“Domestic institutional investors’ integration with Nifty 50 in the Indian equity market”

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DOMESTIC INSTITUTIONAL INVESTORS' INTEGRATION WITH NIFTY 50 IN THE INDIAN EQUITY MARKET

Abstract

Foreign institutional investors (FIIs) have traditionally dominated the Indian equity markets. However, since 2020, the landscape has significantly transformed as the registered investor base at the National Stock Exchange, India, has tripled. This phenomenon is driven by the COVID-19 pandemic and the rise of 'influencers' or easy access to financial knowledge. This study investigates the long-term and causative relationship between the Nifty 50 index and the net flows of domestic institutional investors (DIIs) in the Indian stock market, using daily data from April 2017 to March 2022. Employing the Augmented Dickey-Fuller (ADF) test, Johansen cointegration tests, and Granger causality analysis, the findings reveal a long-term cointegrated relationship between the Nifty 50 and DIIs' daily flow, both before and after COVID-19. The results reveal a bidirectional Granger causality between the Nifty 50 and DIIs (p-value < 0.02) and NIFTY 50 and FIIs (p-value < 0.00) in the post-COVID era, a shift from the unidirectional pattern observed pre-COVID between NIFTY 50 and DIIs. This indicates that traders and analysts may use DII flows as a leading indicator for NIFTY 50 movements. Studying DII's interaction with the Nifty 50 index helps assess whether their investment patterns drive market movements or are reactive to them and highlights the resilience of Indian markets to external shocks.

Keywords domestic institutional investors, Indian stock market, Granger causality, Johansen cointegration, market efficiency, COVID-19, market resilience, foreign institutional investors

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INTRODUCTION

The Indian stock market has undergone a significant transformation, mirroring the evolution of its investor base. From 2020 to 2024, the registered investor base at the National Stock Exchange (NSE) has tripled to 92 million. However, it is to be noted that this equates to only about 20 per cent of the country's households. In the fiscal year 2022–2023, DIIs continued their net buying trend, acquiring Indian shares at Rs 416.35 billion, while FIIs divested equities worth Rs 133.91 billion (BSE India). The consistent buying pressure exerted by DIIs has contributed significantly to reducing market volatility. Retail investors have played a pivotal role in reinforcing DII supremacy over the Nifty 50 index.

Retail investor engagement in the Indian stock market has surged due to robust returns, easy initiation of online trading accounts, and increased financial literacy. Trading volume in Nifty 50 stocks from retail investors increased from 35 per cent in 2020 to 45 per cent in 2022 (BSE India). As of 30 April 2022, the number of demat accounts stood at 92.8 million, a threefold increase from March 2020 (CDSL, India). Investors channelling funds into the equity market through mutual

funds have increasingly favoured systematic investment plans (SIPs), resulting in inflows, and these investors are often referred to as 'Robinhood Investors' as the majority of these have entered the equity market post-COVID.

DIIs have emerged as substantial net buyers in recent fiscal years, contributing substantially to market stabilisation.

1. LITERATURE REVIEW AND HYPOTHESES

The money supply in the market impacts the stock market conditions in countries. In a study conducted into stock markets in developing countries, including South Africa, India, Malaysia, Hong Kong, Mexico, Thailand, Chile, Turkey, Portugal, Korea, Greece, the Philippines, and Singapore, it was concluded that the money supply affected stock profits and that the effects of these characteristics on stock prices varied across the market (Fifield et al., 2002). Rogalski and Vinso (1977) discovered a positive relationship between capital market returns and the amount of money available, while Pearce and Roley (1983) observed that prices of equity decrease when there is an unexpected increase in money supply, and they rise when unexpected money supply cuts are announced. In a study in Egypt and Tunisia, it was found that the Egyptian stock market positively correlated with the money supply, implying causation. This causal link was further observed to flow from the currency rate and money supply to the Tunisian stock market (Barakat et al., 2016). Chaudhuri and Smiles (2004) further argued that long-term real activity indicators such as GDP, oil prices, and private consumption are correlated with stock price levels, reinforcing the role of macroeconomic indicators.

FIIs have long been studied for their impact on emerging markets. Hamao and Mei (2001) stated that foreign investors could contribute to stock market volatility and that their investments in Japanese stocks were often short-term. Moreover, FIIs tend to display Procyclical Follow-the-Trend (PFT) behavior in equity and debt investments but may exhibit herding behaviour during extreme market conditions (Mukherjee & Tiwari, 2022). According to Aggarwal et al. (2022), there is a correlation between FII and returns from the market, and the relationship between trading volume and volatility. Market return was the most influential factor for FII herding, while trading volume had no influence. During market volatility, FIIs abstain from herding (Choudhary et al., 2022). Chandra (2012) stated that FII first invests in the market, and market performance encourages FIIs to reinvest. The study also stated that FII has less influence on the Sensex than on the Nifty (Chauhan, 2013).

The post-COVID era has seen a notable increase in DII participation in India's equity markets. A possible reason for an increase in DII investments can also be attributed to bubble stocks and momentum in the market. A study drawing on Chinese mutual fund data from 2006 to 2020 found that managers tend to increase risk-shifting actions when uncertainty rises. For every standard deviation rise in EPU, risk shifting increases by 0.27 to 0.55 standard deviations. This inclination towards risk shifting can be attributed to the poor performance of mutual funds during times of high EPU. To increase portfolio risk, managers shift from cash to shares, rotate sectors, and increase holdings of bubble stocks (Luo et al., 2023). The confidence of retail investors to shift from debt to equity can only be achieved through the higher performance of mutual funds. The literature on investors' perceptions of performance by mutual funds discovered that mutual funds failed to meet the schemes' objectives and investors' expectations regarding diversity. They also emphasised the significance of financial literacy programmes in achieving long-term development in mutual fund penetration (Adhikary et al., 2015). Due to tax incentives, ELSS gained momentum in India. Agarwal (2016) examined the success of equity-linked savings plans. The expense ratios in the mutual fund are declining, reducing the cost of owning a mutual fund. This suggests that mutual fund fees may continue to decrease despite competition from less expensive alternatives. Platforms favor own-brand funds, but a regulatory ban on com-

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mission sharing was implemented to lower costs and improve the accuracy of recommendations (Cookson et al., 2021).

Recent years have seen an increase in responsible finance and investment in ESG-related sectors. There are multiple factors why institutional investors prefer ESG stocks. A study by Zou et al. (2025) reported that Chinese institutional investors have a high preference for ESG stocks because they have the potential to reduce operational risks and enhance profitability and reputation. Some studies have shown that positive media coverage attracts *institutional investors* with inherent *ESG* preferences to invest in the firm (Li et al., 2024). This ESG investment contributes to the carbon neutrality of the country and is grabbing a lot of attention from the media. A study on Chinese firms on the impact of the corporate value of FIIs and DIIs investment in ESG concluded that it increased the shareholding of both FIIs and DIIs and increased the corporate value as well (Yoo and Chang, 2024). Another study found that with the increased funding by Qualified Foreign Institutional Investors (QFII), DIIs, especially those who held shares in the same firm, started promoting firms to improve their ESG performance (Han, 2023). A study on the financing of biofuel concluded that foreign banks and institutional investors were important in financing such projects, but DIIs did not play many roles in financing biofuel (Willem van Gelder et al., 2012). Studies also showed that long-term institutional investors significantly lessened ESG decoupling, whereas short-term investors had no significant effect (Eliwa & Elmaghrabi, 2025).

Government policies often affect investor behavior. With the help of government policies in place, a positive and significant relationship between risk and equity returns was observed in Indonesia during the COVID-19 pandemic (Budiarso et al., 2020). A rise in DII investments during COVID was also observed in Oman, where ESG considerations, market regulations, and economic conditions significantly affected investor behavior (Singh et al., 2024). Another reason can also be the presence of overconfidence bias, as there is empirical evidence that the usage of robo and digital services is not capable of mitigating overconfidence bias (Bhatia et al., 2022). As there was a significant increase in the finance influencers during the pandemic, there is empirical evidence that financial literacy has a significant influence on investment intentions (Sivaramakrishnan et al., 2017), and information acquisition tends to increase equity trading frequency among conscientious investors (Tauni et al., 2017).

The efficient market hypothesis suggests that all information is equally available to the stakeholders in a symmetric manner (Stephens et al., 2021). The maturity level of markets and regulations can differ from developed markets to emerging markets, resulting in a situation where the efficient market hypothesis may not work (Loang, 2025). In the real world, information asymmetry can only generate alpha for the investors (individual or foreign) (Chan et al., 2007). The FIIs are believed to have faster data processing and decision-making capabilities compared to individual investors. Individual investors exhibit cognitive biases that reduce their returns due to their likelihood of clinging to losses and selling performing stocks (Cem Şahin, 2024). To avoid biases and losses, individual investors are better off investing through Mutual funds. This is reflected in the recent number of individual investors opting for the mutual funds (DII) route to invest in the Indian stock market (Vishnani et al., 2024).

The literature very clearly indicates that the money supply impacts stock prices. Further, it was concluded that foreign investors also impact domestic equity returns. With higher equity returns, investors may invest more in equity, leading to more channelization of funds in the stock market. However, despite extensive research on institutional investor behavior and stock market efficiency, several gaps remain in understanding the evolving role of Domestic Institutional Investors (DIIs) in India, particularly in the post-COVID era. While the role of Foreign Institutional Investors (FIIs) in emerging markets is well-documented, the significant rise of DIIs post-COVID-19 remains underexplored. This study fills the gap by analyzing whether DIIs are now leading or merely responding to market trends, using empirical techniques like Granger causality and Johansen cointegration. This study bridges the gap by quantifying DIIs' impact on the NIFTY 50 index. By addressing these gaps, this study contributes to the evolving discourse on institutional investor behavior in

emerging markets, particularly in India's shifting equity market dynamics post-COVID.

The primary objective of this study is to find out the impact of DIIs on the performance of the Indian Equity Market, particularly on the Nifty 50. The following are the hypotheses for the study:

H1: DII net flows Granger-cause NIFTY 50 movements pre and post COVID.

H2: NIFTY 50 movements Granger-cause DII net flows pre and post COVID.

2. METHODOLOGY

The study examines the long-term and causal connection of the Nifty 50 with DII's daily net flows. The study incorporated a research technique similar to that applied by Matha et al. (2022). Daily time-series data from 1 April 2017 to 31 March 2022 have been considered for this empirical analysis. The dates were divided into pre-COVID (before 1 January 2020) and post-COVID (on and after January 1, 2020). The period from April 2017 to March 2022 provides a balanced pre- and post-COVID window, ensuring that the findings specifically reflect the transformation in domestic institutional investors' (DIIs) interaction with the Nifty 50 during a highly disruptive and significant phase in global and Indian financial markets. Including data beyond March 2022 would introduce new structural developments unrelated to the COVID period. The analysis includes Nifty 50 and DII daily net flows. The spot price data for Nifty 50 were retrieved from the Bloomberg Terminals and the NSE Website. The data on DIIs were attained from www.moneycontrol.com. Initially, a natural log was applied to decrease the skewness in the data. Furthermore, the Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1979) test confirmed the time series stationarity. The stationarity of this data suggests the future constancy of the statistical features. In predicting and modelling using econometrics, the unit root test is crucial. The time series data must be stationary for the Granger-causality and Johansen cointegration tests to be valid. The following is how the ADF is expressed mathematically:

$$\Delta y_t = a + \beta_t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t, \quad (1)$$

where y_t – time series to test, β – coefficient of the time trend, p – lag order for the autoregressive process, a – the constant in the equation, ε_t – error term.

The Johansen cointegration test was also used to investigate the cointegrating vectors in the dataset. It is a statistical method for determining if two or more time series variables have a long-term relationship. The test fits a Vector Error Correction Model (VECM) to the data and calculates a test statistic based on the eigenvalues of the model. The hypothesis of cointegration is tested by comparing the test statistic to critical values. This method is commonly used in finance and economics to analyze long-term relationships between variables such as interest rates, exchange rates, and stock prices. The test identifies cointegrating vectors in the data and is performed in two parts: the Trace test and the Maximum eigenvalue test.

The Granger causality test was also used to examine the short-term causal relationship between DIIs' daily flow and the Nifty 50. The Granger causality test measures how well a variable can forecast future time series movements based on the past behavior of a different time series. The following is the regression equation for this causality test:

$$X_t = \alpha_1 + \sum_{k=1}^{m} \beta_{1k} X_{t-k} + \sum_{k=1}^{m} \gamma_{1k} Y_{t-k} + e_{1t}, \quad (2)$$

$$Y_t = \alpha_2 + \sum_{k=1}^{m} \beta_{2k} Y_{t-k} + \sum_{k=1}^{m} \gamma_{2k} X_{t-k} + e_{2t}, \quad (3)$$

where Y_t and X_t are variables that are to be tested, e_{1t} and e_{2t} – error terms, t refers to the time period, and k denotes the number of lags.

3. RESULTS

Table 1 provides the descriptive statistics for the pre-COVID dataset. The Nifty 50 exhibited mean returns of 0.000268, and the mean net inflows for DIIs were 366.353. Both series showed posi-

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tive skewness. The standard deviations for DIIs and Nifty 50 were 930.99 and 0.79 per cent. The data were overly peaked, according to the kurtosis measurement of data flatness. For evaluating whether the data has a regular distribution, the Jarque-Bera test was used. The findings demonstrated that the data were not normally distributed since the p-value of the *t*-statistic is inconsequential at the 5% level of significance.

Table 1. Results of descriptive statistics (pre-COVID)

Statistical measure	DII (RS_CR)	NIFTY_50
Mean	366.3534	0.000268
Median	308.1500	0.000493
Maximum	7621.160	0.051825
Minimum	–5240.620	–0.037802
Std. Dev.	930.9882	0.007939
Skewness	0.449018	0.169821
Kurtosis	12.15974	6.774193
Jarque-Bera	2537.689	430.1984
Probability	0.00	0.00
Observations	719	719

Table 2 presents an overview of descriptive statistics for the post-COVID dataset. The mean return of the NIFTY 50 increased to 0.000871, while DIIs recorded a slightly lower average net inflow of 274.31. A noticeable increase in volatility is observed for DIIs and Nifty 50, with the standard deviation increased to 1624.407 and 1.59 per cent. According to this analysis, Skewness results show a negative skew for Nifty 50 and a positive skew for DIIs. The data were overly peaked, according to the kurtosis measurement of data flatness. The Jarque-Bera test again confirms non-normality, with p-values well below the 5% threshold.

Table 2. Results of descriptive statistics (post-COVID)

Statistical measure	DII (RS CR)	NIFTY 50
Mean	274.3087	0.000871
Median	161.4500	0.002022
Maximum	7667.750	0.084003
Minimum	–4968.900	–0.139038
Std. Dev.	1624.407	0.015909
Skewness	0.699915	–1.789502
Kurtosis	4.644445	19.42709
Jarque-Bera	100.4644	6088.938
Probability	0.00	0.00
Observations	517	517

Table 3 shows the ADF test results. The data were tested for stationarity, and all variables were found to be stationary at the level, both before and after COVID-19, with p-values < 0.01. These results validate the appropriateness of conducting cointegration and causality analysis on the time series.

Table 3. ADF test results

Variables	Pre-COVID		Post-COVID	
	t-statistics	p-value	t-statistics	p-value
DIIs	–5.098	0.0000	–4.933118	0.0000
N_50	–24.38019	0.0000	–24.96027	0.0000

The Johansen Cointegration Test (Table 4) indicates a long-term equilibrium relationship between NIFTY 50 and DII flows for both pre- and post-COVID periods. The Trace and Max-Eigen statistics exceed their respective critical values of 15.49471 and 14.26460 at the 5% critical values, confirming the presence of cointegration. The test results for both pre-COVID and post-COVID periods show that these values are consistently higher than the critical thresholds, which suggests that any short-term deviation between these variables is corrected over time, implying long-term co-movement.

Table 4. Johansen cointegration test results

Variables	Pre-COVID		Post-COVID	
	Trace	Max Eigen	Trace	Max Eigen
DIIs	322.9359	271.4217	218.3311	18.7660

Cointegration tests indicated the presence of long-term relationships, supporting the relevance of conducting Granger causality analysis. As shown in Table 5, a unidirectional causal relationship was observed between Nifty 50 and DIIs' daily flows in the pre-COVID period. However, in the post-pandemic period, the results revealed a bidirectional Granger causality between Nifty 50 and DIIs' flows. Unlike the pre-COVID period, where no causality was found from DIIs to Nifty 50, the post-COVID period exhibited a strong bidirectional causal relationship, suggesting increased responsiveness of markets to domestic institutional activity. Thus, the study partially accepts the first alternative hypothesis (*H1*) and accepts the second alternative hypothesis (*H2*).

The cointegration results confirm the existence of a long-run equilibrium between the Nifty 50 and DII flows, underscoring the importance of track-

Table 5. Granger causality test results

Pre-COVID			Pre-COVID		
Hypothesis	**p-value**	**Decision**	**Hypothesis**	**p-value**	**Decision**
N_50 →DIIs	0.0000(4.E-17)	Not Accepted	DIIs → N_50	0.6740	Accepted
Post-COVID			Post-COVID		
N_50 → DIIs	0.0196	Not Accepted	DIIs → N_50	0.0000(8.E-16)	Not Accepted

ing domestic institutional activity in market forecasting. In summary, the results reveal that the Indian equity market's response to DII flows has become more pronounced in the post-COVID era, which is evident by the emergence of bidirectional causality.

4. DISCUSSION

It has been believed that FIIs dominate Indian equity markets, and their trades create volatility in the market (Chandra, 2012). This study used Johansen cointegration and Granger causality tests to examine the long-run association and causal relationship between Nifty 50 and DIIs' daily net flows. The Granger causality test results showed bi-directional relationships of Nifty 50, with DIIs' net flow, post-pandemic. The results also found that DII daily net flow movements can predict future price changes in Nifty 50, and similarly, Nifty 50 can predict the DII daily net flow movements. This, in hindsight, might be valuable in developing new investment strategies and diversifying investors' funds. It is also reported that institutional investors show herding behavior (Guo et al., 2024). But over time, especially after COVID-19, there have been improved inflows from domestic investors in the market through DIIs (Chauhan et al., 2023). It is important to analyze the relationship between DIIs and the Indian Stock Market. In line with the current study, Bao Dinh and Tran (2024) also reported that institutional ownership could reduce stock liquidity as institutional investors have better information symmetry. A study conducted in Indonesia revealed that *domestic investors* analyze the habits of foreign investors (Subagyo et al. 2024). The sizable spillovers to domestic types of investors either occur from professional or foreign investors, indicating the long-term dominant effect of foreign and more qualified investors on *domestic investors* in Borsa Istanbul (Can Ergün et al., 2023). It is also suggested that *Domestic investors* act as liquidity providers for the overall market as funding liquidity improves (Ryu et al., 2022). Another study on Asian stock markets concluded that foreign investors have superior information over domestic investors and that there is an inverse relationship between foreign fund flows and market volatility (Nittayagasetwat & Buranasiri, 2022). Another study on Chinese investors, including retail and institutional investors, concluded that investors have become more optimistic in the post-pandemic era (Hong et al., 2024). Overall, it has also been observed in the Chinese stock market that retail investors have doubled post-COVID, whereas the FII market share has declined from 53% to 6% (Tutuncu, 2023). This indicates the decrease in the dominance of these FIIs in the market as compared to the COVID era. A study by Saxena and Sikdar (2024) also revealed that stock market returns significantly impacted the returns of DII flows. Several studies supported our findings that post-COVID, there is an increase in the dominance of non-institutional investors.

CONCLUSION

The purpose of the study was to examine the causal relationships between the daily returns of the Nifty 50 index and the net flows of DIIs. COVID-19 is one of the major events disrupting the flow of money in the stock market. Employing Johansen's cointegration test, the study analyzed substantial long-term cointegration between Nifty 50 and DII daily flows in both pre and post COVID-19. The investigation unravels a bidirectional association between DII daily flow and the Nifty 50 in the post-pandemic landscape. This bidirectional causality implies a mutual influence, emphasising the nuanced dynamics characterising the interactions between market indices and institutional flows in the contemporary fi-

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nancial landscape. In the aftermath of the pandemic, the Nifty 50 has metamorphosed into a domain predominantly influenced by DIIs. This transformation is attributed to the profound understanding DIIs possess regarding the intricacies of the Indian market, enabling them to adeptly navigate the uncertainties arising from global unpredictability and the exodus of foreign investors. Concurrently, the influx of Robinhood investors has significantly contributed to increased inflows, potentially influencing market dynamics through the democratisation of finance, enhanced accessibility, and diversified investment choices.

The surge in retail investors in India is influenced by factors such as increasing disposable incomes, Increased market awareness, and access to online platforms. A focus should especially be drawn to the peculiar demographics of the country. India has the largest youth population in the world, with approximately 65 per cent being under 35 years of age. This young, sprightly population and its inclination to take risks for more significant gains should be examined, as it could be an influential explanation for the shift from traditional savings to the stock market. Thus, the above factors, combined with lower returns from conventional savings, financial inclusion initiatives, and technological advancements, have resulted in the current predicament. If this trend persists, the overarching dominance of FIIs may encounter challenges and lead to a more stable Indian market. Traders and analysts may use DII flows as a leading indicator for Nifty 50 movements. This study postulates that a well-informed domestic investor base is a robust buffer against external market fluctuations, contributing to a more self-reliant and imperturbable Indian financial landscape. In a positive light, volatility can mean greater returns for many, leading to more spending and economic growth.

AUTHOR CONTRIBUTIONS

Conceptualization: Sushant Malik, Jeevan Nagarkar, Nisha Bharti.
Data curation: Jeevan Nagarkar, Hrushikesh Padhi.
Formal analysis: Jeevan Nagarkar, Nisha Bharti, Hrushikesh Padhi.
Investigation: Sushant Malik, Jeevan Nagarkar, Nisha Bharti.
Methodology: Sushant Malik.
Project Administration: Jeevan Nagarkar
Software: Sushant Malik, Hrushikesh Padhi.
Supervision: Jeevan Nagarkar, Nisha Bharti
Validation: Sushant Malik, Jeevan Nagarkar, Nisha Bharti.
Writing – original draft: Jeevan Nagarkar, Hrushikesh Padhi.
Writing – review & editing: Sushant Malik, Jeevan Nagarkar, Nisha Bharti.

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