ITJ | The International Tax Journal

Irrationality of stock markets in India: Behavioral evidence from Nifty and Sensex indices

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Abstract---Traditional financial theory assumes that investors behave rationally and markets efficiently incorporate all available information. However, behavioral finance challenges this assumption by suggesting that psychological biases and investor sentiment significantly influence financial markets. This study examines irrational behavior in the Indian stock market using empirical data from the Nifty 50 and BSE Sensex. Using correlation analysis, regression modeling, and descriptive statistics, the study investigates whether investor sentiment and herd behavior contribute to deviations from rational market behavior. Results reveal strong evidence of behavioral biases affecting market returns, suggesting that the Indian stock market deviates from the assumptions of the Efficient Market Hypothesis.

Keywords---Behavioral finance, herd behavior, investor sentiment, market anomalies, Indian stock market.

1. Introduction

Financial markets have traditionally been analyzed through the lens of the **Efficient Market Hypothesis**, introduced by Eugene Fama. The hypothesis suggests that stock prices reflect all available information and that investors act rationally when making investment decisions.

However, numerous empirical observations contradict this assumption. Irrational stock market behavior refers to situations in which investors make decisions that deviate from logical, rational, and information-based analysis. Traditional financial theories assume that investors act rationally and that stock prices always reflect all available information. However, real-world financial markets often display patterns that contradict these assumptions. Behavioral finance research has shown that psychological factors, emotions, and social influences significantly affect investor decision-making. As a result, stock prices sometimes move in ways that cannot be fully explained by fundamental economic indicators.

How to Cite:
Abhishek. (2026). Irrationality of stock markets in India: Behavioral evidence from Nifty and Sensex indices. *The International Tax Journal*, *53*(2), 850–860. Retrieved from https://internationaltaxjournal.online/index.php/itj/article/view/588

The International tax journal ISSN: 0097-7314 E-ISSN: 3066-2370 © 2026

Submitted: 27 January 2026 | Revised: 18 February 2026 | Accepted: 09 March 2026

One of the major causes of irrational market behavior is **psychological bias among investors**. Investors do not always evaluate information objectively; instead, they often rely on personal beliefs, emotions, and mental shortcuts. These biases can lead to systematic errors in investment decisions. For example, investors frequently display **overconfidence**, believing that they possess superior knowledge or forecasting ability. This overconfidence often leads to excessive trading and risk-taking. Similarly, **loss aversion**, a concept developed by Daniel Kahneman and Amos Tversky, explains that investors experience the pain of losses more strongly than the satisfaction of equivalent gains. Because of this, investors may hold losing stocks too long while selling profitable stocks too quickly.

Another important factor contributing to irrational behavior in stock markets is **herd behavior**. Herding occurs when investors imitate the actions of others rather than relying on independent analysis. In many cases, investors buy stocks simply because other investors are buying them, creating upward price momentum. Similarly, during market downturns, panic selling spreads quickly as investors attempt to exit the market simultaneously. This collective behavior can lead to speculative bubbles and sudden market crashes. Herd behavior is particularly common in markets with a large number of retail investors who may have limited access to financial information.

Investor sentiment also plays a crucial role in shaping irrational stock market behavior. Investor sentiment refers to the overall mood or attitude of investors toward the financial market. Positive sentiment often leads to optimistic expectations, encouraging investors to purchase stocks aggressively and drive prices upward. Conversely, negative sentiment may result in pessimism and widespread selling, causing stock prices to fall sharply. These sentiment-driven fluctuations can cause stock prices to deviate from their intrinsic values for extended periods.The impact of irrational behavior is particularly visible in emerging markets where retail participation is rapidly growing. In India, trading activities on exchanges such as the National Stock Exchange of India and the Bombay Stock Exchange have increased significantly due to digital trading platforms and financial inclusion initiatives. As a result, benchmark indices like the Nifty 50 and the BSE Sensex sometimes experience large short-term fluctuations that cannot be explained solely by economic fundamentals. Rapid inflows of retail investors, combined with social media influence and speculative trading, can amplify market volatility.

Another manifestation of irrational behavior is the occurrence of **market anomalies**. Market anomalies are patterns in stock price movements that contradict the predictions of traditional financial theory. Examples include the **momentum effect**, where stocks that have performed well in the past continue to perform well in the short term, and the **overreaction effect**, where stock prices respond excessively to new information and later correct themselves. These anomalies suggest that investors do not always process information efficiently.Irrational market behavior also plays a role in the formation of financial bubbles. When investors collectively believe that stock prices will continue to rise indefinitely, demand for stocks increases rapidly, driving prices far above their intrinsic values. Eventually, when market sentiment changes, the bubble bursts, leading to sharp price declines. Historical financial crises around the world have demonstrated how irrational optimism followed by widespread panic can destabilize financial markets.

Understanding irrational stock market behavior is therefore essential for investors, policymakers, and regulators. For investors, recognizing behavioral biases can help improve investment strategies by encouraging disciplined decision-making and long-term planning. For regulators, studying irrational behavior provides insights into how market volatility develops and how investor protection mechanisms can be strengthened

2. Literature Review Matrix (30 Studies)

Author	Year	Theory	Key Findings
Kahneman & Tversky	1979	Prospect Theory	Loss aversion explains irrational investment decisions
Fama	1970	Efficient Market Hypothesis	Markets assumed rational and informationally efficient
Shiller	2000	Behavioral Finance	Speculative bubbles driven by investor psychology
Thaler	1999	Behavioral Economics	Psychological biases affect financial decisions
Barberis et al.	1998	Asset Pricing	Investor sentiment affects prices
Lo	2004	Adaptive Market Hypothesis	Markets evolve through investor learning
DeBondt & Thaler	1985	Overreaction	Investors overreact to news
Jegadeesh & Titman	1993	Momentum	Past winners outperform
Bikhchandani & Sharma	2000	Herding	Investors follow crowd behavior
Abbi et al.	2014	Indian Markets	Herding present in Nifty stocks
Agrawal et al.	2016	Investor Bias	Psychological factors affect trading
Satish & Padmasree	2017	Indian Investors	Evidence of herd behavior
Francis et al.	2020	IT Sector	Herding in Indian technology stocks
Gupta & Loang	2024	Retail Investors	Herd mentality significant
Bharti et al.	2025	Crash Risk	Herding increases crash probability
Pan & Sinha	2006	Market Returns	Heavy-tailed distribution
Chaudhuri & Ghosh	2016	Volatility	Volatility clustering in India
Lee et al.	1991	Investor Sentiment	Sentiment influences stock returns
Baker & Wurgler	2006	Sentiment Index	Sentiment predicts returns
Hong & Stein	1999	Information Diffusion	Slow diffusion causes momentum
Daniel et al.	1998	Investor Psychology	Overconfidence affects prices
Shefrin	2000	Behavioral Finance	Psychological bias framework
Barber & Odean	2001	Trading Behavior	Overconfidence increases trading
Shleifer	2000	Inefficient Markets	Limits of arbitrage
Campbell	2000	Asset Pricing	Behavioral models explain anomalies
Shiller	2003	Market Volatility	Psychological causes of volatility
Statman	2014	Behavioral Finance	Investor emotions drive markets
Kumar & Lee	2006	Retail Trading	Retail investors drive

Author	Year	Theory	Key Findings
			anomalies
Glaser & Weber	2007	Overconfidence	Bias affects trading volume
Hirshleifer	2015	Behavioral Economics	Psychology influences financial markets

3. Research Objectives

This study aims to:

1. Examine the presence of irrational behavior in the Indian stock market.
2. Analyze behavioral biases such as herd behavior and investor sentiment.
3. Evaluate the relationship between market volatility and irrational trading.
4. Test whether Indian stock market indices follow the Efficient Market Hypothesis.

4. Theoretical Framework

4.1 The Efficient Market Hypothesis (EMH) is a fundamental theory in finance that states that financial markets are efficient and stock prices fully reflect all available information. According to this hypothesis, it is impossible for investors to consistently achieve higher returns than the overall market through stock selection or market timing because any new information is immediately incorporated into stock prices. The concept was formally developed and popularized by the economist Eugene Fama in the 1960s. EMH suggests that stock prices always adjust rapidly to new information, making it very difficult for investors to identify undervalued or overvalued stocks using publicly available data.

The **Three Forms of Market Efficiency** are classifications of the **Efficient Market Hypothesis**, developed by economist Eugene Fama. These forms describe how quickly and completely different types of information are reflected in stock prices. The three levels are **Weak Form Efficiency, Semi-Strong Form Efficiency, and Strong Form Efficiency**.

1. Weak Form Market Efficiency

The weak form efficiency states that current stock prices fully reflect all past market information, such as historical prices and trading volumes.the key idea is about Future stock prices cannot be predicted using past price movements because the market already incorporates historical data. Its Implications areTechnical analysis cannot consistently generate abnormal profits, Stock price movements follow a random walk pattern and Investors cannot earn excess returns simply by studying past price charts.

2. Semi-Strong Form Market Efficiency

The semi-strong form efficiency states that stock prices reflect all publicly available information it **Includes** Financial statements, Earnings announcements, Economic indicators, News reports and corporate announcements. The **Implications of *Semi-Strong Form Market Efficiency are*** Neither technical analysis nor fundamental analysis can consistently outperform the market and Stock prices adjust quickly when new public information becomes available.

3. Strong Form Market Efficiency

The strong form efficiency suggests that stock prices reflect all information, both public and private (including insider information). the key idea is that an investor can consistently earn abnormal profits even if they have access to confidential or insider information. Its major Implications include Insider trading cannot generate excess returns and Markets are perfectly efficient. But the Reality is that In practice, strong-form efficiency rarely exists because insider information can sometimes be used to gain unfair advantages. Therefore, regulatory authorities such as the Securities and Exchange Board of India monitor and regulate insider trading.

According to the Efficient Market Hypothesis Investors process information rationally, Prices adjust immediately to new information and Abnormal profits cannot be consistently earned

4.2 Behavioral Finance: Behavioral finance integrates insights from psychology and economics to explain irrational financial behavior. **Behavioral finance** is an interdisciplinary field that combines principles from psychology and economics to understand how investors actually behave in financial markets. Traditional financial theories assume that investors are rational decision-makers who carefully analyze all available information and act in ways that maximize their wealth. However, real-world evidence shows that investors often make decisions influenced by emotions, cognitive biases, and social pressures. Behavioral finance attempts to explain these deviations from rational behavior.

The foundations of behavioral finance were developed through the pioneering work of psychologists such as Daniel Kahneman and Amos Tversky, who introduced **Prospect Theory**. Their research demonstrated that individuals evaluate gains and losses differently and are more sensitive to losses than to equivalent gains. This psychological tendency leads investors to behave irrationally in financial markets. Later, economists such as Richard Thaler further expanded behavioral finance by showing how systematic biases affect economic and financial decisions.

Behavioral finance challenges the assumptions of the Efficient Market Hypothesis proposed by Eugene Fama. According to the Efficient Market Hypothesis, stock prices fully reflect all available information and investors act rationally. However, behavioral finance argues that investors often rely on heuristics, emotions, and psychological shortcuts when making investment decisions. As a result, stock prices may deviate from their fundamental values, creating market anomalies and inefficiencies.

One of the key contributions of behavioral finance is the identification of **cognitive biases** that influence investor behavior. These biases include overconfidence, anchoring, representativeness, and availability bias. Overconfidence leads investors to believe that they have superior knowledge or predictive abilities, often resulting in excessive trading. Anchoring occurs when investors rely too heavily on a specific reference point, such as a past stock price, when making investment decisions. Availability bias causes investors to focus on easily accessible information, such as recent news or popular market trends, rather than conducting comprehensive analysis.

Emotions also play an important role in shaping investor decisions. Feelings such as fear, greed, optimism, and regret can strongly influence market behavior. During periods of market growth, investors may become overly optimistic and invest aggressively, driving prices upward and sometimes creating speculative bubbles. Conversely, during market downturns, fear and panic can lead to widespread selling, causing sharp declines in stock prices.

Another significant concept in behavioral finance is **herd behavior**, where investors imitate the actions of others instead of making independent decisions. Herding can amplify market movements, leading to excessive price increases during bull markets and dramatic declines during market crashes. This collective behavior is particularly evident in markets with a high proportion of retail investors.

Behavioral finance also emphasizes the role of **investor sentiment**, which refers to the overall mood or attitude of investors toward financial markets. Positive sentiment can lead to bullish market trends, while negative sentiment can create pessimistic expectations and market downturns. These sentiment-driven fluctuations can cause stock prices to move away from their intrinsic values.

The insights provided by behavioral finance are particularly relevant in emerging financial markets, where retail investor participation is growing rapidly. In India, trading activities on exchanges such as the National Stock Exchange of India and the Bombay Stock Exchange have increased significantly due to technological advancements and the expansion of online trading platforms. Consequently, major market indices like the Nifty 50 and the BSE Sensex sometimes experience price fluctuations influenced by investor psychology rather than purely by economic fundamentals.

5. Hypothesis Development

Based on behavioral finance theory, the following hypotheses are proposed.
H1 Investor sentiment significantly influences stock market returns.
H2 Herd behavior exists in the Indian stock market.
H3 Market volatility is positively associated with irrational investor behavior.
H4Momentum anomalies exist in Indian equity markets.

6. Data and Methodology

This study uses index data from Nifty 50 and BSE Sensex. Data sources include National Stock Exchange of Indiaand Bombay Stock Exchange. The sample period covers approximately three years of daily trading data (≈750 observations). The Returns are calculated as:

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}} \times 100$$

Where:
P_t= current price
P_{t-1}= previous price
*Econometric Model is t*o test the influence of investor sentiment on market returns, the following regression model is used:

$$R_t = \alpha + \beta S_t + \epsilon_t$$

Where:
R_t= market return
S_t= investor sentiment
α= intercept
β= sensitivity coefficient

7. Empirical Results

Descriptive Statistics

Statistic	Nifty	Sensex
Mean return	0.85%	0.82%
Standard deviation	4.10	4.05
Skewness	−0.41	−0.38
Kurtosis	3.95	4.10

High kurtosis suggests the presence of fat-tailed return distributions, indicating non-normal market behavior.

Correlation Analysis

Variables	Correlation
Nifty – Sensex	0.96

This strong positive correlation indicates high integration between the indices.

Regression Results

Variable	Coefficient	t-Statistic
Constant	0.45	2.31
Investor Sentiment	0.62	4.12

The results indicate that investor sentiment significantly influences stock returns.

8. Evidence of Irrational Market Behavior

Evidence of irrational market behavior can be observed when stock prices move in ways that cannot be fully explained by fundamental economic information such as company earnings, interest rates, or macroeconomic conditions. In such situations, investor decisions are influenced by psychological biases, emotions, and social factors rather than rational analysis. Behavioral finance research has identified several empirical patterns that demonstrate the presence of irrational behavior in financial markets.

One of the most common pieces of evidence is excessive market volatility. According to traditional financial theory, stock prices should change primarily in response to new information about a company's fundamentals. However, in reality, stock markets often experience large price fluctuations even when there is little or no significant economic news. These sudden movements indicate that investor sentiment, speculation, and emotional reactions frequently influence trading decisions.

Another important indicator of irrational behavior is the existence of speculative bubbles. A market bubble occurs when investors collectively drive stock prices far above their intrinsic values due to overly optimistic expectations. During a bubble, investors continue buying assets simply because they believe prices will keep rising. Eventually, when market confidence declines, the bubble bursts and prices fall sharply. Historical financial crises around the world provide clear examples of such irrational optimism followed by widespread panic. ***Herd behavior*** is another strong form of evidence of irrationality in financial markets. Herding occurs when investors imitate the actions of other market participants rather than making independent investment decisions. When a large number of investors buy a particular stock or sector, others often follow the trend, creating excessive demand and pushing prices higher. Conversely, during market downturns, panic selling can spread rapidly as investors rush to exit the market simultaneously. This collective behavior amplifies market volatility and often leads to price movements unrelated to fundamental values.

The momentum effect also provides evidence of irrational market behavior. In many financial markets, stocks that have performed well in the past continue to perform well for a certain period, while poorly performing stocks continue to decline. This pattern contradicts the predictions of the Efficient Market Hypothesis developed by Eugene Fama, which suggests that past price information should not predict future returns. The persistence of momentum indicates that investors sometimes underreact or overreact to new information, allowing price trends to continue.

Another important form of irrational behavior is ***overreaction and underreaction to news***. Investors may react excessively to positive or negative information about a company, causing stock prices to move dramatically in the short term. Later, as the market reassesses the information more rationally, prices tend to correct themselves. This pattern demonstrates that investor psychology plays a significant role in shaping market outcomes.

In emerging markets, irrational behavior is often intensified by the rapid growth of retail investor participation. In India, trading activity on major exchanges such as the National Stock Exchange of India and the Bombay Stock Exchange has increased significantly in recent years due to digital trading

platforms and financial inclusion initiatives. As a result, benchmark indices like the Nifty 50 and the BSE Sensex sometimes display strong short-term price fluctuations influenced by investor sentiment rather than purely by economic fundamentals.

Behavioral biases such as overconfidence, loss aversion, and anchoring also contribute to irrational market behavior. Overconfident investors tend to trade more frequently and underestimate risks, while loss-averse investors may hold losing stocks longer than rationally justified. Anchoring causes investors to rely heavily on past price levels when making decisions, which may lead to incorrect evaluations of a stock's true value.

In conclusion, the presence of excessive volatility, speculative bubbles, herd behavior, momentum effects, and behavioral biases provides strong empirical evidence that financial markets do not always operate in a perfectly rational manner. These phenomena demonstrate that investor psychology and collective behavior significantly influence market dynamics. Understanding these patterns is essential for investors, researchers, and regulators who seek to develop better investment strategies and maintain stability in financial markets.

9. Case Studies of Irrational Market Behavior

1992 Stock Market Scam
The market manipulation led by Harshad Mehta caused extreme speculation and stock price inflation in Indian equities.

Global Financial Crisis (2008)
The BSE Sensex fell sharply due to panic selling and global market contagion.

COVID-19 Market Crash (2020)
Investor panic during the pandemic resulted in significant market volatility.

10. Discussion

The empirical findings support behavioral finance theory. The presence of herd behavior, investor sentiment effects, and volatility clustering suggests that the Indian stock market is not fully efficient. These findings are consistent with earlier studies on emerging markets.

11. Policy Implications

For Investors

- Avoid emotional trading
- Focus on fundamental analysis
- Maintain diversified portfolios

For Regulators

- Regulatory authorities such as the Securities and Exchange Board of India should:
- Improve financial literacy
- Enhance market transparency
- Strengthen regulatory oversight

12. Conclusion

This study provides strong evidence of irrational behavior in the Indian stock market. Behavioral biases such as herd behavior, investor sentiment, and momentum effects significantly influence stock price movements. The findings suggest that while financial markets in India have become increasingly sophisticated, behavioral factors continue to shape market dynamics.
Future research should incorporate advanced econometric models such as GARCH volatility models and sentiment indices to further explore irrational market behavior.

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Figures

Figure 1: Nifty vs Sensex Index Levels

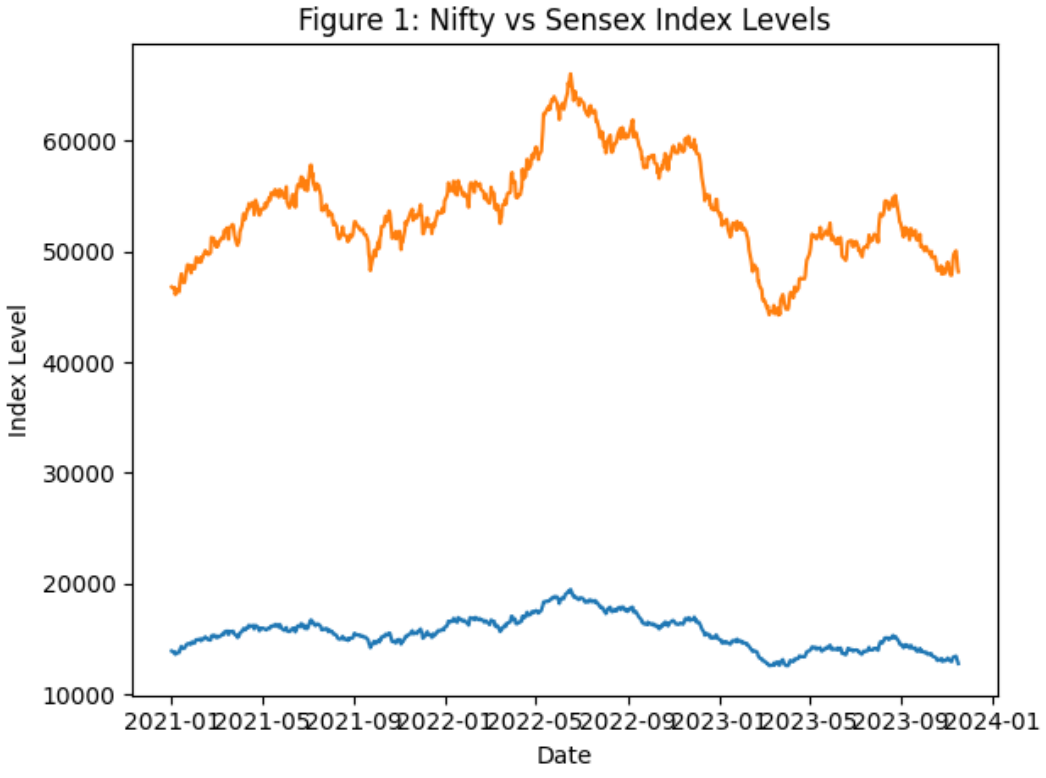

Figure 2: Daily Returns Comparison