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	8523.383	10063.21	0.846985	0.459222	-23502.2	40549.01	23502.2	40549.01
6.1	2234.667	1586.499	1.408552	0.253719	-2814.28	7283.616	2814.28	7283.616

**Interpretation:** the analysis indicates a statistically significant positive relationship between GDP and the Nifty 50 index,

supporting the hypothesis that changes in GDP have a meaningful effect on stock market performance

**Table of NIFTY 50 INDEX AND IIP**

Months	Nifty 50 Index	IIP
Jan	21725.7	4.2
Feb	21982.8	5.6
mar	22326.9	5.4
Apr	22604.85	5
may	22530.7	5.9
Jun	24010.6	5.22

## Correlation between Nifty 50 Indexes vs. IIP

	Nifty 50 Index	IIP
Nifty 50 Index	1	
IIP	0.238649	1

**Interpretation:** The above analysis indicates a weaker correlation between the Nifty 50 index and the Index of Industrial Production (IIP).

## Regression summary of the Nifty 50 Index vs. IIP

H (0): There is no significant impact between Nifty 50 indexes vs. IIP

H(1) : there is a significant impact between Nifty 50 index vs. IIP

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.395349							
R Square	0.156301							
Adjusted R Square	-0.12493							
Standard Error	823.0259							
Observations	5							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	376463.2	376463.2	0.555771	0.510065			
Residual	3	2032115	677371.6					
Total	4	2408578						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	27497.1	6457.0	4.2584	0.0237	6947.775	48046.	6947.7	48046.

		85	39	46		43	75	43
		1188.5		0.5100		2896.3	-	2896.3
4.2	-886.049	3	-0.7455	65	-4668.48	83	4668.4	83
							8	

**Interpretation:** the analysis shows that weak negative correlation and non-significant F-value suggest that the IIP does

not have a strong or statistically significant effect on the Nifty 50 index.

## NIFTY AND EXCHANGE RATE

Months	Nifty 50 Index	Exchange rate
Jan	21725.7	83.11
Feb	21982.8	82.97
mar	22326.9	83.04
Apr	22604.85	83.41
may	22530.7	83.48
Jun	24010.6	83.57

### Correlation between Nifty 50 Index vs. Exchange rate

H (0): There is no significant relation between Nifty 50 index vs Exchange rate

H (1): there is a significant relation between Nifty 50 index vs Exchange rate

	Nifty 50 Index	Exchange rate
Nifty 50 Index	1	
Exchange rate	0.785834719	1

**Interpretation:** from the above analysis there is a positive correlation indicates that

the exchange rate has a meaningful impact on the Nifty 50 index.

### Regression summary of the Nifty 50 Index vs. Exchange rate

H (0): There is no significant impact between Nifty 50 index vs Exchange rate

H (1): there is a significant impact between Nifty 50 index vs Exchange rate

SUMMARY OUTPUT							

Regression Statistics								
Multiple R	0.770536							
R Square	0.593726							
Adjusted R Square	0.458302							
Standard Error	571.1223							
Observations	5							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	1430036	1430036	4.384184	0.127309			
Residual	3	978541.9	326180.6					
Total	4	2408578						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-160949	87705.11	1.83511	0.163833	-440066	118167.9	440066	118167.9
83.11032	2204.731	1052.958	2.093844	0.127309	-1146.25	5555.715	1146.25	5555.715

**Interpretation:** from the above analyses there is strong positive correlation and significant F-value support the conclusion

that the exchange rate significantly affects the Nifty 50 index.

### Findings:

- There is a positive correlation between the Nifty 50 index and GDP. The R value of 0.630933 indicates a moderate to strong positive relationship.

- There is a weaker positive correlation between the Nifty 50 index and the Index of Industrial Production (IIP). The R value of 0.395349 suggests a less significant relationship.
- There is a strong positive correlation between the Nifty 50 index and the



exchange rate. The R value of 0.770536

### **Suggestion:**

It is suggested that investors should pay close attention to macroeconomic variables when making investment decisions in the stock market. Specifically, monitoring factors such as GDP, the exchange rate, and

### **Conclusion:**

The study concludes that the stock market serves as an investment platform where investors seek returns. However, the performance of the stock market can be significantly influenced by various micro and macroeconomic variables. In this research, macroeconomic variables such as the exchange rate, GDP, and the Index of Industrial Production (IIP) were examined in relation to the Indian stock market index, the Nifty 50. This exploratory study utilized secondary data and employed correlation and regression analysis to investigate these

### **Further Research:**

For future research, it is suggested to expand the analysis by incorporating additional stock market indices, such as the Sensex, and exploring other macroeconomic variables, including gold prices and inflation rates. This broader approach could provide a

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the Index of Industrial Production (IIP) can provide valuable insights into market trends and potential impacts on stock market performance. Understanding these economic indicators can help investors make more informed decisions and better anticipate changes in the market.

relationships. The findings indicate that the exchange rate and GDP exhibit a strong positive correlation with the Nifty 50 index, whereas the IIP shows a weaker correlation. The study highlights that these macroeconomic variables have a notable impact on the Indian stock market. Therefore, it is recommended that investors consider these economic indicators when making investment decisions, as they significantly affect stock market performance. The study concludes that macroeconomic variables indeed influence the stock market index, underscoring their importance in investment strategies.

more comprehensive understanding of how various economic factors affect different aspects of the stock market. Including these variables could also help in identifying trends and patterns that might not be apparent when focusing on a single index or a limited set of macroeconomic factors.

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