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THE MACRO LENS: EXPLORING THE IMPACT OF
MACROECONOMIC VARIABLES ON INDIA'S SMALL CAP, MID
CAP, AND LARGE CAP INDICES

OBIEKTYW MAKRO: BADANIE WPŁYWU ZMIENNYCH
MAKROEKONOMICZNYCH NA INDEKSY MAŁYCH, ŚREDNICH
I DUŻYCH SPÓŁEK W INDIACH

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Abstract

Subject and Purpose of Work: This study explores the intricate relationship between key macroeconomic variables and India's equity market segments, specifically the NIFTY Small-cap, Mid-cap, and Large-cap indices. The primary objective is to evaluate how selected macroeconomic factors influence market dynamics and investor sentiment in the Indian context.

Materials and Methods: The research analyses monthly data spanning five years, from January 2019 to January 2024. The macroeconomic indicators considered include Foreign Institutional Investment (FII), Domestic Institutional Investment (DII), Consumer Price Index (CPI), Purchasing Managers' Index (PMI), Treasury Bill Rate, Gold Price, and Reverse Repo Rate. Statistical techniques such as the Unit Root Test, Ordinary Least Squares (OLS), and Granger Causality Test are employed to assess the short-term and long-term impacts of these variables on market indices.

Results: The findings reveal that GDP, CPI, PMI, and Gold Price exhibit no statistically significant influence on the NIFTY Small-cap, Mid-cap, or Large-cap indices, aligning with certain earlier studies. However, variables like FII, DII, Treasury Bill Rate, and Reverse Repo Rate show varying degrees of influence across the indices, highlighting the complex and segmented nature of the Indian equity market.

Conclusion: These insights are valuable for investors, policymakers, and financial analysts in refining investment strategies, informing policy frameworks, and enhancing market forecasting models. The study underscores the need for continuous evaluation of macroeconomic influences to better navigate market volatility and investor behaviour.

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Keywords: Gross Domestic Product, Foreign Institutional Investment, Domestic Institutional Investment, Consumer Price Index, Purchasing Managers' Index, Gold Price, Reverse Repo Rate, NIFTY Smallcap 50, NIFTY Midcap 50, NIFTY Largecap 50

Streszczenie

Przedmiot i cel pracy: Niniejsze badanie analizuje złożone relacje między kluczowymi zmiennymi makroekonomicznymi a segmentami rynku akcji w Indiach, a konkretnie indeksami NIFTY Small-cap, Mid-cap i Large-cap. Głównym celem jest ocena wpływu wybranych czynników makroekonomicznych na dynamikę rynku i nastroje inwestorów w kontekście indyjskim.

Materiały i metody: W badaniu przeanalizowano dane miesięczne z pięciu lat, od stycznia 2019 r. do stycznia 2024 r. Uwzględniono następujące wskaźniki makroekonomiczne: zagraniczne inwestycje instytucjonalne (FII), krajowe inwestycje instytucjonalne (DII), wskaźnik cen towarów i usług konsumpcyjnych (CPI), wskaźnik menedżerów ds. zakupów (PMI), stopę bonów skarbowych, cenę złota oraz stopę odwrotnego repo. W celu oceny krótko- i długoterminowego wpływu tych zmiennych na indeksy rynkowe zastosowano techniki statystyczne, takie jak test pierwiastka jednostkowego, metoda najmniejszych kwadratów (OLS) oraz test przyczynowości Grangera.

Wyniki: Wyniki badań wskazują, że PKB, CPI, PMI i cena złota nie mają statystycznie istotnego wpływu na indeksy NIFTY Small-cap, Mid-cap lub Large-cap, co jest zgodne z niektórymi wcześniejszymi badaniami. Jednak zmienne takie jak FII, DII, stopa bonów skarbowych i stopa repo odwrotnego wykazują różny stopień wpływu na poszczególne indeksy, co podkreśla złożony i podzielony charakter indyjskiego rynku akcji.

Wnioski: Te spostrzeżenia są cenne dla inwestorów, decydentów politycznych i analityków finansowych przy udoskonalaniu strategii inwestycyjnych, kształtowaniu ram polityki i ulepszaniu modeli prognozowania rynku. Badanie podkreśla potrzebę ciągłej oceny wpływów makroekonomicznych, aby lepiej radzić sobie z zmiennością rynku i zachowaniami inwestorów.

Słowa kluczowe: produkt krajowy brutto, zagraniczne inwestycje instytucjonalne, krajowe inwestycje instytucjonalne, wskaźnik cen towarów i usług konsumpcyjnych, wskaźnik menedżerów ds. zakupów, cena złota, stopa odwrotnego repo, NIFTY Smallcap 50, NIFTY Midcap 50, NIFTY Largecap 50

Introduction

Since the country's economic liberalization in the 1990s, the small-cap, mid-cap, and large-cap indices of India's equities market have had a long and rich history. These indices were developed in line with the founding of major stock exchanges such as the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) and served as crucial benchmarks representing various market capitalization levels of companies. Their importance comes in forming investment strategies, assessing sentiment in the market, and giving investors vital insights into the performance of market segments. In addition, macroeconomic factors that impact market patterns and policy choices, such as the Consumer Price Index (CPI), Gold Price, and Foreign Institutional Investment (FII), have developed into important indicators. Gaining an insight into this historical background improves understanding of their long-lasting influence on the Indian equity market. This paper seeks to study these interactions and their ramifications on India's equity markets.

The focus of this study revolves around a comprehensive spectrum of macroeconomic indicators as informed by insights from prior papers. These factors include Foreign Institutional Investment (FII) and Domestic Institutional Investment (DII), whose movement profoundly impacts market liquidity and valuation trends across the small, mid, and large-cap indices (Sangmi, Hassan, 2013). Moreover, the Consumer Price Index (CPI) emerges as a pivotal metric for gauging inflationary pressures, exerting significant sway over investor sentiments and monetary policy formulations across all index strata. The Purchasing Managers' Index (PMI), a gauge of economic activity, assumes significance in delineating the performance and prospects of constituent companies within each index segment (Tripathy, 2011). Similarly, the Treasury Bill Rate and Reverse Repo Rate wield significant influence over borrowing costs, capital allocation strategies, and overall market liquidity, affecting small-cap, mid-cap, and large-cap enterprises differentially (Sangmi, Hassan, 2013). Within this multifaceted analysis, the price of gold is taken as a pivotal metric reflecting market sentiment and serving as a hedge against economic uncertainties (Pachiyappan, 2022). Its price dynamics give insights into the shifts in investor risk appetite and broader macroeconomic trajectories. By drawing insights from these studies, this study aims to understand the interplay between macroeconomic indicators and India's small-cap, mid-cap, and large-cap indices, to

arm investors, policymakers, and financial analysts with actionable insights. Employing the econometric model, the study aims to uncover patterns, correlations, and causal linkages that explain the underlying mechanisms influencing market performance across each index stratum.

Review of Literature

Studying the impact of macroeconomic variables on the stock market has been a trending topic on which various empirical studies have been carried out. Researchers across various geographies have carried out studies. For instance, Kalam (2020) attempted to assess the effect of different macroeconomic variables on Malaysia's stock market return, for which he considered GDP, Interest Rate, Inflation, Exchange Rate, and Foreign Direct Investment as macroeconomic factors having a likely impact on Bursa Malaysia KLCI over a 20-year period. They found out that all the macroeconomic variables considered in the study had a significant impact on Malaysian stock returns. Agwu and Haydar (2023) studied the impact of the Consumer Price Index (CPI), Interest rate, and exchange rate on the London Stock Exchange over a 10-year period using multiple regression. While all three variables showed a significant impact on the London Stock Exchange, the variable showing the most significant impact was the interest rate, and the one showing the least significant impact was the exchange rate.

Various researchers have extended this research to the Indian stock markets. Pal and Mittal (2011) investigated the long-term association between Indian capital markets and key macroeconomic indices, including interest rates, inflation, currency rates, and gross domestic savings (GDS). The study used quarterly time series data from January 1995 to December 2008 to perform unit root tests, cointegration tests, and error correction mechanisms (ECM). The findings revealed a strong co-integration of macroeconomic factors and Indian stock indexes, implying a long-term link. Kalra (2012) examined the relationship between selected macroeconomic variables like Cash Reserve Ratio (CRR), reverse repo rate, gold price, Wholesale Price Index (WPI), oil rate, inflation rate, gross domestic product (GDP), and Sensex using regression and concluded that Forex rate, inflation rate, and gold prices are significant variables having an impact on the Sensex. Using the results, she tried to develop a forecasting model combining these variables. Gurloveleen & Bhatia (2016) studied the impact of macroeconomic factors on the Indian stock market, concentrating on manufacturing businesses listed on the BSE 500. The study used monthly data from several macroeconomic variables and the BSE 500 index to perform Augmented Dickey Fuller (ADF) tests, multiple regression, and Granger causality tests. The findings suggested that several macroeconomic factors, including Foreign Institutional Investors and Exchange Rates, are important. However, Granger causality tests revealed no association between these factors and the closing prices of manufacturing firms on the BSE 500 index. Furthermore, researchers started comparing the impact of the same macroeconomic variables over different geographies to gauge the differences across different economies. Humpe and Macmillan (2009) used the cointegration technique to investigate the long-term link between macroeconomic factors and stock prices in the United States and Japan. The study discovered that in the United States, stock prices are favourably associated with industrial production and adversely related to the consumer price index and long-term interest rates, with no meaningful association with the money supply. In contrast, the Japanese data showed two cointegrating vectors: one shows stock prices being positively influenced by industrial production and negatively by money supply, and the other shows industrial production being negatively influenced by the consumer price index and long-term interest rates.

Tariq and Haider (2018) investigated the performance of various macroeconomic indicators and their fluctuations between the stock indexes of the Pakistan Stock Exchange (PSX) and the Bombay Stock Exchange (BSX) in India. The study used regression analysis and correlations to examine the relationship between eight macroeconomic variables (interest rate, inflation, GDP growth, exports, imports, unemployment, PSX index, and BSX index) across the two countries. The empirical results indicated a significant pricing relationship between the PSX and BSX 100 indexes and the tested macroeconomic variables,

suggesting that the fluctuations in the stock market indexes are dependent on changes in economic indicators in both India and Pakistan.

Auto Regression Distributed Lag Model (ARDL) analysis shows macroeconomic variables like exchange rate, BSE returns, and industrial production have a strong influence on FII inflows, reinforcing that macro factors drive FII behavior. Exchange rates were shown to be the primary factors influencing foreign institutional investment. The extreme volatility in the movement of foreign institutional investment was also observed to be a reflection of the size of exchange rate changes (Arun Prakash, 2018).

Research Gap

Numerous studies have explored the factors impacting indices, particularly in developed economies, yet there is a dearth of comprehensive research on the assessment of the impact of macroeconomic variables on Nifty Indices. Previous studies have often overlooked the purchasing managers' index as a variable in determining the impact on indices. In light of this gap, this study examines the influence of the purchasing managers' index, alongside other macroeconomic factors like FII, DII, CPI, PMI, Treasury Bill Rate, Gold Price, Unemployment Rate, and Reverse Repo Rate on Nifty small cap, mid cap and large cap index. The findings of this study may help provide valuable insights that can contribute to shaping effective investment strategies and facilitating more informed and prudent decision-making by investors.

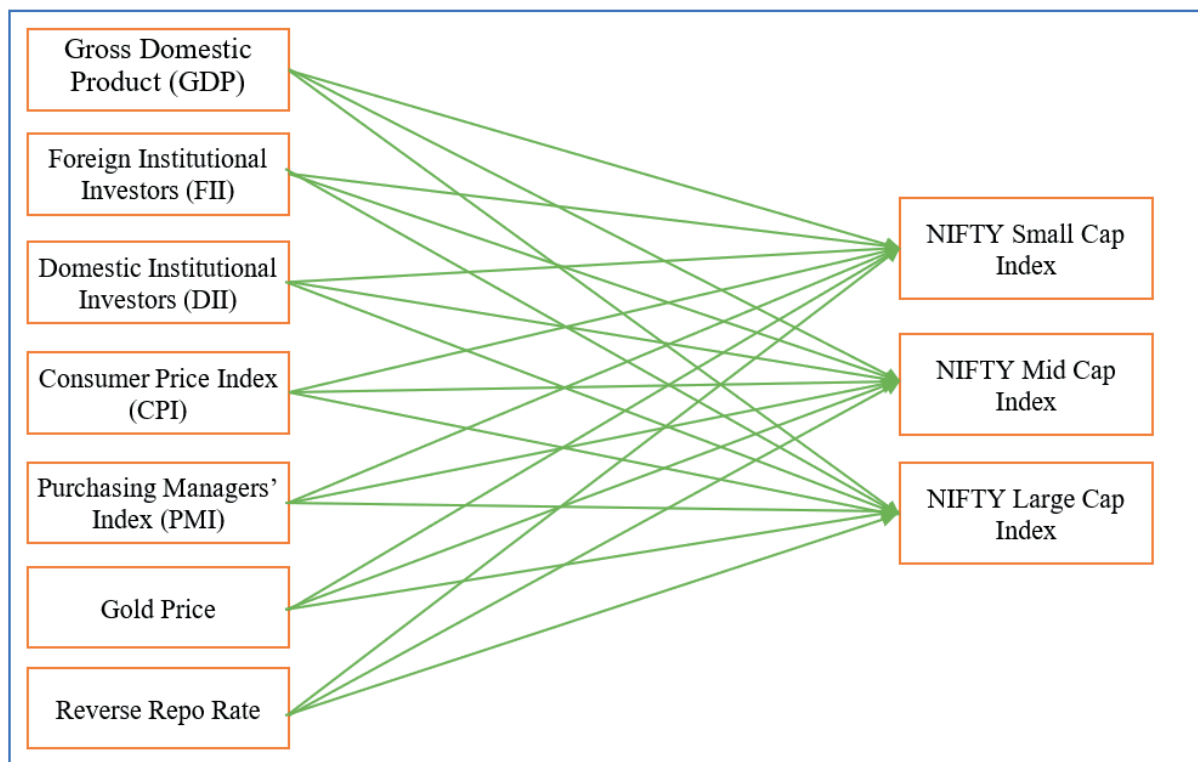


Figure 1. Proposed Research Model

Source: Prepared by the authors.

Hypotheses

H _n	Model 1	Model 2	Model 3
H ₁	<i>Influence of GDP on the Nifty Small Cap Index</i>	<i>Influence of GDP on the Nifty Mid Cap Index</i>	<i>Influence of GDP on the Nifty Large Cap Index</i>
H ₂	<i>Influence of FII on the Nifty Small Cap Index</i>	<i>Influence of FII on the Nifty Mid Cap Index</i>	<i>Influence of FII on the Nifty Large Cap Index</i>
H ₃	<i>Influence of DII on the Nifty Small Cap Index</i>	<i>Influence of DII on the Nifty Mid Cap Index</i>	<i>Influence of DII on the Nifty Large Cap Index</i>
H ₄	<i>Influence of CPI on the Nifty Small Cap Index</i>	<i>Influence of CPI on the Nifty Mid Cap Index</i>	<i>Influence of CPI on the Nifty Large Cap Index</i>
H ₅	<i>Influence of PMI on the Nifty Small Cap Index</i>	<i>Influence of PMI on the Nifty Mid Cap Index</i>	<i>Influence of PMI on the Nifty Large Cap Index</i>
H ₆	<i>Influence of Gold price on the Nifty Small Cap Index</i>	<i>Influence of Gold price on the Nifty Mid Cap Index</i>	<i>Influence of Gold price on Nifty Large Cap Index</i>
H ₇	<i>Influence of Reverse repo rate on the Nifty Small Cap Index</i>	<i>Influence of Reverse repo rate on the Nifty Mid Cap Index</i>	<i>Influence of Reverse repo rate on the Nifty Large Cap Index</i>

Research Methodology

The nature of the study is descriptive and analytical. Broadly, the study attempts to assess the fluctuations in the Small-cap, Midcap, and Large-cap indices. Thus, the endogenous variables considered in the study are NIFTY Small-cap Index, NIFTY Midcap Index, and NIFTY Large-cap Index. To determine the fluctuations in these variables, the exogenous variables considered are macroeconomic factors, which are selected based on previous literature. These are Gross Domestic Product, Foreign Institutional Investment, Domestic Institutional Investment, Consumer Price Index, Purchasing Managers' Index, Gold Price, and Reverse Repo Rate. Monthly observations were collected for the variables for a period of 5 years, starting from the 1st of January 2019 to the 31st of January 2024. Table 1 presents the description of the variables and sources of data.

Table 1. Description of Selected Variables

Variables	Description	Sources
GDP	Gross Domestic Product	Bloomberg
FII	Foreign Institutional Investment	Bloomberg
DII	Domestic Institutional Investment	Bloomberg
CPI	Consumer Price Index	Database on Indian Economy (DBIE)
PMI	Purchasing Managers' Index	S&P Global
GP	Gold Price	World Gold Council
RRR	Reverse Repo Rate	Database on Indian Economy (DBIE)
NIFTY Small-cap Index	NIFTY Smallcap 50 Index	National Stock Exchange (NSE)
NIFTY Mid Cap Index	NIFTY Midcap 50 Index	National Stock Exchange (NSE)
NIFTY Large Cap Index	NIFTY Largecap 50 Index	National Stock Exchange (NSE)

Source: Prepared by the authors.

The data collected was analysed using EViews 12. Firstly, a unit root test was carried out to check the reliability of the data. Regression analysis was used to check the effect of macroeconomic variables on the three indices. Further, the existence of cause-and-effect relationships among variables was validated using the Granger Causality test. The model specifications for Ordinary Least Squares (OLS) are as follows:

$$\text{Nifty Smallcap Index} = \alpha + \beta_1(\text{GDP}) + \beta_2(\text{FII}) + \beta_3(\text{DII}) + \beta_4(\text{CPI}) + \beta_5(\text{PMI}) + \beta_6(\text{GP}) + \beta_7(\text{RRR}) + u_t \dots \dots \dots (1)$$

$$\text{Nifty Midcap Index} = \alpha + \beta_1(\text{GDP}) + \beta_2(\text{FII}) + \beta_3(\text{DII}) + \beta_4(\text{CPI}) + \beta_5(\text{PMI}) + \beta_6(\text{GP}) + \beta_7(\text{RRR}) + u_t \dots\dots\dots(2)$$

$$\text{Nifty Largecap Index} = \alpha + \beta_1(\text{GDP}) + \beta_2(\text{FII}) + \beta_3(\text{DII}) + \beta_4(\text{CPI}) + \beta_5(\text{PMI}) + \beta_6(\text{GP}) + \beta_7(\text{RRR}) + u_t \dots\dots\dots(3)$$

Results and Discussion

Unit Root Test

H_0 : There is a unit root problem in the time series data (i.e., $\delta = 0$)

H_1 : There is no unit root problem in the time series data (i.e., $\delta < 0$)

Table 2. Augmented Dickey-Fuller Stationarity Test Results

Variable	I(0)	I(1)	I(2)	Inference
CPI	-0.4607	-7.517*	-	Stationarity
DII	-3.629*	-	-	Stationarity
FII	-4.037*	-	-	Stationarity
GDP	-2.353	-6.267*	-	Stationarity
GOLD	-1.105	-8.032*	-	Stationarity
PMI	-3.050	-6.133*	-	Stationarity
Reverse Repo Rate	-3.197	-7.725*	-	Stationarity
Nifty Small Cap Index	2.997	1.729	-4.099*	Stationarity
Nifty Mid Cap Index	1.413	-6.862*	-	Stationarity
Nifty Large Cap Index	-0.103	-7.536*	-	Stationarity

Note: * indicates 1% significance level

Source: Prepared by the authors.

Table 2 presents the results of the unit root test with the help of the Augmented Dickey-Fuller (ADF) Stationarity Test for various economic variables at different levels of differencing. All the variables, including CPI, DII, FII, GDP, GOLD, PMI, Reverse Repo Rate, Nifty Mid Cap Index, and Nifty Large Cap Index, are stationary at first difference, i.e., I (1), while the Nifty Small Cap Index is stationary at I (2). Therefore, these variables can be used for further econometric models.

Ordinary Least Squares (OLS)

Table 3. Ordinary Least Squares Output for Nifty Small-Cap Index

DV	IV	β	S.E	t-stat	p- value	R ²	F Stat	DW Test
Nifty Small-cap 50	CPI	85.070	112.943	0.862	0.454	0.155	1.336	1.385
	DII	-0.001	0.012	0.753	0.911	-	-	-
	FII	-0.012	0.005	-0.111	0.027**	-	-	-
	GDP	-0.333	50162	-2.273	0.948	-	-	-
	Gold	-0.188	0.967	-0.064	0.846	-	-	-
	PMI	-6.384	20.742	-0.194	0.759	-	-	-
	Reverse Repo Rate	-414.134	1061.207	-0.307	0.698	-	-	-

Note: * & ** indicates 1% & 5% significance levels

Source: Prepared by the authors.

Table 3 shows that changes in the independent variables explain approximately 15% of the variability of the Nifty Small-cap Index, as indicated by the coefficient of determination (R-squared). However, the remaining 85% of the index's fluctuations are due to factors unaccounted for in our model. Foreign Institutional Investors (FIIs) have a statistically significant impact on the Nifty Small-cap Index. A one-unit increase in FII results in a decrease of 0.012 units in the index, with a p-value of 0.027, indicating significance at the 5% level. However, the coefficients for GDP, Gold, PMI, and Reverse Repo Rate have no statistically significant effects on the Nifty Small-cap Index, with p-values of 0.948, 0.846, 0.759, and 0.698, respectively. Furthermore, the model's overall significance, as indicated by the F statistic (1.336), falls short of statistical significance at conventional levels (p-value = 0.25, $p > 0.05$). Nonetheless, the Durbin-Watson test results indicate that the model is suitable for prediction, as there is no significant autocorrelation in the residuals. Hence, H_2 is accepted.

Table 4. Ordinary Least Squares Output for Nifty Midcap Index

DV	IV	β	S.E	t-stat	p-value	R ²	F Stat	DW Test
Nifty Midcap 50	CPI	-1.118	42.712	-0.026	0.979	0.466	6.377*	1.642
	DII	-0.009	0.0051	-1.915	0.061**	-	-	-
	FII	0.004	0.003	1.229	0.224	-	-	-
	GDP	2.631	2.660	0.989	0.327	-	-	-
	Gold	0.040	0.365	0.110	0.912	-	-	-
	Reverse Repo Rate	1056.71	366.176	2.885	0.005*	-	-	-
	PMI	-7.191	9.920	-0.724	0.471	-	-	-

Note: * & ** indicates 1% & 5% significance levels

Source: Prepared by the authors.

Table 4 shows that the independent variables included in the model explain approximately 46.6% of the Nifty Midcap Index's variability, as indicated by the coefficient of determination (R-squared). This suggests that a significant portion of the index's fluctuations, approximately 53.4%, are influenced by factors outside of our analytical framework. Exploring the coefficients of the independent variables provides additional information about their respective impacts. Notably, a one-unit increase in the Consumer Price Index (CPI) leads to a 1.118-unit decrease in the Nifty Midcap Index. However, this effect is statistically insignificant, with a p-value of 0.979. In contrast, the coefficient for Domestic Institutional Investors (DII) shows a marginally statistically significant impact, with a one-unit increase resulting in a 0.009-unit decrease in the index (p-value = 0.061, 10% significance level). Foreign Institutional Investors (FIIs) have an insignificant effect on the Nifty Midcap Index, with a coefficient of 0.004 and a p-value of 0.224. Similarly, the coefficients for GDP, Gold, and Purchasing Managers' Index (PMI) have no statistically significant effects on the Nifty Midcap Index, with p-values of 0.327, 0.912, and 0.471, respectively. However, the coefficient for the reverse repo rate has a statistically significant impact on the Nifty Midcap Index. A one-unit increase in the Reverse Repo Rate results in an increase of 1056.71 units in the index, with a p-value of 0.005, indicating 1% significance. The model's F statistic (6.377) shows statistical significance at conventional levels (p-value = 0.000021, $p < 0.05$). Furthermore, the Durbin-Watson test results indicate that the model is suitable for prediction, with no significant autocorrelation detected in the residuals. Hence, H_3 and H_7 are accepted.

Table 5. Ordinary Least Square Output for Nifty Large Cap Index

DV	IV	β	S.E	t-stat	p- value	R ²	F Stat	DW Test
Nifty Large Cap Index	CPI	-25.209	57.779	-0.436	0.664	0.622	12.262*	1.503
	DII	-0.023	0.006	-3.518	0.0009*	-	-	-
	FII	0.005	0.004	1.424	0.160	-	-	-
	GDP	2.663	3.660	0.727	0.470	-	-	-
	GOLD	-0.159	0.503	-0.317	0.751	-	-	-
	Reverse Repo Rate	1534.710	503.404	3.048	0.0036*	-	-	-
	PMI	-6.514	13.644	-0.477	0.6350	-	-	-

Note: * & ** indicates 1% & 5% significance levels

Source: Prepared by the authors.

Examining the Nifty Large Cap Index, as shown in Table 4, the analysis reveals that the independent variables included in the model can explain approximately 62.2% of the index's variability, as indicated by the coefficient of determination (R-squared). This implies that a significant portion, approximately 37.8%, of the index's fluctuations are due to factors unaccounted for in our analytical framework. Examining the coefficients of the independent variables provides insight into their respective impacts. Notably, a one-unit increase in the Consumer Price Index (CPI) results in a decrease of 25.209 units in the Nifty Large Cap Index. However, this effect is not statistically significant due to a p-value of 0.664. However, the coefficient for Domestic Institutional Investors (DII) has a highly statistically significant impact, with a one-unit increase resulting in a 0.023-unit decrease in the index, with a notably low p-value of 0.0009, indicating significance at the 0.1% level. Foreign Institutional Investment (FII) has an insignificant effect on the Nifty Large Cap Index, with a coefficient of 0.005 and a p-value of 0.160. Similarly, the coefficients for GDP, Gold, and the Purchasing Managers' Index (PMI) have no statistically significant effects on the Nifty Large Cap Index, with p-values of 0.470, 0.751, and 0.6350. However, the coefficient for the reverse repo rate has a highly statistically significant impact on the Nifty Large Cap Index. A one-unit increase in the Reverse Repo Rate results in an increase of 1534.710 units in the index, with a p-value of 0.0036 indicating significance at the 0.1% level. Hence, H_3 and H_7 are accepted.

Granger Causality Test

Table 6. Results of the Granger Causality Test

Pair-Wise	Pairwise Granger Effect	Obs	F-Statistic	prob.	Decision
1	<i>DII -> CPI</i>	58	2.46851	0.0944	Reject
	<i>CPI -> DII</i>		0.17339	0.8413	Reject
2	<i>FII -> CPI</i>	58	2.71289	0.0756	Reject
	<i>CPI -> FII</i>		1.01681	0.8687	Reject
3	<i>GDP -> CPI</i>	58	1.78541	0.1777	Reject
	<i>CPI -> GDP</i>		1.50192	0.232	Reject
4	<i>GOLD -> CPI</i>	58	1.14159	0.327	Reject
	<i>CPI -> GOLD</i>		1.45879	0.2417	Reject
5	<i>Nifty Large Cap Index -> CPI</i>	58	2.77252	0.0716	Reject
	<i>CPI -> Nifty Large Cap Index</i>		0.19221	0.8257	Reject
6	<i>Nifty Mid Cap Index -> CPI</i>	58	0.96714	0.3869	Reject
	<i>CPI -> Nifty Mid Cap Index</i>		0.89171	0.4161	Reject
7	<i>PMI -> CPI</i>	58	2.46371	0.0948	Reject
	<i>CPI -> PMI</i>		2.87054	0.0655	Reject

8	Reverse Repo Rate -> CPI	58	0.98144	0.3815	Reject
	CPI -> Reverse Repo Rate		1.26023	0.2919	Reject
9	Nifty Small Cap Index -> CPI	58	1.49446	0.2338	Reject
	CPI -> Nifty Small Cap Index		0.47269	0.626	Reject
10	FII -> DII	58	0.88134	0.6848	Reject
	DII -> FII		0.80475	0.4526	Reject
11	GDP -> DII	58	1.126	0.3318	Reject
	DII -> GDP		8.57539	0.0006*	Accept
12	GOLD -> DDI	58	0.1471	0.8636	Reject
	DII -> GOLD		2.27717	0.1125	Reject
13	Nifty Large Cap Index -> DDI	58	4.7311	0.0129**	Accept
	DDI -> Nifty Large Cap Index		0.17693	0.8383	Reject
14	Nifty Mid Cap Index -> DII	58	7.45868	0.0014*	Accept
	DII -> Nifty Mid Cap Index		0.40964	0.666	Reject
15	PMI -> DII	58	0.08942	0.9146	Reject
	DII -> PMI		6.63622	0.0027*	Accept
16	Reverse Repo Rate -> DDI	58	2.34736	0.1055	Reject
	DDI -> Reverse Repo Rate		2.05508	0.1382	Reject
17	Nifty Small Cap Index -> DDI	58	21.1668	2.00E-07*	Accept
	DDI -> Nifty Small Cap Index		0.17586	0.8392	Reject
18	GDP -> FII	58	0.03179	0.9687	Reject
	FII -> GDP		0.09	0.0018*	Accept
19	GOLD -> FII	58	2.169	0.9224	Reject
	FII -> GOLD		2.16955	0.1243	Reject
20	Nifty Large Cap Index -> FII	58	6.48797	0.003*	Accept
	FII -> Nifty Large Cap Index		0.09846	0.9064	Reject
21	Nifty Mid Cap Index -> FII	58	6.98029	0.0021*	Accept
	FII -> Nifty Mid Cap Index		0.10186	0.9033	Reject
22	PMI -> FII	58	0.16093	0.8518	Reject
	FII -> PMI		3.99434	0.0242**	Accept
23	Reverse Repo Rate -> FII	58	1.99298	0.1464	Reject
	FII -> Reverse Repo Rate		1.81694	0.2766	Reject
24	Nifty Small Cap Index -> FII	58	16.0479	4.00E-06	Accept
	FII -> Nifty Small Cap Index		1.9868	0.1474	Reject
25	GOLD -> GDP	58	0.62991	0.5366	Reject
	GDP -> GOLD		0.55948	0.5748	Reject
26	Nifty Large Cap Index -> GDP	58	10.3829	0.0002	Accept
	GDP -> Nifty Large Cap Index		0.67298	0.5145	Reject
27	Nifty Mid Cap Index -> GDP	58	7.49354	0.0014*	Accept
	GDP -> Nifty Mid Cap Index		0.23046	0.795	Reject
28	PMI -> GDP	58	1.167	0.3191	Reject
	GDP -> PMI		1.157	0.8221	Reject
29	Reverse Repo Rate -> GDP	58	15.1502	6.00E-06	Accept
	GDP -> Reverse Repo Rate		1.145	0.8258	Reject
30	Nifty Small Cap Index -> GDP	58	5.6124	0.0062*	Accept
	GDP -> Nifty Small Cap Index		0.342	0.7113	Reject
31	Nifty Large Cap Index -> GOLD	58	2.58477	0.0849	Reject
	GOLD -> Nifty Large Cap Index		1.48196	0.2365	Reject

32	<i>Nifty Mid Cap Index -> GOLD</i>	58	5.24153	0.0084*	Accept
	<i>GOLD -> Nifty Mid Cap Index</i>		1.27931	0.2868	Reject
33	<i>PMI -> GOLD</i>	58	0.17294	0.8417	Reject
	<i>GOLD -> PMI</i>		0.14055	0.8692	Reject
34	<i>Reverse Repo Rate -> GOLD</i>	58	0.69918	0.5015	Reject
	<i>GOLD -> Reverse Repo Rate</i>		0.56131	0.5738	Reject
35	<i>Nifty Small Cap Index -> GOLD</i>	58	3.59768	0.0344**	Accept
	<i>GOLD -> Nifty Small Cap Index</i>		0.7891	0.4596	Reject
36	<i>Nifty Mid Cap Index -> Nifty Large Cap Index</i>	58	1.114	0.3357	Reject
	<i>Nifty Large Cap Index -> Nifty Mid Cap Index</i>		1.181	0.8149	Reject
37	<i>PMI -> Nifty Large Cap Index</i>	58	0.57111	0.5683	Reject
	<i>Nifty Large Cap Index -> PMI</i>		11.6211	7.00E-05*	Accept
38	<i>Reverse Repo Rate -> Nifty Large Cap Index</i>	58	0.70856	0.497	Reject
	<i>Nifty Large Cap Index -> Reverse Repo Rate</i>		4.487	0.0158**	Accept
39	<i>Nifty Small Cap Index -> Nifty Large Cap Index</i>	58	25.7899	2.00E-08*	Accept
	<i>Nifty Large Cap Index -> Nifty Small Cap Index</i>		2.57183	0.0861	Reject
40	<i>PMI -> Nifty Mid Cap Index</i>	58	0.01693	0.9832	Reject
	<i>Nifty Mid Cap Index -> PMI</i>		7.25324	0.0017*	Accept
41	<i>Reverse Repo Rate -> Nifty Mid Cap Index</i>	58	0.54612	0.5825	Reject
	<i>Nifty Mid Cap Index -> Reverse Repo Rate</i>		3.50566	0.0373**	Accept
42	<i>Nifty Small Cap Index -> Nifty Mid Cap Index</i>	58	72.8836	1 E-15	Reject
	<i>Nifty Mid Cap Index -> Nifty Small Cap Index</i>		1.58038	0.2158	Reject
43	<i>Reverse Repo Rate -> PMI</i>	58	16.1346	3.00E-06*	Accept
	<i>PMI -> Reverse Repo Rate</i>		2.03766	0.1404	Reject
44	<i>Nifty Small Cap Index -> PMI</i>	58	5.03369	0.01**	Accept
	<i>PMI -> Nifty Small Cap Index</i>		0.2564	0.7748	Reject
45	<i>Nifty Small Cap Index -> Reverse Repo Rate</i>	58	1.55192	0.2215	Reject
	<i>Reverse Repo Rate -> Nifty Small Cap Index</i>		0.10963	0.9964	Reject

Note: * & ** indicates 1% & 5% significance levels

Source: Prepared by the authors.

Table 6 shows the results of the Granger Causality test, which was used to determine the cause-and-effect relationships among various indicators as well as between the indicators and all three indices. The findings show that changes in the Domestic Institutional Investment (DII) Granger cause changes in Gross Domestic Product (GDP), implying a directional influence between DII and GDP. Similarly, the Nifty Large Cap Index Granger influences DII, indicating a dynamic relationship between the two variables. The Nifty Mid Cap Index also shows Granger's changes in DII, indicating a strong link between mid-cap stock movements and domestic institutional investment.

Furthermore, the analysis shows that Foreign Institutional Investment (FII) Granger causes changes in GDP, highlighting FII's potential impact on the overall economic landscape. The Nifty Large Cap Index and the Nifty Mid Cap Index both Granger cause changes in FII, implying that these indices' movements may precede or influence changes in foreign institutional investment. Additionally, the Reverse Repo Rate Granger causes changes in GDP, implying a possible predictive relationship between the reverse repo rate and economic activity. The Nifty Small Cap Index Granger influences both GDP and PMI, implying that small-cap stock movements may reflect broader economic trends and manufacturing activity. The Granger causality test results indicate that there is no bidirectional relationship between the variables or between the variables and the three indices.

Overall, the result shows that GDP, CPI, PMI, and Gold Price do not demonstrate a statistically significant influence over any of the three indices. Similar results have been observed by researchers in their studies

wherein they considered the impact of GDP on Nifty index (Raju et. al, 2018; Sinha et. al, 2021; Swaroop, Solomon, 2022). The same can be observed for CPI (Singh et. al, 2013; Majumdar, Saha, 2018), PMI (Pranesh et. al, 2017; Singh, 2022), as well as Gold Price (Sreekanth, Veni, 2014; Gayathri, Dhanabhakym, 2014; Singh, Kishor, 2014).

Implications

Theoretical Implications

The study's theoretical implications deepen our understanding of the connection between macroeconomic variables and the Indian equities market. This research gives deep insights into the varied influence of macroeconomic variables on each index, shedding light on the market dynamics at play. It does this by segmenting the effects of these variables across the three separate indices of the market: small cap, mid cap, and large cap. Furthermore, the study's use of a wide range of macroeconomic variables that haven't been looked at collectively in this context before broadens the field of research and enhances the analytical framework used, offering fresh insights into the complex connection between economic indicators and equity market performance.

Managerial Implications

The study's managerial implications underscore how important macroeconomic factors are to many aspects of decision-making. First of all, in order to facilitate strategic adjustments and promote economic stability, policymakers are encouraged to include macroeconomic factors in their policy formulation processes. They can do this by drawing insights from indicators like inflation, interest rates, and currency rates. In a similar vein, businesses are recommended to take these factors into account when estimating their eventual goals and directing their strategic operations. This will help them manage market uncertainty and maximize performance. Investors can make better-informed investing and risk-management decisions by using macroeconomic information to examine sectoral and industry trends. Organizational management teams are also encouraged to become more sensitive to external influences, such as macroeconomic variables, and to understand how they could affect the growth trajectory and operational capacity of the company. Management may better position their firms to prosper in changing economic conditions by keeping a close eye on these elements and taking proactive measures to respond to them.

Conclusion

In conclusion, this research delved into the intricate relationships between macroeconomic variables and the performance of India's stock market indices, specifically focusing on the Nifty Small Cap, Mid Cap, and Large Cap Indices. The study reveals nuanced insights into the dynamics of the stock market. While Gross Domestic Product (GDP), Consumer Price Index (CPI), Purchasing Managers' Index (PMI), and Gold Price show no statistically significant influence on any index, Domestic Institutional Investment (DII) emerges as a key determinant, negatively impacting Nifty Midcap and Large Cap indices. Foreign Institutional Investment (FII) significantly affects the Nifty Small Cap Index, reflecting varying investor behaviors across market segments. The Reverse Repo Rate played a crucial role in shaping the Nifty Midcap and Large Cap indices. Granger causality tests reveal several dynamic relationships among macroeconomic variables and the three indices. These findings underscore the importance of considering a diverse set of macroeconomic factors in both investment decision-making and policy formulation, enabling investors, policymakers, and financial analysts to develop more informed strategies. However, further research is needed to deepen our understanding of the underlying mechanisms driving these relationships and explore additional factors shaping market dynamics in the Indian context.

Limitations and Scope for Future Research

The study has been done for a limited time period of 5 years, ranging from January 2019 to January 2024. The research period might be extended for further studies. Further, it considered only GDP, FII, DII, CPI, PMI, Gold Price, and Reverse Repo rate as macroeconomic variables having an impact on the indices, which were listed on the NSE. Alongside only three indices, i.e., large cap, medium cap, and small cap, were included. More indices and macroeconomic variables can be selected to do further research work. Even the impact of macroeconomic variables on different sectors can be checked. Lastly, the results were drawn on the basis of Ordinary Least Squares (OLS) and the Granger Causality test. Further research could include other econometric models like ARDL, i.e., Autoregressive Distributed Lag, for their study.

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