Understanding Investors' Behavior under Market Volatility: Evidence from the Equity Market

[1] Miss Jyotiben I. Ghanchi , [2]Miss Bhavna S. Jadav, [3]Dr. Nimesh P. Bhojak

[1,2] Research Scholar (Management), Hemchandracharya North Gujarat University, Patan, Gujarat, India. jyotighanchi@gmail.com jadavbhavna26@gmail.com

[3] Assistant professor, Hemchandracharya North Gujarat University, Patan, Gujarat, India, nimeshbhojak@outlook.com

Abstract

The study examines investor behaviour in the Indian equity market under varying market volatility conditions using a quantitative time-series framework. Monthly secondary data covering the period from January 2015 to January 2025 are analysed to capture both stable and turbulent market phases. Market volatility is measured using the India VIX, while investor behaviour is proxied by trading volume of the NIFTY 50 index, with market returns included as a control variable. Descriptive statistics, Pearson correlation analysis, multiple regression models, and regime-based analysis are employed to investigate the relationship between volatility and investor activity. The results reveal substantial variability in market volatility over time, with pronounced spikes during periods of market stress. Correlation analysis indicates a strong positive association between volatility and trading volume, suggesting heightened investor activity during uncertain market conditions, while volatility is negatively related to market returns. Regression results confirm that market volatility has a statistically significant and positive impact on trading volume even after controlling for returns. Further, regime analysis shows that trading activity increases disproportionately during high-volatility periods, with statistically significant differences between high- and low-volatility regimes. These findings highlight asymmetric investor responses during extreme market conditions and provide evidence of behavioral biases such as risk aversion and herding. The study contributes to behavioral finance literature by offering empirical insights from an emerging market context and has implications for investors and policymakers concerned with market stability.

Keywords: Market Volatility, Investor Behaviour, Equity Market, Volatility Index (VIX), Behavioral Finance

1. Introduction

Financial markets are volatile in nature, and they are always characterised by uncertainties that tend to affect the way investors make decisions and behave in the market. Market volatility is a measure of the level of uncertainty of the prices of assets that are commonly employed in measuring market risk. Over the past few years, the volatility in equity markets across the world has been aggravated by factors like international financial crises, economic fallouts and pandemic shocks. Market volatility has also been increasing due to the increased participation of markets and the high flow of information in emerging markets such as India. It is thus very important to comprehend the behaviour of investors in volatile market conditions since behavioural reactions may influence the efficiency of the market, price discovery, and stability in the financial market in general. The emergent trends in the Indian stock market literature have been putting more emphasis on volatility, sentiment, and behavioural aspects of investor behaviour. Agarwal and Saradhi (2025) analyze the co-movement between Indian and Asia- Pacific stock markets, and conclude that volatility spillovers and regional correlations are important in determining the dynamics of the market, which implies that the presence of external uncertainty can intensify any domestic volatility. Alarnkar and in. It has also been demonstrated that macroeconomic uncertainty influences market liquidity and volatility. Debata and Mahakud (2018) record that the economic policy uncertainty has a big impact on the liquidity of the stock market in India, the effects of which are more pronounced during financial crises. Continuing on this line of argument, Mishra et al. (2024) conclude that the uncertainty in global economic policy significantly influences the volatility of the Indian stock market, which confirms the argument about emerging market susceptibility to global shocks. According to Dey et al. (2024), institutional investors in India show that their trading behaviour varies differently with the change in risk, return, and volatility, a factor that supports a heterogeneous investor reaction. The topicality of behavioural

biases and investor psychology in Indian market research is still a prominent theme. According to Goyal and Tripathi (2019), overconfidence and representativeness are some of the behavioural biases in the decision-making of Indian investors. Jain et al. (2023) demonstrate that investment intentions depend on the personality traits of investors, and overconfidence bias and financial literacy are the mediating factors. Kumari and Mahakud (2015) offer solid empirical evidence on the idea of investor sentiment predicting asset volatility in the Indian stock market, and Kumari and Mahakud (2016) go further to prove that investor sentiment is one of the factors that contribute hugely to and enhance market volatility, which substantiates the argument that emotions and expectations drive the movement of the markets. Naik (2022) and Yadav and Naik (2024) also show that the element of irrational investor sentiment has a major influence on the stock returns volatility and the distribution of returns in the Indian stock market.

The existence of extreme market conditions increases behavioural responses. Mushinada (2020) discovers the shift in investor behaviour during market crashes in India, associated with an increase in risk aversion and panic selling. The techniques of sentiment analysis are used by Paramanik and Singhal (2020) to demonstrate that there is a close relationship between sentiment devices and the volatility of the stock market. Sharma, et al (2021) provide arguments on the advent of behavioural finance to explain investment decisions, and Sehgal et al (2022) discuss the topic of financial integration and its impact on equity market anomalies in India. Thomas and Kumar (2025) also strengthen the arguments on behavioural finance by drawing a direct connection between investor sentiment and the volatility of the stock markets. Even though Jan et al. (2022) are exploring post-COVID investor psychology, the research was reneged and thus used cautiously, as merely a background context instead of a supporting evidence.

According to the traditional finance theories, investors are all rational, and markets are perfectly efficient in order to integrate all the available information. Nevertheless, these assumptions are put to test by regular instances of overtrading, overreactions in the market, and volatility clustering. The sharp fluctuation in the trading activity in the Indian equity market is common in times of high volatility, hence the occurrence of behavioural bias like herding and risk aversion. Although there is increased interest in behavioural finance, there is little empirical evidence on how the volatility of the market has a systematic effect on investor behaviour in the long term. Through the integration of market volatility, volume of trade and market returns, the investigation offers all round evaluation of investor behaviour under stable and turbulent market dynamics. Moreover, the analysis trades the asymmetric behavioural responses in the times of extreme volatility, and it gives us an insight on the application of behavioural finance in an emerging market situation.

Objectives of the Study

1. To examine the nature and extent of market volatility in the Indian equity market during the period 2015 to 2025
2. To analyse the relationship between market volatility and investor behaviour, as measured by trading volume and market returns
3. To assess whether investor behaviour differs across high-volatility and normal market conditions, indicating the presence of asymmetric behavioural responses

2. Methodology

2.1 Research Design

In the present study, quantitative and empirical research design is assumed to investigate the behaviour of investors in the equity market during market volatility conditions. The time-series form of analysis is used to capture the changes in the activity of the investors at various stages in the market. This analysis is done completely on basis of secondary data and thus volatility and trading behaviour can be objectively measured. The study aims at establishing statistical connections amid market volatility and investor behaviour based on the well-established econometric methods. The study will offer empirical data on the behavioural reaction to uncertainty, which is in line with the behavioural finance framework, by observing the stable and turbulent periods.

2.2 Data Sources and Sample Period

The analysis is based on monthly secondary data since January 2015 to January 2025, which offers 121 observations. The data on market volatility were retrieved through available financial databases in the market, where India VIX is the prime proxy of market uncertainty. Equity market information such as trading volume and index price of the NIFty 50 was gathered

through valid financial information sources. The chosen timeframe encompasses both stable market scenarios and periods of extreme volatility, like financial stress and periods of crisis, which guarantees that the behaviour of investors is thoroughly studied.

2.3 Variable Description and Measurement

The volatility of the markets is calculated with the help of the India VIX, that demonstrates the expectations of investors to the market risk in the nearest future. Monthly trading volume of the NIFTE 50 index proxies investor behaviour as it reflects the trading intensity as well as the participation of the market. The sample is also covered by market returns as a control factor (calculated as monthly percentage variations in the closing price of NIFTY 50 index). The volume of trading is valued at billions, whereas the market returns are measured in percentages. These are the variables that are commonly employed to examine the investor response to volatility in behavioural finance literature.

2.4 Data Processing and Software

R statistical software was then used to clean, transform, and merge all the datasets. The variables that were in text formats initially were changed to numeric values so that they would be compatible with statistical analysis. The standard return calculation formulae were used to compute monthly market returns and they were all normalized with a standard time index in months. The last set of data will be the volatility of markets, the quantity of trades, and market returns per month. R is used to provide transparency, reproducibility, and accuracy in the data handling and analysis.

2.5 Analytical Techniques

The primary methods used in the study are descriptive statistics, correlation analysis, and regression-based models to study the relationship between investor behavior and market volatility. The distributional properties of the variables are summarized with the help of descriptive statistics. The analysis of Pearson correlation is applied to determine the direction and the strength of relationships between volatility, trading volume, and returns. Multiregression is used to assess the effect of market volatility on investor behavior with the market returns held constant. All these methods present empirical support of volatility behavior dynamics.

2.6 Analysis of High-Volatility Regimes

In order to investigate the asymmetric investor behaviour, the sample is sorted into high-volatility regime and normal/low-volatility regime in respect to upper 20 percent of India VIX values. The average trading volume compares across these regimes to determine the difference in investor activity in extreme market environments. The statistical significance of trading behaviour differences is tested with two-sample t-test. In this way the study will be able to take into account behavioural patterns including risk aversion and herding in times of increased uncertainty.

2.7 Ethical Considerations

No human subjects or sensitive data are involved in the study since it only utilizes secondary data in the form of publicly accessible materials. This leads to the fact that no ethical approval is necessary. As a way of ensuring academic integrity and transparency, all sources of data are properly referenced.

3. Results

3.1 Descriptive Statistics

The descriptive statistics give a summary of the market volatility, investor behaviour as well as the market returns between the years 2015 and 2025. The volatility of the market as given by the India VIX is exhibits substantial variation with 17.10 as the mean and 6.22 as the standard deviation of the volatility showing it changing frequently between stable and turbulent market conditions. The volatility index ranges from 10.41 to 64.41, reflecting extreme uncertainty during crisis periods. The trading volume as a measure to determine the investor behavior stands at 5.77 billion units and is highly dispersed indicating that the investor participation varies through the market phases. Market returns also have much variability showing swings of profits and losses in the equity market. Table 1 presents the descriptive statistics of the market volatility (India VIX), volume of trade, and market returns over the period of study. Market returns consist of 120 observations due to the loss of the first observation during return calculation.

Table 1: Descriptive Statistics of Market Volatility, Investor Behaviour, and Market Returns (January 2015 – January 2025)

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
India VIX	121	17.10	6.22	10.41	64.41
Trading Volume (Billion units)	121	5.77	3.25	1.00	11.30
Market Return (%)	120	0.57	3.31	-23.25	14.68

Source: Author's compilation based on secondary data obtained from Investing.com

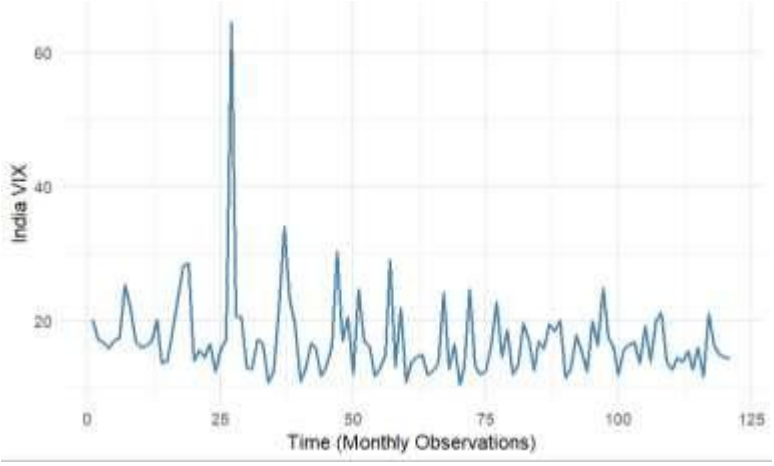

Figure 1: Trend of Market Volatility (India VIX)

Figure 1 shows the time-varying behavior of market volatility, highlighting periods of heightened uncertainty and volatility clustering. It reveals pronounced volatility spikes during specific periods, indicating episodes of heightened market stress. Such volatility clustering suggests that uncertainty in the equity market tends to persist over time rather than occurring in isolation.

3.2 Correlation Analysis

The correlation analysis focuses on the association between the market volatility, investor behaviour, and the market returns. The findings show that there is a high positive correlation between India VIX and trading volume (r = 0.62) which means that there is an increase in the volume of investor activity when the market is highly volatile. This means that the more the uncertainty, the higher will be the intensity of the trading in the equity market. Conversely, market volatility has negative correlation to market returns (r = -0.33), thus the high volatility levels are usually linked to the deteriorating performance of the market. The relationship between trading volume and market returns is weak and near to zero indicating that the investor behaviour is greatly influenced by volatility conditions than by the contemporaneous market returns. In general, the results indicate that market volatility contributes largely to the development of investor behaviour. Table 2 shows Pearson correlation coefficients between market volatility (India VIX), trading volume and market returns. It shows the correlations between India VIX and trading volume, and between India VIX and market returns, are statistically significant at the 1% level.

Table 2 Correlation Matrix of Market Volatility, Trading Volume, and Market Returns

Variable	India VIX	Trading Volume	Market Return
India VIX	1.00	0.62	-0.33
Trading Volume	0.62	1.00	-0.01
Market Return	-0.33	-0.01	1.00

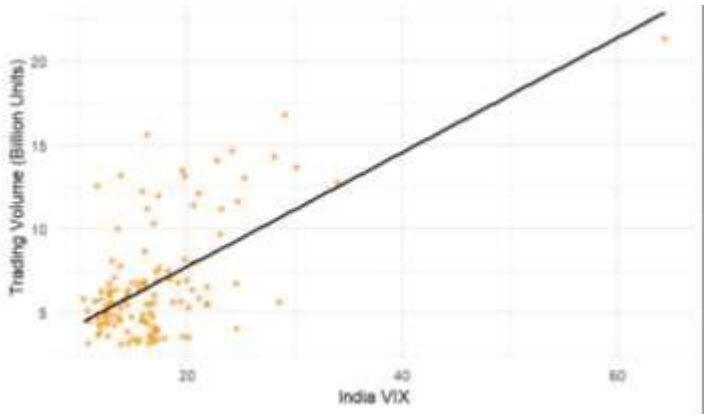

Figure 2: Relationship between Market Volatility and Trading Volume

Figure 1 shows the relationship between market volatility, measured by the India VIX, and investor trading activity. The upward-sloping trend indicates a positive association between volatility and trading volume, suggesting that investor activity increases during periods of heightened market uncertainty. The fitted regression line further confirms this positive relationship, supporting the correlation and regression results that identify market volatility as a key driver of investor behavior in the equity market.

3.3 Regression Analysis

In order to study the effect of market volatility on investor behavior in a more formalized way, a multiple regression model was estimated with the trading volume as the dependent variable and the market volatility (India VIX) and market returns as the predictors. The findings reveal that market volatility significantly, and statistically significantly, affects investor activity. The coefficient of the India VIX is positive and statistically significant, which indicates that an increase in the uncertainty in the market can result in an increase in the intensity of trading. Market returns also have a positive and significant association with volume trading, which implies that the involvement of an investor is affected by the market performance as well as conditions of volatility. All in all, the model exhibits a high level of explanatory power and supports the view that the effect of market volatility is significant in determining investor behavior in the equity market. The findings of the multiple regression analysis of the impact of market volatility and market returns on trading volume are presented in Table 3. The results provide strong statistical evidence that market volatility significantly influences investor behavior.

Table 3 Regression Results: Impact of Market Volatility on Investor Behavior

Variable	Coefficient (β)	Std. Error	t-value	p-value
Constant	0.066	0.759	0.087	0.931
India VIX	0.385	0.041	9.366	< 0.001
Market Return	0.165	0.055	2.995	0.003

3.4 Investor Behavior during High-Volatility Periods

To examine asymmetric behavioural responses under extreme market conditions, the sample was classified into high-volatility and normal/low-volatility regimes based on the upper 20 percent of India VIX values. The analysis reveals a clear difference in investor behavior across volatility regimes. Average trading volume during high-volatility periods is significantly higher than during normal or low-volatility periods, indicating intensified trading activity under heightened uncertainty. The Welch two-sample t-test confirms that the difference in mean trading volume across regimes is statistically significant. These findings suggest that investor behavior is not uniform across market conditions and becomes more pronounced during periods of extreme volatility, reflecting behavioral biases such as risk aversion and herding. Table 4 compares average trading volume between high-volatility and normal/low-volatility market regimes. The difference in mean trading volume is statistically significant at the 1% level ($p < 0.01$)

Table 4 Comparison of Investor Behavior across Volatility Regimes

Volatility Regime	Average Trading Volume (Billion Units)	Average India VIX	Observations
High Volatility	9.84	25.50	25
Normal / Low Volatility	5.96	14.90	96

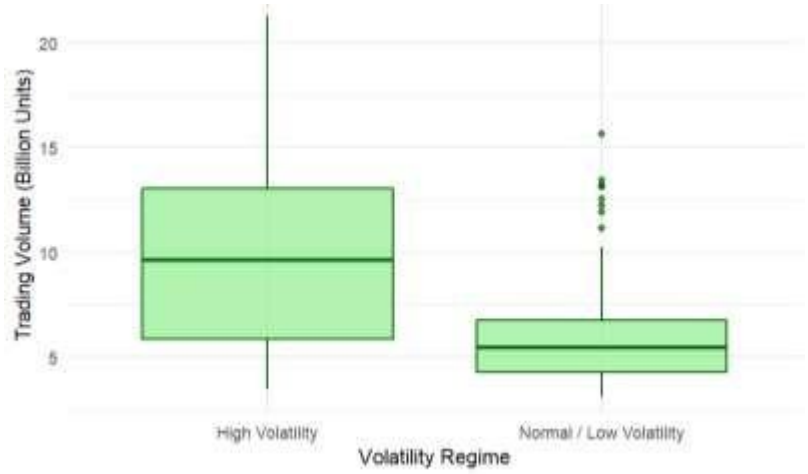

Figure 3: Investor Behavior Across Volatility Regimes

Figure 3 shows the distribution of trading volume across high-volatility and normal/low-volatility market regimes. The figure shows that trading volume is substantially higher during periods of high market volatility compared to normal or low-volatility periods, indicating intensified investor activity under heightened uncertainty. The wider dispersion of trading volume during high-volatility regimes further suggests heterogeneous investor responses, consistent with risk aversion and herding behavior.

3.5 Summary of Key Findings

The study finds that market volatility exhibits significant variability over time, reflecting alternating phases of stability and heightened turbulence in the equity market. Empirical results reveal a strong positive relationship between market volatility and trading volume, indicating that investor activity intensifies during periods of increased uncertainty. Regression analysis further confirms that higher levels of market volatility significantly raise trading activity, even after controlling for market returns. Additionally, investor behavior is found to differ markedly across volatility regimes, with trading volume increasing disproportionately during extreme volatility periods. These asymmetric behavioral responses provide evidence of non-rational investor behavior, consistent with risk aversion and herding tendencies observed in volatile market conditions.

4. Discussion

The empirical evidence shows that market volatility has a considerable contribution to the investor behavior in the equity market. The positive association between India VIX and the trading volume is strong and positive which indicates that investors are more active in times of increased uncertainty, this could be as a result of portfolio rebalancing, speculative trading or risk management plans. The correlation between market returns and volatility is negative and it indicates that risk aversion is increased during times of volatility. The results of the regression also substantiate that even when the market performance has been taken into account, volatility is a strong predictor of trading activity. The fact that the trading volumes were asymmetrically increased under the high-volatility regimes also supports the idea that the reactions of investors are not homogeneous and they do not follow the assumptions of fully rational behavior.

These results have significant implications to investors, portfolio managers, and policymakers. To investors, increased volatility of the market is an indicator of more trading and possible behavioral biases and the importance of disciplined investment strategies in the uncertain times. The volatility indicators like the India VIX can help forecast the change in the behavior of the investors and portfolio managers can modify the portfolio allocations. Regulators and policymakers can think about the possibility of tracking trading trends due to volatility to maintain the stability of the market and avoid high levels of speculative trading. Generally, the study of the behavioural effects of volatility can be used to make markets more

effective and aid in the decision-making of investors in times of market stress. The general findings are mostly in line with the previous study that records a high correlation between market volatility and investor behaviour. According to Saranj and Zolfakhari (2025), volatility-trading behaviour nexus between institutional and individual investors is high which is consistent with the current study evidence of higher trading volume in times of high market volatility. On the same note, Zhou (2018) emphasizes the effect of investor sentiment on market dynamics, which justifies the positive correlation between volatility and investor activity in this paper. The findings are also consistent with the recent behavioural finance studies that dwell on emergent and turbulent market situations.

The current analysis by Kumari et al (2025) concludes that bear markets increase investor perception driven trading behaviour, and this is in line with the observed asymmetric responses during the high-volatility regimes. Similarly, Thomas and Kumar (2025) highlight how behavioural biases contribute to the volatility of stock markets, and this supports the prevalence of risk aversion and herding behaviour as in this paper. Moreover, Pillai et al. (2024) show that extreme events like the COVID-19 crisis have a profound effect on the patterns of decisions regarding investment, which is similar to the increased trading activity in the conditions of extreme volatility that are observed in the current study. Altogether, the current results contribute to the current literature by offering empirical evidence of the Indian equity market during the duration of a post-crisis. Although the study has its contributions, it has some limitations, which must be recognized. First, it is analysed based on monthly secondary data, possibly not capturing short term or intramonth investor responses when the market is incredibly volatile. Second, investor behaviour is only indicated through trading volume; this does not make a distinction between retail and institutional traders and it does not focus explicitly on psychological variables, like sentiment and expectations.

The study can be further developed by a future research including more behavioural proxies like investor sentiment indices, institutional and retail investors flows, and derivative market actions to include a wider range of investor behaviour. Higher-frequency data, like daily or intra-daily data, might give more information on short-term behavioural reactions to unexpected shocks in volatility and information releases. More sophisticated econometric methods, such as nonlinear models, regime-switching models, or volatility spillover models, can also be used in the future to explain the dynamic and asymmetric behavior of investor responses in various market regimes. The comparison of developed and emerging markets would also be good to determine whether behavioural patterns around volatility differ across market structures and regulatory environments. Besides, the analysis of the role of macroeconomic announcements and policy interventions can contribute to a better understanding of the interaction of external factors with market volatility. These extensions would add to a more complex and in-depth explanation of investor behaviour under volatile financial conditions.

5. Conclusion

The study examined investor behaviour under conditions of market volatility using evidence from the Indian equity market over the period 2015 to 2025. By employing secondary monthly data on market volatility, trading volume, and market returns, the analysis provides empirical insights into how investors respond to changing market conditions. Descriptive statistics highlighted significant variability in market volatility, reflecting alternating phases of stability and turbulence. Correlation results revealed a strong positive association between market volatility and trading volume, while volatility exhibited a negative relationship with market returns, suggesting heightened risk aversion during uncertain periods. Regression analysis further confirmed that market volatility, proxied by the India VIX, has a statistically significant and positive impact on investor trading activity, even after controlling for market performance. These findings indicate that heightened uncertainty prompts investors to trade more actively, potentially due to behavioural biases such as herding and risk management responses. Additionally, the analysis of high-volatility regimes revealed asymmetric investor behaviour, with trading activity increasing disproportionately during extreme volatility periods. This evidence challenges the assumption of fully rational investors and supports key propositions of behavioural finance theory. Overall, the study contributes to the growing literature on volatility behaviour dynamics by providing robust empirical evidence from an emerging market context. The findings offer practical implications for investors, portfolio managers, and policymakers seeking to understand and manage market behaviour during volatile periods. By highlighting the behavioural impact of market uncertainty, the study underscores the importance of incorporating volatility indicators into investment decision-making and regulatory frameworks aimed at enhancing market stability and efficiency.

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