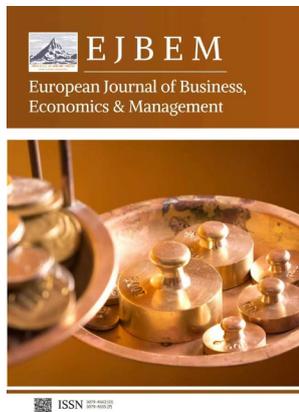




Review **Open Access**

Investor Sentiment and Its Mechanisms in Financial Markets: A Comprehensive Review

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Abstract: Investor sentiment significantly shapes stock market behavior, influencing asset prices, trading activity, market risk, and portfolio allocation. This review synthesizes conceptual frameworks, empirical evidence, and mechanisms through which sentiment affects financial markets, covering both developed and emerging markets. Direct and indirect sentiment measures, including surveys, market-based indicators, and text-based analyses, are evaluated. Findings underscore that optimism and pessimism drive overreaction, herding, and volatility, while also affecting asset allocation decisions. The review discusses practical implications for investors, regulators, and researchers, and identifies future research directions, including multi-modal sentiment analysis and the interactions among behavioral biases.

Keywords: investor sentiment; stock market; behavioral finance; market volatility; trading behavior

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1. Introduction

Over recent decades, investor sentiment has garnered substantial scholarly and practitioner attention as a pivotal force in financial markets. Traditionally, financial theories, such as the Efficient Market Hypothesis (EMH), assume that investors are rational actors who make decisions solely based on available information, leading to asset prices that accurately reflect intrinsic values. According to this perspective, market anomalies are considered rare and temporary deviations from rational pricing. However, empirical observations of financial markets reveal persistent irregularities, including excessive volatility, speculative bubbles, sudden crashes, and mispricing episodes, which cannot be fully explained by rational models alone. These phenomena suggest that psychological and emotional factors, collectively referred to as investor sentiment, play a critical role in shaping market outcomes [1].

Investor sentiment broadly refers to the overall mood, optimism, or pessimism of market participants, reflecting both individual perceptions and collective market psychology. Positive sentiment may encourage risk-taking and excessive buying, driving prices above fundamental values, whereas negative sentiment can lead to pessimism-driven selling and market underperformance [2]. The influence of sentiment is not limited to price fluctuations; it also affects trading volume, liquidity, market depth, and volatility, demonstrating that emotional states can propagate through markets via complex and sometimes nonlinear mechanisms. In this sense, investor sentiment serves as a bridge between human psychology and observable financial behavior, mediating the impact of cognitive biases, such as overconfidence, loss aversion, and herd behavior, on investment decisions.

Behavioral finance has emerged as a pivotal framework for elucidating the role of sentiment, challenging traditional assumptions of rationality in financial decision-making. While classical financial theories emphasize information efficiency and risk-return trade-offs, behavioral finance highlights systematic deviations from rationality caused by cognitive and emotional factors. In particular, sentiment-driven behaviors, such as momentum trading, excessive speculation, and delayed reaction to information, often generate predictable patterns in asset prices that can be exploited or, conversely, may exacerbate market instability [3]. Empirical evidence demonstrates that periods of heightened investor optimism often coincide with asset price bubbles, while periods of excessive pessimism are associated with abrupt market downturns. Understanding these mechanisms is crucial not only for individual investors seeking to optimize strategies but also for institutional investors, regulators, and policymakers aiming to maintain orderly and resilient markets.

Despite a growing body of literature, several gaps persist in our understanding of investor sentiment. Measurement remains a major challenge, because sentiment can be proxied through diverse indicators, which span from survey-based confidence indices and market-based variables, such as trading volume, volatility, and option-implied measures, to increasingly, text-based or social media sentiment metrics derived from news or online platforms. Each measurement approach has strengths and limitations, affecting its ability to capture short-term fluctuations or long-term trends. Additionally, the transmission channels through which sentiment affects market outcomes—such as price dynamics, liquidity conditions, and risk propagation—are not fully delineated, and empirical findings often vary across markets, asset classes, and time periods. Moreover, existing studies tend to focus on isolated markets or specific aspects of sentiment, underscoring a need for comprehensive reviews that integrate conceptual definitions, measurement approaches, behavioral mechanisms, and empirical evidence within a coherent framework [4].

This review aims to fill these gaps by providing a systematic examination of investor sentiment, its measurement methodologies, its influence on investor behavior, and its effects on stock market mechanisms. Specifically, the paper emphasizes the interconnected chain of “sentiment—investor behavior—market mechanisms,” highlighting how individual and collective emotions can influence trading behavior, propagate through financial markets, and ultimately affect price formation, volatility, liquidity, and overall market risk. By synthesizing evidence across diverse markets and methodological approaches, this review seeks to clarify existing controversies, identify consistent patterns, and propose directions for future research. The findings have practical implications for investors, financial institutions, and policymakers, offering insights into risk management, market regulation, and the design of more robust sentiment indicators for predictive purposes. Furthermore, the review highlights emerging trends in investor sentiment research, including the integration of machine learning, big data analytics, and social media analysis, which provide unprecedented opportunities to capture real-time market sentiment and improve our understanding of its dynamic effects.

2. Conceptual Framework of Investor Sentiment

2.1. Definition of Investor Sentiment

Investor sentiment refers to the overall mood, outlook, or attitude of market participants, reflecting their collective optimism or pessimism toward financial markets. Unlike purely rational decision-making assumed in classical finance, investor sentiment captures psychological and emotional tendencies that influence investment behavior [5]. Positive sentiment often encourages risk-taking, excessive trading, and bullish investment strategies, which can temporarily drive asset prices above their fundamental values. Conversely, negative sentiment can induce caution, selling pressure, or even panic, leading to market

underperformance or sharp corrections. By understanding the definition and scope of investor sentiment, researchers and practitioners can better interpret market dynamics and the deviations from traditional financial models.

The concept of investor sentiment extends beyond individual psychology to encompass market-wide perceptions and collective behavior. It is shaped by various factors, including macroeconomic conditions, corporate earnings announcements, geopolitical developments, and social trends. For example, optimistic media coverage about technological innovation can heighten investor confidence, encouraging increased investment in related stocks. In contrast, political instability or financial crises often trigger widespread pessimism, influencing both retail and institutional investors. Behavioral finance provides a framework for analyzing these effects, highlighting the role of cognitive biases such as overconfidence, herding behavior, and loss aversion. Thus sentiment serves as a bridge between psychological tendencies and observable market phenomena, linking individual decision-making to aggregate price movements and market trends [6].

Furthermore, investor sentiment is closely related to other behavioral constructs, such as market mood, investor confidence, and fear indices. While market mood captures short-term emotional fluctuations, sentiment typically refers to a broader and more persistent attitude that can influence strategic investment decisions. Distinguishing these concepts is essential for designing empirical studies and constructing accurate sentiment proxies. Understanding sentiment as a multi-dimensional construct allows researchers to explore not only its immediate effects on trading but also its long-term implications for market efficiency, asset pricing, and systemic risk.

2.2. Measurement of Investor Sentiment

Measuring investor sentiment is inherently challenging due to its psychological and often intangible nature. Researchers have developed multiple approaches, broadly categorized into direct indicators and indirect indicators, each offering unique advantages and limitations [7]. Direct indicators typically involve surveys or questionnaires that assess investor perceptions, expectations, and confidence levels. Examples include the Consumer Confidence Index (CCI), the University of Michigan Investor Sentiment Index, or specialized surveys targeting professional and retail investors. These indicators provide valuable insight into the self-reported attitudes of market participants, directly capturing the psychological state of investors. However, survey-based measures can be constrained by response bias, sample size, or timing, and may not fully reflect real-time sentiment fluctuations.

Indirect indicators rely on observable market variables and proxies to infer sentiment from behavior rather than self-reports. Market-based measures, such as trading volume, price volatility, put-call ratios, and market liquidity, can signal the degree of optimism or pessimism among investors. For instance, unusually high trading volumes accompanied by rising prices may indicate overconfidence or speculative enthusiasm, while sudden spikes in volatility often reflect fear or uncertainty. Text-based sentiment analysis has emerged as a complementary approach, leveraging natural language processing techniques to extract sentiment from news articles, financial reports, blogs, and social media posts. This method enables researchers to capture large-scale, real-time sentiment patterns across markets, thereby offering a dynamic and granular perspective on investor psychology. Despite its potential, text-based sentiment requires sophisticated algorithms and careful calibration to account for context, irony, and linguistic nuances [8].

To summarize the main indicators and their characteristics, Table 1 presents a comparative overview of commonly used investor sentiment measures, including both direct and indirect approaches. This table highlights the advantages and limitations of each method, as well as typical applications in empirical research. As shown in Table 1, combining multiple indicators can enhance the robustness of sentiment assessment and pro-

vide a more comprehensive understanding of market psychology. For example, researchers often construct composite indices that integrate survey data, market variables, and text-based sentiment to capture both short-term fluctuations and long-term trends more effectively.

Table 1. Common investor sentiment measurement indicators and their characteristics.

Indicator	Measurement Method	Advantages	Limitations	Typical Applications
Investor Confidence Index	Surveys	Directly measures sentiment	Subject to survey bias and timing issues	Predicting short-term market trends and investor risk appetite
Trading Volume	Market data	Objective and easily accessible	Influenced by multiple factors beyond sentiment	Detecting speculative behavior or momentum trading
Volatility (VIX)	Market data	Reflects market uncertainty and risk perception	May lag underlying psychological sentiment	Risk management and portfolio adjustment
Put-Call Ratio	Market data	Captures option market sentiment	Can be affected by hedging activity	Identifying bullish or bearish extremes
News/Social Media Sentiment	Text analysis	Real-time, large-scale coverage	Requires complex algorithms, sensitive to context	Forecasting market reactions and early detection of sentiment shifts

This table demonstrates the diversity of measurement approaches and highlights the trade-offs between direct accuracy, timeliness, and feasibility. In practice, researchers often combine multiple indicators to construct composite sentiment indices, which can capture both short-term fluctuations and long-term trends more effectively. For example, a composite index may integrate survey data, volatility measures, and social media sentiment to provide a more robust assessment of market mood. Such indices are increasingly applied in empirical studies to predict stock returns, trading behavior, and market anomalies.

2.3. Classification and Temporal Characteristics

Investor sentiment can be classified according to its temporal horizon, valence, and intensity. Temporal classification distinguishes between short-term sentiment, which reflects immediate reactions to news, earnings announcements, or geopolitical events, and long-term sentiment, which is influenced by structural economic factors, macroeconomic trends, or persistent market conditions. Short-term sentiment typically induces temporary price deviations, speculative behavior, and intraday volatility, while long-term sentiment contributes to broader market trends, asset bubbles, or prolonged periods of risk aversion. Understanding these temporal dynamics is crucial for interpreting the impact of sentiment on both trading behavior and asset pricing [9].

Valence classification distinguishes sentiment based on its positivity or negativity, ranging from extreme optimism to extreme pessimism. Intensity further captures the degree to which sentiment deviates from a neutral or baseline state. Different markets, asset classes, and investor segments may exhibit varying sensitivities to sentiment types. For instance, emerging markets may react more strongly to optimism-driven rallies due to lower liquidity and higher speculative activity, whereas developed markets may show heightened sensitivity to fear-driven downturns due to complex derivative exposures. By examining both the temporal and qualitative characteristics of sentiment, researchers can

develop more nuanced models of market behavior, improve predictive accuracy, and design investment strategies that account for the interplay between psychology and market dynamics [10].

In summary, investor sentiment is a multi-dimensional construct that encompasses psychological, behavioral, and market-driven components. Its definition, measurement, and classification form the foundation for understanding how emotions influence investor behavior and propagate through financial markets. A thorough grasp of these concepts is essential for the subsequent analysis of sentiment-driven market mechanisms, which will be addressed in the following section.

3. Mechanisms: How Investor Sentiment Affects the Stock Market

3.1. Impact on Stock Price Fluctuations

Investor sentiment exerts a significant influence on stock price movements, often leading to deviations from fundamental values. Positive sentiment can cause over-optimism, resulting in excessive buying pressure and temporarily inflated asset prices—a phenomenon frequently observed during market bubbles. Conversely, negative sentiment can trigger pessimistic selling and sharp price declines, which may exacerbate market downturns. These deviations are not always promptly corrected, as sentiment-driven trading can amplify short-term volatility and create cycles of overreaction and correction. Understanding how sentiment affects price fluctuations is essential for interpreting both normal market dynamics and extreme events.

Behavioral finance research highlights several mechanisms underlying these effects. Cognitive biases, such as overconfidence and extrapolation of past returns, often amplify the influence of sentiment on prices. Investors tend to overweight recent information and market trends, leading to momentum-driven price changes that may overshoot intrinsic values. Moreover, the interaction between retail and institutional investors can further amplify these effects, as collective sentiment drives herding behavior and the propagation of optimistic or pessimistic views across market participants. Empirical studies have consistently documented correlations between sentiment indices and short-term return patterns, indicating the pervasive influence of psychological factors on pricing dynamics.

3.2. Influence on Trading Behavior

Investor sentiment also shapes trading behavior, including market participation, transaction intensity, and herd behavior. Elevated optimism encourages more aggressive trading strategies, higher turnover rates, and speculative activities, while negative sentiment often results in cautious or risk-averse behavior. These behavioral patterns have direct implications for market liquidity and efficiency. Sentiment-driven trading may create temporary mispricing, which can be exploited by contrarian investors, but it also increases the potential for sudden liquidity shortages during periods of extreme pessimism [11].

As illustrated in Table 2, sentiment impacts multiple dimensions of market behavior, from price formation to trading strategies, risk levels, and portfolio decisions. These mechanisms often interact, creating complex feedback loops that can either stabilize or destabilize markets depending on prevailing conditions.

Table 2. Summary of investor sentiment effects on stock market mechanisms.

Mechanism Type	Main Impact
Price Fluctuation	Overreaction, temporary mispricing
Trading Behavior	Herding, momentum trading, excessive turnover
Market Risk	Increased volatility, crash risk
Asset Allocation	Shift in portfolio composition, liquidity preference

3.3. *Effects on Market Risk*

Sentiment-driven trading has significant implications for market risk. Positive sentiment may encourage excessive risk-taking and over-leveraging, increasing systemic vulnerability. Negative sentiment, especially when widespread, can induce panic selling, sudden liquidity shortages, and amplified volatility. During periods of extreme pessimism, the risk of market crashes escalates, as investors rapidly withdraw from positions and feedback loops intensify. Volatility indices, such as the VIX, often spike during such periods, reflecting heightened market uncertainty and collective fear.

Moreover, sentiment influences not only the magnitude but also the propagation of market risk. Herd behavior and synchronized trading amplify shocks across sectors and asset classes, creating correlations that are not explained by fundamentals alone. Understanding these mechanisms is critical for regulators and risk managers seeking to anticipate systemic risk and design interventions to maintain market stability.

3.4. *Influence on Asset Allocation*

Investor sentiment also affects asset allocation decisions, at both the individual and institutional levels. Optimistic sentiment encourages investors to favor higher-risk assets, such as equities or emerging market instruments, while pessimistic sentiment leads to a preference for safer assets, including government bonds or cash holdings. These shifts in portfolio composition influence market liquidity, capital flows, and even macroeconomic conditions. Furthermore, sentiment-driven changes in liquidity demand can create temporary imbalances between supply and demand, contributing to price volatility and impairing market efficiency [12].

Long-term sentiment trends may also shape strategic allocation decisions, affecting investment horizons and diversification strategies. For example, sustained optimism in technology or renewable energy sectors can attract long-term capital inflows, driving structural shifts in the market. Conversely, prolonged pessimism in certain markets may reduce participation and hinder capital formation, highlighting the broader economic implications of collective investor psychology.

4. **Empirical Evidence**

4.1. *Stock Market Cases: Developed vs. Emerging Markets*

Empirical research on investor sentiment has examined its effects across a variety of stock markets, highlighting differences between developed and emerging markets. In developed markets, such as the United States, the United Kingdom, and Japan, studies often draw on long historical datasets, detailed market indices, and sophisticated sentiment indicators. For example, the U.S. market has been extensively studied using the Baker and Wurgler (2007) sentiment index, showing that periods of high optimism are associated with lower future returns and higher volatility. Developed markets tend to exhibit strong institutional participation, which can either mitigate or amplify sentiment effects depending on market conditions.

Emerging markets, such as China, India, and Brazil, exhibit different dynamics due to factors like higher retail investor participation, lower liquidity, and greater information asymmetry. Sentiment-driven trading in these markets often produces more pronounced price swings and volatility spikes. For instance, research indicates that optimistic investor sentiment in emerging markets can lead to rapid overvaluation of equities, while negative sentiment triggers abrupt sell-offs. Comparing findings across markets demonstrates that the magnitude and persistence of sentiment effects depend on structural characteristics, market maturity, and investor composition.

4.2. *Empirical Methods*

A wide range of empirical methods has been employed to quantify the effects of investor sentiment on financial markets. Regression analysis is one of the most common

approaches, used to estimate the relationship between sentiment indicators and asset returns, volatility, or liquidity. Studies often employ both time-series and panel data regressions to control for macroeconomic and firm-specific factors. Event studies are also widely applied, particularly in analyzing the market reaction to specific sentiment-shaping events such as earnings announcements, policy changes, or macroeconomic shocks. These methods help isolate the short-term impact of sentiment on prices and trading behavior.

More recently, machine learning and text-based sentiment analysis have become prevalent. Techniques such as natural language processing (NLP) allow researchers to extract investor sentiment from financial news, social media posts, analyst reports, and blogs. Machine learning models, including support vector machines and neural networks, enable the identification of complex patterns and non-linear relationships between sentiment and market outcomes. This approach provides high-frequency, large-scale insights into how collective investor psychology influences trading behavior and asset prices in real time.

4.3. Key Findings

Empirical studies consistently find that investor sentiment is significantly related to stock returns, volatility, and liquidity. Positive sentiment generally leads to short-term overpricing and increased trading activity, whereas negative sentiment is associated with declines in asset prices and heightened market risk. For example, in the U.S. equity market, high sentiment periods have been linked to lower subsequent returns for small-cap stocks, reflecting overreaction. In emerging markets, the effects tend to be more pronounced, with sentiment strongly correlated with both extreme price movements and liquidity fluctuations.

Sentiment also interacts with market conditions. In high-volatility periods, the influence of sentiment is often magnified, suggesting a feedback loop between emotion-driven trading and market risk. Furthermore, different sentiment measures, such as survey-based indices versus market-based proxies, may capture distinct aspects of investor psychology. While survey data often reflect forward-looking expectations, market-based indicators capture real-time trading behavior, and combining multiple indicators enhances predictive power.

4.4. Comparative Analysis Across Markets and Indicators

Comparing empirical findings across markets and sentiment measures reveals both consistencies and divergences. Developed markets generally exhibit more muted sentiment effects due to greater institutional presence and informational efficiency. In contrast, emerging markets show stronger sentiment-driven price fluctuations and volatility responses. Similarly, the choice of sentiment indicator can influence the magnitude of observed effects. For instance, social media-derived sentiment indices may capture rapid shifts in retail investor mood, while traditional survey-based indices may better reflect strategic expectations and long-term trends.

Table 3 summarizes representative empirical studies, highlighting the markets examined, methods used, and key conclusions. As shown in Table 3, while methodologies and contexts vary, the consensus indicates that investor sentiment plays a crucial role in shaping market dynamics across diverse environments and instruments.

Table 3. Summary of key empirical studies on investor sentiment across markets.

Author	Year	Market	Method	Core Findings
Baker & Wurgler	2007	USA	Regression, sentiment index	High sentiment predicts lower future returns for small-cap stocks

Tetlock	2007	USA	News sentiment analysis	Negative media tone predicts higher volatility
Da et al.	2015	China	Social media NLP	Positive sentiment drives overvaluation, increases trading volume
Schmeling	2009	Global	Survey-based	Sentiment effects stronger in markets with high retail participation
Kumar & Goyal	2015	India	Regression, investor surveys	Optimistic sentiment linked to aggressive trading and higher short-term returns

5. Implications and Applications

5.1. Implications for Investors

Understanding investor sentiment provides practical insights for market participants seeking to optimize investment strategies and manage risk. By monitoring sentiment indicators, investors can identify periods of over-optimism or excessive pessimism, which may signal potential market mispricing. For instance, elevated sentiment may indicate short-term overvaluation, suggesting opportunities for contrarian strategies, while negative sentiment could warn of heightened market risk and the need for defensive positioning. Integrating sentiment analysis into portfolio management can enhance risk-adjusted returns by informing allocation decisions, timing of trades, and hedging strategies.

Moreover, sentiment-aware trading allows investors to anticipate behavioral patterns such as momentum trading, herding, and overreaction. For example, in markets where retail participation is high, optimism-driven buying frenzies may create temporary bubbles, whereas pessimism-driven selling can exacerbate volatility. By accounting for these psychological drivers, investors can adjust trading frequency, leverage levels, and asset allocation to mitigate exposure to sentiment-induced market swings.

5.2. Implications for Regulators and Policymakers

Regulatory authorities can leverage insights from investor sentiment research to design policies that promote market stability and protect investors. Monitoring sentiment indices, especially those derived from real-time data sources such as social media or trading activity, can serve as an early warning system for potential market disruptions. Sudden spikes in optimism or pessimism may signal increased risk of bubbles or market crashes, prompting regulators to implement preventive measures, such as liquidity interventions, margin requirements, or disclosure mandates.

Additionally, understanding sentiment-driven trading behavior can inform the design of market mechanisms aimed at mitigating systemic risk. For instance, circuit breakers, trading halts, and volatility controls can be calibrated using sentiment analysis to respond more effectively to emotion-driven market extremes. By integrating behavioral insights into market regulation, policymakers can enhance transparency, reduce excessive speculation, and maintain orderly market functioning.

5.3. Implications for Researchers

For academic researchers, investor sentiment offers rich avenues for future study, particularly in addressing methodological and conceptual gaps. Emerging areas include multi-modal sentiment analysis, which integrates text-based, market-based, and survey-based indicators to capture sentiment dynamics more comprehensively. Such approaches can improve predictive models of stock returns, volatility, and liquidity. Additionally, exploring interactions between behavioral biases and sentiment—such as the joint effects of overconfidence, loss aversion, and herding—can deepen understanding of complex market behaviors.

Cross-market and cross-asset studies remain promising as well, providing insights into how sentiment effects vary across developed and emerging markets, equity and bond

markets, or short-term and long-term horizons. Finally, integrating machine learning techniques and big data analytics allows researchers to process vast volumes of textual and numerical data, enabling more precise measurement of real-time sentiment and its dynamic impact on market mechanisms. Such research not only contributes to behavioral finance theory but also offers actionable knowledge for practitioners and policymakers seeking to navigate emotion-driven financial environments.

6. Conclusion

Investor sentiment plays a critical role in shaping stock market dynamics, influencing asset prices, trading behavior, market risk, and portfolio allocation. The review highlights that sentiment-driven overreaction can lead to temporary price misalignments, while optimism or pessimism affects trading intensity, herding behavior, and market volatility. Empirical evidence across developed and emerging markets consistently demonstrates the pervasive impact of sentiment on returns, liquidity, and risk, although the magnitude and persistence of these effects vary depending on market structure, investor composition, and the choice of sentiment indicators.

The study underscores the practical significance of understanding investor sentiment. For investors, integrating sentiment measures into decision-making can enhance risk management and trading strategies. Regulators can leverage sentiment analysis to monitor market stability and design interventions that mitigate systemic risk. For researchers, the evolving methodologies, such as multi-modal sentiment analysis and machine learning, offer opportunities to further investigate complex behavioral interactions and cross-market effects.

However, limitations pertaining to measurement precision, data accessibility, and the intrinsic subjectivity of sentiment continue to pose challenges. Moreover, most studies focus on short-term effects, leaving long-term implications relatively underexplored. Future research should prioritize the integration of diverse data sources, scrutinize interactions among multiple behavioral biases, and extend the examination of sentiment effects across a wider range of asset classes and market environments. By addressing these gaps, scholars and practitioners can gain a more comprehensive understanding of the mechanisms through which investor sentiment shapes financial markets, thereby contributing both to theory and practice.

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