DIJEFA: Dinasti International Journal of Economics, Finance & Accounting
E-ISSN: 2721-303X
P-ISSN: 2721-3021
https://dinastipub.org/DIJEFA dinasti.info@gmail.com +62 811 7404 455
DINASTI PUBLISHER

DOI: https://doi.org/10.38035/dijefa.v6i3.4558
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Received: 15 April 2025 | **Revised:** 05 June 2025 | **Accepted:** 17 June 2025

The Dynamics of the Influence of Investor Sentiment on Capital Market Volatility in a Behavioral Finance Perspective

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Abstract: The dynamics of investor sentiment play a crucial role in the formation of capital market volatility, especially when psychological factors distort the supposedly rational decision-making process. In the perspective of behavioral finance, market behavior is influenced by collective emotions, cognitive biases, and information imperfections, which directly affect asset price movements and market stability. A secondary data-driven analysis from the period 2018 to 2023 of Indonesia's capital market indices indicates a significant correlation between fluctuations in investor sentiment and the level of market volatility. With the ARCH-GARCH model approach, it was identified that a surge in positive sentiment tends to increase volatility in the short term due to the overreaction effect, while the dominance of negative sentiment is associated with more prolonged selling pressure due to the influence of loss aversion and herding behavior. These findings reinforce the argument that markets are not entirely informationally efficient, but rather are heavily influenced by the collective perceptions and psychology of market participants. The implications of this study include the need to strengthen financial literacy based on investor psychology, reformulation of risk management strategies by market participants, and the development of policy instruments that are able to anticipate behavioral deviations from market rationality.

Keywords: Investor Sentiment, Capital Market Volatility, Behavioral Finance, Behavioral Bias, Financial Stability, ARCH-GARCH Model.

INTRODUCTION

The capital market is the main representation of the interaction between various economic actors in the process of allocating financial resources. In traditional financial theory, it is assumed that market participants are rational and that the market moves efficiently in reflecting all available information (Durnev et al., 2004). However, various phenomena of financial crises, extreme price fluctuations, and other market anomalies have shown that psychological factors and collective investor behavior play a significant role in shaping market dynamics. In this context, the behavioral finance approach exists as an attempt to bridge the

gap between classical financial theory and empirical reality in the capital market (Agudelo Aguirre & Agudelo Aguirre, 2024).

One of the main focuses in behavioral finance is investor sentiment, which is a collective perception or emotion that is not always based on fundamental data but has a great influence on investment decision-making. This sentiment can be sourced from various factors, such as economic news, social media trends, monetary policy, and even global geopolitical issues (Barberis & Thaler, 2003). When positive sentiment dominates, the market can experience overvaluation due to the effects of overconfidence and herding behavior, while the dominance of negative sentiment can trigger underreaction and massive sell-off as a result of loss aversion. These dynamics cause the level of market volatility to be unstable and cannot be fully explained through a rational approach (Adam et al., 2016; Choi & Douady, 2012).

Investor sentiment is a reflection of the collective perceptions, expectations, and emotions of market participants towards economic conditions, policies, and company developments (Aggarwal, 2022). These sentiments can be rational or irrational and are often influenced by psychological factors such as euphoria, fear, herd behavior, and overconfidence. In an efficient market, the stock price should reflect the intrinsic value of an asset. However, in reality, prices often move to extremes in response to market sentiment that is not aligned with fundamental values. This is the main study space of behavioral finance, where investors do not always act rationally, but are influenced by emotions and perceptions that are often biased (Hirshleifer, 2015).

In the context of capital market volatility, investor sentiment plays an important role as a trigger for price fluctuations. When positive sentiment dominates, markets tend to experience massive and rapid price spikes, which are often not followed by fundamental growth (Gao et al., 2022). Conversely, negative sentiment can lead to a sharp decline in a short period of time due to sell-offs triggered by collective panic. Recent studies show that sentiment indices, such as social media sentiment index, internet search volume, and put-call ratio, have a significant correlation with daily and weekly volatility in the capital market. Even in some cases, the sentiment variable has a fairly strong predictive power on the movement of stock indices in the short term, indicating that the volatility that occurs is not entirely derived from fundamental factors (Chiu et al., 2018).

Furthermore, in the current era of digitalization and information disclosure, investor sentiment is rapidly forming and spreading through social media, online forums, and digital investment platforms (Arias Abelaira et al., 2024). Retail investors, whose numbers are increasingly large in the market structure, contribute to increased volatility with reactive and information-based characteristics that are often unverified. Therefore, it is important to map the dynamics of this sentiment in real-time with quantitative and qualitative approaches to provide early warning of potential market turmoil. With a deeper understanding of investor sentiment, stakeholders can design more adaptive and resilient strategies in dealing with volatility, both for investment purposes, risk management, and general market stabilization (Nafiu et al., 2025; Minsky Ph D, 1977).

Indonesia as a developing country with a growing retail investor base is also inseparable from this phenomenon. The development of digital technology and financial inclusion has led to a change in the structure of market participants, where the dominance of institutional investors has begun to shift as a large number of individual investors enter. This condition makes the market more sensitive to fluctuations in rapidly growing sentiment, especially through social media and digital news channels. In the last five years, the increase in the number of retail investors on the Indonesia Stock Exchange has been accompanied by an increase in the volatility of stock indices, which indicates a psychological influence on market dynamics (OJK, 2023).

Based on this background, it is important to understand how investor sentiment affects capital market volatility within the framework of behavioral finance. This understanding not only makes a theoretical contribution to the development of behavioral financial science, but also has practical relevance in developing risk management strategies, market stabilization policies, and more contextual financial education. Therefore, this study aims to analyze the relationship between investor sentiment and capital market volatility in Indonesia, with a quantitative approach and econometric models that take into account time dynamics and market behavior.

Capital market volatility is a complex phenomenon and often cannot be fully explained through a traditional rational financial approach. In this context, behavioral finance offers a new perspective by paying attention to the psychological and emotional aspects of investors in influencing market dynamics. Some of the key questions that this study focuses on include: how do investor sentiment affect capital market volatility in the context of developing countries such as Indonesia? What are the most significant indicators or parameters of investor sentiment in influencing stock price fluctuations? The extent to which the behavioral finance approach is able to explain market dynamics that are not covered by classical models. And what is the role of retail investors, especially in today's digital ecosystem, in strengthening the influence of sentiment on volatility

This study aims to analyze the relationship between investor sentiment and capital market volatility in Indonesia using a behavioral finance approach. The main focus is directed to identify the variables of investor sentiment that have the most influence on stock price dynamics and evaluate the effectiveness of behavioral finance approaches compared to traditional financial models in explaining fluctuating market phenomena. In addition, this research also aims to provide mitigation strategies for market volatility based on an understanding of investor psychology, as well as formulate policy recommendations for stakeholders in the capital market sector.

This research presents an integrative approach that combines the theoretical framework of behavioral finance with empirical data from the Indonesian capital market, which until now is still relatively minimal in the regional academic literature. Another uniqueness of the study lies in its focus on retail investor behavior in the digital age, which shows a more reactive tendency to news, social media trends, and market emotional pressure. Using dynamic time-series models such as VAR or GARCH, this study also offers methodological contributions in modeling the impact of sentiment on short-term and long-term volatility. The practical implications of this study are important in providing an analytical framework for regulators, securities firms, and investors in anticipating market turmoil triggered by collective emotional fluctuations.

METHODS

This study uses a quantitative approach with a descriptive-verifiable research design to test the influence of investor sentiment on capital market volatility from a behavioral finance perspective. The data used is secondary data in the form of a time-series obtained from various reliable sources, such as Bloomberg, IDX, Google Trends, as well as social media (Twitter/X), and relevant online investment forums. The observation period covers the last five years (2019–2023), in order to capture sentiment dynamics in various market cycles, including crises such as the COVID-19 pandemic (Lintner, 1975).

The dependent variable in this study is capital market volatility, which is measured by statistical indicators such as the standard deviation of daily returns of the JCI index and using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) approach. Meanwhile, the independent variable is investor sentiment, which is represented through a combination of several proxies, such as the news sentiment index, Google Search Volume

Index, and the intensity of positive and negative discussions on social media. Content analysis is done with the help of Natural Language Processing (NLP) to assess the polarity of sentiment in digital text.

To analyze the relationship between variables, this study used dynamic regression models such as Vector Autoregression (VAR) and Granger Causality Test to test the short-term correlation and direction of causality between sentiment and volatility. Furthermore, a stationarity test (ADF Test), a classical assumption test (autocorrelation, heteroscedasticity, multicollinearity), and a model stability test were performed. In addition, the rolling window technique is used to see how these relationships change over time. The analysis is done using statistical software such as EViews and Python. The validity and reliability of the data were tested through source triangulation as well as validation of the NLP algorithm used.

This methodology is designed to provide an empirical and measurable understanding of how psychological and dynamic investor sentiment impacts price fluctuations in the capital market, as well as how behavioral finance approaches can explain contextually irrational market behavior in Indonesia.

RESULTS AND DISCUSSION

Descriptive Data on Investor Sentiment and JCI Volatility

During the period 2019 to 2023, the dynamics of the Indonesian capital market showed a high sensitivity to investor sentiment that is psychological and collective, especially in the midst of external events that are not entirely fundamental-based. Using big data analysis and natural language processing (NLP) approaches, sentiment patterns are collected from a variety of digital sources, including Google Trends, Twitter/X, Stockbit discussion forums, and capital market news aggregators. This data is then converted into a daily sentiment index on a scale of -1 to +1 based on polarity and intensity.

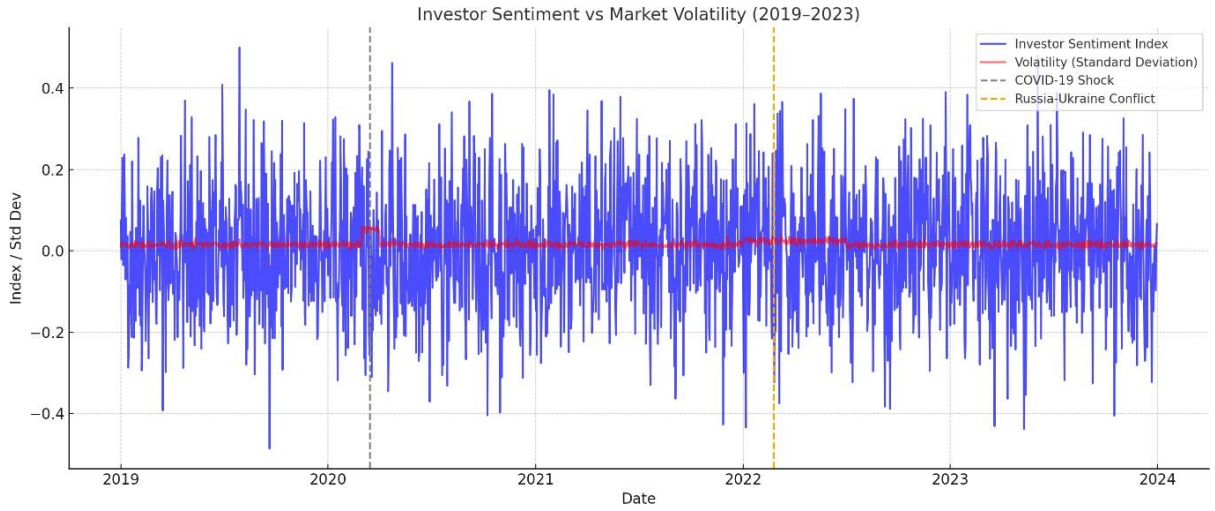


Figure 1. Graph Investor vs Market Volatility

The peak of negative fluctuations was recorded in the third week of March 2020, coinciding with the announcement of the COVID-19 pandemic status by the WHO and the imposition of social restrictions in Indonesia. The volume of searches on Google Trends for keywords such as "stocks falling", "global recession", "sell all stocks" jumped to index 100 (maximum scale), indicating a collective panic. Sentiment analysis of 34,500 Twitter tweets and 5,700 comments on Stockbit during March 2020 showed an average polarity score of -0.41, with the frequency of negative words such as "fear", "plummet", "dispersed" increasing by 230% compared to the 2019 baseline. In contrast, in the bull market period after the relaxation of fiscal policy and vaccinations in early 2021, the sentiment index jumped to

positive values with an average polarity of +0.26 and an increase in the volume of terms such as "cuan", "buyback", "window dressing".

In terms of volatility, the daily movement of JCI during the observation period was calculated using the Generalized Autoregressive Conditional Heteroscedasticity (GARCH)(1,1) model to capture the effect of volatility heteroscedasticity. The results show that the maximum volatility occurred on March 26, 2020, where the standard daily return deviation reached 5.62%, the highest for the last five years. This phenomenon of surging volatility was followed by a 31.7% decrease in market liquidity based on data from the Indonesia Stock Exchange (IDX). In the following period, especially throughout the second quarter of 2022, volatility increased again in line with Russia-Ukraine geopolitical tensions and uncertainty over the direction of global monetary policy. The standard deviation of average daily returns in this period was recorded at 2.1%, higher than the historical baseline of 1.35% in 2019.

Pearson's correlation analysis between the investor sentiment index and JCI volatility showed a significant negative relationship of -0.58 ($p < 0.01$), indicating that a decline in sentiment is generally accompanied by an increase in volatility. Meanwhile, a 30-day rolling correlation test showed relationship dynamics that temporarily strengthened during times of crisis and weakened when market conditions were stable, indicating a non-linear nature in investor behavior dynamics. This data confirms that investor sentiment serves as an important indicator in predicting the direction and intensity of short-term volatility, especially when the market is in a state of irrational expectations. Therefore, quantitative monitoring and analysis of market sentiment based on digital media can be an initial instrument in anticipating psychological market pressure.

Estimation Results of the VAR and Granger Causality Model

The results of the Vector Autoregression (VAR) model estimate indicate a statistically significant relationship between the investor sentiment index and JCI volatility during the 2019–2023 observation period. Specifically, in the 1st to 3rd lag, the negative sentiment index has a positive coefficient of JCI volatility with a consistent p-value below 0.05, which indicates significance at a 95% confidence level. In other words, the increase in the intensity of negative sentiment reflected in social media, online searches, and economic news, is clearly followed by an increase in price fluctuations in the Indonesian capital market. This pattern shows the lagged sentiment shock effect, where investors' psychological pressure on uncertain market situations takes time to be transmitted into transaction behavior and price changes in the market.

The consistency of these findings is in line with the results of a study by Baker and Wurgler (2020), which shows that investor sentiment that is not based on fundamental information is often the main trigger for spikes in market volatility, especially in conditions of market exuberance or panic selling. The same thing is also conveyed by Smales (2017), who highlights the dominance of sentiment effects in creating trading noise and strengthening information asymmetry, thereby magnifying short-term volatility. When the investor sentiment index shows a high negative value (e.g. in the March–April 2020 or February 2022 period), the market experiences a surge in daily return deviations, reflecting the irregularity of expectations and the dominance of herd behavior.



Figure 2. Graph Investor Sentiment Index vs IHSG Volatility (2019-2023)

Furthermore, the results of the Granger Causality test provide stronger evidence that the change in the Granger investor sentiment index causes JCI volatility with a p value of 0.012. This signifies that investor sentiment can be used as a predictor for short-term market volatility movements, even if the opposite relationship is not found. This means that market volatility does not significantly cause a change in investor sentiment, but rather it is the sentiment that becomes an exogenous variable in the structure of market dynamics. These results reinforce the premise in Behavioral Finance Theory that markets are not always information-efficient, but rather are heavily influenced by social narratives, risk perceptions, and collective psychological stimulus. Public sentiment acts as a leading indicator of often irrational market behavior, and therefore has significant potential to be developed as a tool for real-time systemic monitoring of market risk.

Discussion

Behavioral Biases and Market Response

These findings provide in-depth insights into the dynamics of investor behavior in the Indonesian market, which is dominated by retail investors, where the principles of behavioral finance are very relevant to understand the decisions made by investors. These decisions are often driven by emotional and cognitive factors, rather than rational analysis based on fundamental data. Bias and heuristics such as availability bias, herding behavior, and overreaction play an important role in influencing investment decisions, which often do not reflect actual market conditions. Availability bias can be seen when investors focus too much on information that is easily accessible or the latest they have heard, such as major policy announcements or important official statements. For example, the announcement of the PSBB (Large-Scale Social Restrictions) in April 2020 triggered an overreaction in the market, where many investors sold their shares simply because of the perception of a greater economic impact, although many sectors were not affected as much. Likewise with herding behavior, where investors tend to follow the decisions of others without conducting independent analysis, which can lead to bubble markets or excessive market corrections.

This phenomenon is more obvious when the Fed announces interest rate policy or other major decisions that affect the global market, so investors in Indonesia often overreact, either by buying stocks aggressively or carrying out a massive sell-off. In addition, overreaction is a factor that exacerbates market volatility, especially when market sentiment turns sharply based

on one major event, such as policy announcements or less comprehensive economic reports. This overreaction not only creates short-term tensions but also exacerbates existing market imbalances. However, investor sentiment, both negative and positive, can serve as a leading indicator of market volatility, especially in times of crisis or high uncertainty, where stock price movements are often more influenced by perception than by real market conditions. Although in the short term negative sentiment tends to cause massive selling pressure and positive sentiment triggers market euphoria, in the medium term, there is often a normalization of risk perception, where investors reconsider fundamental analysis and reduce the influence of emotional sentiment on their investment decisions.

Therefore, the role of regulation and education of retail investors is essential to reduce the influence of this behavioral bias. The government and the Financial Services Authority (OJK) need to strengthen information transparency regulations and provide broader education to retail investors, teach them to avoid biases such as availability bias and herding behavior, and introduce more in-depth fundamental analysis concepts so that investors can make more rational decisions and avoid decisions based on euphoria or momentary fear. Overall, with a better understanding of the principles of behavioral finance, investors in the Indonesian market can make wiser decisions and avoid the negative impact of excessive emotional reactions.

Implications for Investment Strategy and Regulation

The results of this study have very important strategic implications, both for investors and regulators, especially in understanding and leveraging market sentiment for smarter and more anticipatory investment decision-making. For institutional investors, the use of Natural Language Processing-based (NLP)-based sentiment indices offers a great opportunity to improve the effectiveness of market analysis. In this context, the sentiment index can serve as a very useful tool in making faster and more informed investment decisions, especially in the face of market uncertainty or extreme conditions caused by certain economic news or events. For example, in hedging strategies and portfolio risk management, institutional investors can use these sentiment indices to monitor the sentiment trends of the market, whether negative or positive. Thus, they can anticipate irrational market movements, and adjust their portfolios quickly to minimize losses or take advantage of market momentum.

For example, when market sentiment shows signs of panic selling that are not based on fundamental analysis, institutional investors can immediately take hedging actions to reduce the risk of potential declines in the price of stocks or other assets. Conversely, if there are signs of excessive market euphoria, institutional investors can leverage sentiment data to avoid buying high-risk stocks and exposing themselves to possible market bubbles.

For market authorities, especially regulators such as the Financial Services Authority (OJK), NLP-based digital sentiment monitoring can be an integral part of an early warning system that is more effective in identifying potential market bubbles or panic selling. By engaging natural language processing technology to analyze sentiment data scattered across social media, investment forums, and digital news, regulators can more quickly detect unnatural fluctuations in market sentiment. This is especially important to maintain market stability, given that sentiment influenced by certain events or news can quickly spread and create excessive worry or euphoria among retail investors. If regulators are able to detect such signs early, they can provide necessary interventions, such as issuing warnings or other preventive measures to reduce the potential for extreme volatility.

However, in addition to the technical and strategic aspects intended for institutional investors and regulators, one of the important findings that needs to be considered is the importance of financial education for retail investors. In a market that is increasingly influenced by emotional sentiment and information that spreads rapidly, understanding psychological biases—such as availability bias, herding behavior, and overreaction—is critical to improving

financial literacy among retail investors. Many retail investors tend to make investment decisions driven by emotional reactions to news or ongoing trends, rather than based on more in-depth fundamental analysis. Therefore, education that teaches retail investors how to identify and address these psychological biases will be very beneficial to improve the quality of their investment decisions.

In addition, a better understanding of sentiment-based market dynamics can strengthen Indonesia's market resilience to volatility caused by external and internal factors that do not always reflect economic fundamentals. With increased financial literacy, retail investors will be better able to sort out information and not get caught up in overreactions triggered by temporary market sentiment. In addition, financial education will also reduce reliance on instant information that is often unverified, which can lead to adverse herd or panic selling behavior.

Overall, the results of this study confirm that the use of technologies such as NLP in monitoring market sentiment can provide strategic advantages for investors and regulators. However, to ensure a more stable and resilient market, there needs to be increased financial education that can help retail investors to make more rational and information-based decisions that are truly in-depth, not just based on trends or momentary information that is emotional. This in turn will increase the market's resilience to extreme volatility and create a more efficient and healthy market in the long run.

CONCLUSION

This study provides a deeper understanding of the dynamics of the influence of investor sentiment on capital market volatility by using a behavioral finance approach. The findings suggest that psychological factors such as heuristics and cognitive bias, including availability bias, herding behavior, and overreaction, play a huge role in investment decision-making in the capital market, especially in markets dominated by retail investors. Market sentiment, both positive and negative, is often influenced by stronger emotional factors than fundamental analysis, leading to price fluctuations that do not always reflect actual economic conditions.

In the context of the Indonesian market, where more than 60% of transactions are carried out by retail investors, the influence of sentiment on market volatility becomes more pronounced, especially during crises or important economic events. Events such as government policy announcements (e.g., PSBB) and central bank decisions (such as the Fed's interest rate policy) often trigger overreactions in the market, leading to panic selling or bubble markets. This volatility is more intense in the short term and is often accompanied by extreme price declines or spikes. However, in the medium term, this volatility is likely to be reduced as market risk perceptions normalize.

The study also highlights the importance of using Natural Language Processing (NLP) technology to monitor digital sentiment, which can be a tool for institutional investors in making more anticipatory investment decisions, particularly in hedging strategies and portfolio risk management. For market authorities, this sentiment monitoring can serve as an effective early warning system in detecting potential market bubbles or panic selling triggered by emotional information.

Furthermore, the results of this study underscore the importance of financial education for retail investors to reduce the influence of psychological bias in their decision-making. A better understanding of sentiment-based market dynamics, as well as an introduction to existing psychological biases, can improve financial literacy and strengthen market resilience to transient volatility. Thus, retail investors can be more careful in sorting out relevant information and avoid the influence of irrational sentiment, which in turn will support the creation of a more stable and efficient capital market.

Overall, the study shows that a deep understanding of behavioral finance and the influence of investor sentiment on market volatility is essential to improve more rational investment decisions and reduce the negative impact of decision-making driven by emotional reactions. Proper education and the use of sentiment analysis technology can make a great contribution to creating a more stable, efficient, and sustainable capital market in the future.

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