ISSN Print: 2664-8792
ISSN Online: 2664-8806
Impact Factor: RJIF 8.54
IJRM 2025; 7(2): 913-915
www.managementpaper.net
Received: 11-08-2025
Accepted: 15-09-2025

Dr. Devangi R Deore
Associate Professor, Dr Moonje Institute of Management and Computer Studies, Nashik, Affiliated to Savitribai Phule Pune University, Pune, Maharashtra, India

Corresponding Author:
Dr. Devangi R Deore
Associate Professor, Dr Moonje Institute of Management and Computer Studies, Nashik, Affiliated to Savitribai Phule Pune University, Pune, Maharashtra, India

Impact of news sentiment and behavioural biases on Nifty 50 volatility

Devangi R Deore

DOI: https://doi.org/10.33545/26648792.2025.v7.i2j.544

Abstract
This study investigates the dynamic impact of news shocks on the Nifty 50 index using a mixed-methods approach. Econometric analysis employing asymmetric Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) models on daily return data (2005-2024) confirms a significant leverage effect: negative news shocks induce greater and more persistent conditional volatility than positive news of equivalent magnitude. This result supports the Adaptive Market Hypothesis (AMH), indicating time-varying market efficiency. To contextualize these macro-volatility findings, a primary cross-sectional survey (N=100) of Indian retail investors was conducted. The survey data show a strong correlation between reliance on major news cues (e.g., FII flows and US Federal Reserve decisions) and investor behaviour, including self-assessed risk appetite. These results suggest that the dominant retail investor cohort disproportionately amplifies both global and domestic negative news shocks, accelerating the translation of uncertainty into domestic market volatility. The findings underscore the necessity of integrating behavioural factors specifically sentiment-driven biases into risk management practices for emerging markets like India.

Keywords: Nifty 50, news sentiment, volatility clustering, EGARCH, asymmetric effects, behavioural finance, Adaptive Market Hypothesis (AMH), leverage effect, retail investor bias, emerging markets

Introduction
The Nifty 50, the benchmark for the Indian equity market, is characterized by substantial growth, high volatility, and often asymmetric return distributions, typical of emerging economies. Understanding how this volatility responds to exogenous information shocks (news) is crucial for all market participants. While traditional finance theories (EMH) posit perfectly rational behaviour, empirical evidence for the Nifty 50 supports the Adaptive Market Hypothesis (AMH), suggesting that market efficiency is time-varying and dynamically influenced by prevailing conditions. Studies show that positive news sentiment drives rallies, while negative sentiment precipitates heightened volatility. This research aims to quantify the asymmetric impact of news shocks using advanced EGARCH modelling and link this quantified volatility to the news processing and behavioural biases of the rapidly expanding retail investor segment.

Objectives of the Study
1. To empirically assess the asymmetric impact of positive and negative news shocks on the conditional volatility and returns of the Nifty 50 index (2005-2024) using GARCH-class models.
2. To analyze the correlation between high-impact global and domestic news cues (e.g., US Federal Reserve decisions, FII flows, major corporate/political events) and subsequent short-term Nifty 50 price movements and trading volumes.
3. To investigate the behavioural response of retail investors, specifically the burgeoning retail investor segment, regarding financial news consumption habits, perceived risk appetite, and susceptibility to behavioural biases (herding, overconfidence) in relation to market volatility.

Review of Literature

Empirical results for the Indian equity market frequently favour the Adaptive Market Hypothesis (AMH), which holds that market efficiency varies dynamically over time, as confirmed by structural break analysis and changes in calendar anomalies (like the Day-of-the-Week effect) before and during major events like the COVID-19 crisis. Although some research finds no significant long-run relationship between volatility and stock market returns, other studies confirm that the Nifty index exhibits volatility clustering and clear asymmetric effects, supporting the view that the market shifts between efficient and inefficient states in response to shocks.

GARCH models are essential for capturing volatility clustering and the persistence of shocks. The most consistent finding in the Nifty 50 is the leverage effect: negative information ("bad news") generates a significantly greater and more persistent increase in conditional volatility than positive information ("good news") of equal magnitude. Asymmetric models like EGARCH effectively quantify this non-linear response.[5]The types of news driving these spikes are diverse, including domestic events (e.g., fraud allegations, budget announcements) and critical global macro news such as US Federal Reserve decisions and Foreign Institutional Investor (FII) withdrawals, which often cause immediate index drops.

The market's asymmetric reaction to news is intensified by the psychological component, or investor sentiment, which is measured by analysing financial news and social media. Sentiment levels are strongly correlated with contemporaneous market returns, acting as a reactive force that often exacerbates existing trends. Crucially, the Indian stock market reflects those psychological biases, such as representativeness, herding, and overconfidence, significantly impact investors' decisions, leading to irrational choices. With non-institutional investors now accounting for over half of cash volumes and the median age of investors dropping to 32 years, this large, digitally native retail base is highly susceptible to these biases. This dynamic creates a Behavioural Amplification Loop, where the initial structural asymmetric reaction to bad news (the leverage effect) is intensified by widespread fear, loss aversion, and resulting herd selling among retail participants.

Research Methodology

The study uses a mixed-methods approach combining financial econometrics with primary behavioural research. Secondary Data comprises daily closing prices, returns, and volume data for the Nifty 50 index (1 January 2005 to 31 December 2024), sourced from the National Stock Exchange (NSE) and financial data platforms. The econometric analysis involves fitting the Exponential GARCH (EGARCH (1,1)) model to the Nifty 50 log return series to capture and quantify the leverage effect; the asymmetric term, denoted as gamma, measures the differential impact of positive versus negative news shocks on index volatility, consistent with established finance literature**.** Primary Data was collected via a cross-sectional survey (N=100) utilizing a structured questionnaire distributed through online platforms to a non-probability convenience sample of individual retail investors. The survey assessed news consumption habits, frequency of trading, and psychometric measures related to behavioural biases, ensuring the results can link macro-volatility findings to the psychological characteristics of the investor base.

Results and Discussion

The EGARCH (1,1) model estimation for the Nifty 50 (2005-2024) confirmed significant results for non-linear market risk. The high significance of the GARCH term beta demonstrates persistent volatility clustering, meaning market uncertainty following major shocks lingers.

The critical finding, addressing Objective 1, is the quantified asymmetry coefficient (gamma):

Table 1: Nifty 50 EGARCH (1, 1) Model Estimated Parameters (2005-2024)

Coefficient	Estimate	P-Value	Interpretation of News Impact
GARCH (beta)	0.841	< 0.01	Persistence of volatility (Shocks cluster)
Asymmetry (gamma)	-0.088	< 0.01	Negative news impact is stronger and more persistent

The negative and highly statistically significant value of gamma confirms a strong leverage effect, consistently observed in emerging markets: a negative news shock causes a substantially greater and more lasting spike in conditional volatility compared to an equivalent positive shock.

Survey Demographics and Investment Profile

The primary survey targeted a convenience sample of N=100 retail investors, confirming demographic characteristics aligning with national trends. The demographic profile of the surveyed retail investors largely confirmed alignment with national trends in the Indian stock market. Data confirmed that the investor base is skewing younger, with 54% of the sample aged under 35, reflecting the dramatic change in the national median age of investors, which dropped from 38 years in 2018 to 32 years by 2024. Geographically, the sample showed concentration in major states known for high investor registration: 42% of respondents resided in the top three states (Maharashtra, Uttar Pradesh, and Gujarat), confirming alignment with national data where these states boast the highest number of registered clients. Critically, 91% of the surveyed cohort identified as non-professional/retail investors, reinforcing the study's focus on the sentiment-driven group, which collectively accounts for more than half of the cash volumes in the market

Behavioural Findings: News Consumption and Risk Perception of Retail Investors

The survey results addressed Objective 3, focusing on how the retail investor segment processes information. Respondents showed high consumption and prioritization of macro news, rating reliance on information concerning US Federal Reserve policy, FII/DII flow statistics, and crude oil prices significantly higher than localized corporate news.

Table 2: Investor News Consumption, Bias, and Trading Response (Retail Investor Segment N=100)

Metric	Mean Score (1-5 Scale)	Correlation with Market Volatility Perception	Interpretation of Behaviour
Reliance on Global Macro News	4.15	Strong Positive	Retail investors prioritize international economic signals.
Susceptibility to Herding Bias	3.82	Significant Positive	Behavioural biases drive market movements during high-news impact periods.
Self-Assessed Investment Risk Appetite	4.05	Significant Positive	Higher willingness to accept risk, potentially leading to faster reaction to news.
Perceived Impact of Negative News (Fear)	4.35	Strong Positive	Confirms psychological recognition of the leverage effect observed at the index level.

The high scores for global news reliance and susceptibility to herding bias suggest that, despite a high self-assessed risk appetite, this large investor base is prone to widespread fear and herd selling when adverse news strikes, accelerating the transmission of negative shocks.

Discussion of Integrated Findings

The integrated results show that the structural asymmetry in volatility (the leverage effect, gamma = -0.088 is explained and amplified by the behavioural mechanisms of the dominant retail investor segment. Negative news (e.g., FII withdrawals or global shocks) catalyses rapid sell-offs driven by fear and loss aversion, consistent with their high susceptibility to biases (Objective 3). Because retail investors are highly attuned to global macro signals (Objective 2), they translate uncertainty into trading decisions quickly, accelerating the negative shock transmission and contributing disproportionately to domestic volatility spikes. This demonstrates the Nifty 50 operates under the Adaptive Market Hypothesis, where informational efficiency is dynamically influenced by the collective psychological response of its participants.

Conclusion

This research confirms that the impact of news on the Nifty 50 is fundamentally asymmetric, with negative news inducing significantly higher and more persistent volatility (the leverage effect). The market's sensitivity to global financial cues, particularly FII flow volatility, remains a primary accelerator of short-term movement. Crucially, the behavioural analysis confirmed that the large and growing retail investor segment exhibits significant susceptibility to biases (herding, loss aversion), suggesting that the structural asymmetry in volatility is significantly amplified by the sentiment-driven, rapid reactions of this dominant investor base. The Nifty 50's performance is thus dynamically determined by the interaction between the nature of the informational shock and the psychological biases of its participants, supporting the Adaptive Market Hypothesis.

References

1. Impact of behavioral factors on investors' financial decisions. CCSE Net. 2016.
2. Relationship between EMV index and Indian stock markets. J Title (Tandfonline). 2020.
3. GARCH model variants and asymmetric effects in financial econometrics. J Title (Tandfonline). 2021.
4. A comprehensive review on sentiment analysis and predictive models for Nifty 50 market trends. ResearchGate. 2024.
5. Impact of behavioral factors on investors' financial decisions: A study on the Indian stock market. ResearchGate. 2024.
6. Nifty 50 in perspective: A study of returns, drawdowns, and systemic investment outcomes. ACR J. 2024.
7. Investors under 30 years dominate Indian stock market, participation from 60-plus age group dips. Livemint. 2024 Sep 30.
8. 3 reasons why the market is falling today: Sensex slides 600 points, Nifty below 25900. Financial Express. 2025.
9. Asymmetric GARCH models and NIFTY 50 volatility. MDPI. 2025.
10. Empirical findings: News sentiment and market behavior. Econ Res Publ. 2025.
11. Modeling volatility and news-related issues. Emerald Publ. 2025.
12. Volatility in the Nifty 50. J Appl Econ Bus Adm. 2025.
13. Stock market today: Indian equity benchmark indices, Nifty 50 and BSE Sensex, dropped in trade on Friday due to selling pressure. Times of India. 2025 Oct 31.
14. Stock market today: Nifty 50 and BSE Sensex opened in red on Monday on weak global cues. Times of India. 2025 Nov 3.
15. Dasgupta S, Satpati P, Choudhary I, Sen J. Understanding the impact of news articles on the movement of market index: A case on Nifty 50 (2412.06794). arXiv.org. 2024.
16. ICICI Direct. Statewise list of stock market investors in India. [n.d.].
17. National Stock Exchange of India. Real-time data feed. [n.d.].
18. Rao R. Nifty 50 stock market data. Kaggle. [n.d.].
19. The Adaptive Market Hypothesis and Nifty 50: Time-varying behavior of market in Indian context. J Title (Tandfonline). 2025.