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Understanding The Characteristics Of Indonesian Stock Investors: An Analysis Of Financial Literacy And Psychological Bias

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Abstract: This research paper aims to understand the characteristics of Indonesian stock investors by analyzing their levels of financial literacy and psychological bias tendencies. The study explores the level of financial literacy, differentiated into general financial literacy, financial report literacy, and stock investment literacy, and the level of psychological biases which are cognitive biases that can influence investment decision-making. The research utilizes quantitative surveys to gather comprehensive data from a sample of 153 Indonesian stock investors. The findings reveal that there is a significant difference both in the level of financial literacy and the level of psychological bias among investors. Moreover, the study identifies specific psychological biases commonly observed among Indonesian stock investors, such as overconfidence, loss aversion, and herding behavior. It is also found that stock investment literacy level is high, but it is lower for financial report literacy. These findings contribute to the existing literature on investor behavior and provide valuable insights for policymakers, financial institutions, and individual investors seeking to improve their investment decision-making processes. Enhancing financial literacy through educational initiatives and interventions can help mitigate the negative impact of psychological biases and foster a more informed and rational investment culture in Indonesia.

Index Terms - **Stock investing, Investor behavior, Investor characteristics, Investor Bias**

Introduction

Financial markets are studied from both normative and behavioral perspectives. Traditional finance theories, such as Modern Portfolio Theory (MPT), Capital Asset Pricing Model (CAPM), Efficient Market Hypothesis (EMH), Fama-French Three Factors Model, and Arbitrage Pricing Theory (APT) are based on the assumption of individual rationality, where investors act to maximize expected utility or welfare. However, it was found that investors, both retail and institutional, do not always adopt rational behavior, but make a lot of irrational decisions based on individual cognitive and prejudices (Zhang and Zheng, 2015; Smith and Zoega, 2009). These irrational behavior among investors gives rise to Behavioral Finance, a novel field, recognizing that human emotions and irrationality play a significant role in financial market (Gribnikov and Shevchenko, 2012; Darmayanti et al, 2022). Behavioral finance explains how cognitive biases influence investor decision-making, leading to systematic errors in their investment choices resulting in sub-optimal investment result. Investors' inability to predict market movements accurately makes them prone to these biases. Psychological, social, economic, and demographic factors have been identified as contributors to these biases. Some common psychological biases include overconfidence, anchoring, cognitive dissonance, loss aversion, herding behavior, and hindsight bias, among others. Investor behavior plays a crucial role in asset price and market movements, challenging the assumptions of rationality in traditional finance theories. While various models assume that investors are rational and markets are efficient, behavioral finance argues that investors are not always rational, and markets may be inefficient.

Institutional investors and individual investors are two significant player groups in financial markets. Traditionally, institutional investors have been considered as "smart money" and less prone to behavioral biases, while individual investors are often viewed as "noise traders" influenced by irrational behavior. However, recent studies have shown that institutional investors are also subject to behavioral biases, and their investment strategies may not always be rational. Some common biases observed among institutional investors include status quo bias, anchoring effect, endowment effect, ambiguity aversion, and overconfidence bias. Institutional investors' trading behavior also accommodates various anomalies in the market. Despite the prevailing assumptions of rationality in traditional finance, behavioral finance offers valuable insights into the reality of investor decision-making. Behavioral biases can lead to market inefficiencies and irrational investment choices. Understanding these biases is crucial for both individual and institutional investors to improve their investment decision-making processes. It is also found that stock investors generally have higher level of financial literacy compared to general population (Baihaqqy and Sari, 2020). Possessing higher financial literacy is important for investors as it is associated with lower probability of major investment losses and higher investment performance (Jiang et al, 2020). It also results in higher return and higher excess Sharpe Ratio (Bellofatto et al, 2018)

This study aims to present a picture of Indonesian stock investors level of financial literacy, differentiated into general financial literacy, financial report literacy, and stock investment literacy, and also their tendency of behavioral bias with focus to overconfidence bias, herding behavior, disposition effect, and sentiment.

I. Literature Review

Investing in financial markets involves complex decision-making processes influenced by various psychological, emotional, and social factors (Musse et al., 2015; Madaan and Singh, 2019). As a result, behavioral finance has emerged as a critical field of study, focusing on understanding how cognitive biases and emotions impact investor behavior and market outcomes.

Behavioral finance traces its roots back to the seminal work of Daniel Kahneman and Amos Tversky in 1979, who introduced prospect theory, challenging the traditional assumption of rationality in economics and finance. Their research demonstrated that individuals often deviate from rational decision-making due to cognitive biases, leading to systematic errors in their choices (Kahneman and Tversky, 1979). Subsequently, numerous studies have expanded the field, exploring various biases and their implications for investor behavior. Some of the common biases experienced by investors are as follows:

Overconfidence Bias:

Overconfidence bias was proposed by DeBondt and Thaler (1985) as an explanation for stock overreaction phenomena. An overconfident investor is defined as an investor who believes too strongly in his or her own assessments of a stock's fundamentals (Scott et al., 2003) and thus tends to ignore objective information and underreact to any new information. Overconfidence is associated with lower investment return (Eshraghi and Taffler, 2012). Trinugroho and Sembel (2011) found that investors with low overconfidence outperform investors with high overconfidence in terms of investment return. Overconfidence bias is common among stock investors, with retail investors more susceptible to the bias compared to institutional investors (Liu et al., 2016). The bias is dangerous as it may cause a false sense of invincibility on the investor, thus they might neglect thorough research and diversification, relying instead on gut feelings. This can result in hasty decisions, excessive trading, and significant losses. It's crucial for investors to recognize and manage this bias, seeking expert advice and staying grounded to achieve sustainable success in the stock market.

Herding Behavior:

Herding behavior is defined as an obvious intent by investors to copy the behavior of other investors (Bikchandani and Sharma, 2000, as cited in Demirer and Kuntan, 2006). Herding behavior results in collective bias observed in financial markets, where investors tend to follow the actions of their peers, leading to the formation of market trends and momentum trading. Herding behavior can amplify market volatility and contribute to price bubbles as investors copy each other's decision. The bias affects both retail and institutional investors, with unexpectedly, stronger herding tendency among institutional investors (Hsieh, 2013). According to Demirer and Kuntan (2006), there are three main explanations on the source of herding behavior. First, it can be caused by the psychology of investors who might find comfort from conformity with other investors. Second, an investor might believe that other investors as a whole poses information that the investor is not aware of. Third, among institutional investors, copying each other's moves might prevent severe loss that can jeopardize an institutional investor's reputation or compensation.

Disposition Effect:

The disposition effect is a behavioral bias that influences investors' decision to sell their winning investments rather quickly while holding on to losing investments (Kaustia, 2010). The most common explanation on the cause of disposition effect is Prospect Theory as proposed by Kahneman and Tversky (1979). According to Prospect Theory, loss affects human psychology more profoundly than gain. Thus, humans have a strong tendency to avoid loss, even by sacrificing possible gain in the process. Investors tend to hold on losing stocks to avoid realizing the loss and feel the pain from the loss. Meanwhile investors tend to sell winning stocks to immediately realize the gain and avoid it turning to possible loss. Frazzini (2006) found that disposition effect can cause underreaction, which then can explain momentum effect. For example, if there is positive news that increases stock value, investors tend to sell it too soon, depressing the price. Only slowly, the full value of the stock will be reflected in the stock price. On the other hand, in the case of negative news, stock prices will go down. But investors will hold on to it, thus avoiding further reduction of stock price. Only slowly the new lower value will be reflected in the stock price. Both increase and decrease of stock price happen slowly, causing the momentum effect.

Investor sentiment

Investor sentiment is defined as an investor's belief about the future value of the stock that has no justification by facts (Baker and Wurgler, 2007). Instead of facts, the justification might come from investor's feeling or psychological state. Investor sentiment is a crucial aspect in financial markets. The effect goes beyond objective analysis, relying on subjective beliefs and intuition of the investor rather than concrete facts or fundamental data. Such sentiment-driven behavior can lead to significant market fluctuations and even irrational exuberance or pessimism, positively affect the probability of stock market bubble and the bubble size (Pan, 2020). Investor sentiment influences trading decisions, leading to herd behavior and the formation of speculative bubbles. Understanding and quantifying this intangible factor is a complex yet essential task for investors, as it can have a substantial impact on asset prices and overall market stability.

Literature on behavioral biases among stock investors demonstrates the significant impact of psychological factors on investment decision-making and stock market situations. Investors' cognitive biases and emotional responses play a critical role in shaping their choices, leading to market inefficiencies and suboptimal outcomes. Understanding these biases is essential for investors, financial professionals, and policymakers seeking to improve market efficiency and individual investment performance. Behavioral finance offers valuable insights into the complexities of investor behavior, paving the way for more informed and rational decision-making in financial markets.

Financial Literacy

Financial literacy among stock investors is a critical area of study that holds significant implications for individual investors and overall market efficiency. Financial literacy refers to the knowledge, skills, and understanding of financial concepts and principles, enabling individuals to make informed and effective financial decisions. In the context of stock investing, having a solid foundation in financial literacy is vital for navigating the complexities of the stock market and achieving long-term financial goals.

A substantial portion of the general population lacks adequate financial literacy, particularly when it comes to stock investing (Mitchell and Lusardi, 2015). Many investors lack a fundamental understanding of investment products, risk management, diversification, and the impact of macroeconomic factors on the stock market. This deficiency can lead to suboptimal investment choices, emotional decision-making, and susceptibility to behavioral biases. On the other hand, financial literacy strongly corelate with stock market participation (kadoya et al., 2017). Financial literacy also plays a role in investor confidence and participation in the stock market. Those who possess higher levels of financial literacy are more likely to actively engage in investing, while others may shy away due to fear of making mistakes or being overwhelmed by the complexity of financial markets. Investors with higher financial literacy also form portfolio with better diversification (Abreu and Mendes, 2010) leadings to higher investment performance. Financial literacy also moderates the effect of various behavioral bias such as overconfidence, disposition effect, and herding behavior, and thus prevent investors from making poor investment decisions or miss out on opportunities for gain (M. Adil et al., 2021).

II. Goal of Research

The goal of this paper is to report financial literacy level and behavioral bias tendency among stock investors in Indonesia. Financial literacy is differentiated into general financial literacy, financial report literacy, and stock investment literacy. Behavioral bias analyzed in this paper consists of overconfidence, disposition effect, herding behavior, and investor sentiment.

III. Method

A questionnaire was distributed online through a popular stock investing forum in Indonesia. The questionnaire measured respondents' general financial literacy, financial report literacy, and stock investment literacy. The questionnaire also measures the tendency of respondent on overconfidence bias, disposition effect, herding behavior, and sentiment.

The research employs three distinct instruments to assess General Financial Literacy, Financial Report Literacy, and Stock Investing Literacy. Each instrument comprises four multiple-choice questions, with one point awarded for every correct response, yielding a possible score range of zero to four points. Participants scoring between 0 to 2 are categorized as having a low level of literacy, while those scoring between 3 to 4 are classified as possessing a high level of literacy. This approach allows for a clear and standardized evaluation of financial literacy across the three specific domains under investigation.

Measurements for each of the four types of behavioral bias consists of four questions measuring the tendency of respondent to follow that bias. Each question has score from 0 (no tendency) to 4 (high tendency), resulting in total of 0 to 18 points. A respondent is classified as low tendency of bias if he/she has score between 0 to 8. The respondent is classified as high tendency of bias if he/she has score between 9 to 16.

The participants in this research consist of stock investors who are actively involved in the Indonesia stock market and have a minimum of one year of experience in trading stocks. Moreover, each respondent currently owns at least one stock at the time of the survey. The educational criteria for inclusion in the study require a minimum of a high school certificate. Additionally, the participants' monthly income is capped at a maximum of Rp 60 million. These specific characteristics were considered to ensure a focused and relevant sample of stock investors for the research analysis. Altogether there are 153 respondents.

IV. RESULTS AND DISCUSSION

Measurements of respondents' financial literacy are as follows.

Table 4.1: Score of Respondents' Financial Literacy

Score of Financial Literacy

	General Financial Literacy	Financial Report Literacy	Stock Investment Literacy
average	3.1	2.4	3.3
minimum	1	0	1
maximum	4	4	4
# respondent with low Financial Literacy	30	79	20
% respondent with low Financial Literacy	19.60%	51.60%	13.10%

Table 4.1 provides insightful information regarding the average financial literacy scores among Indonesian stock investors. The findings reveal that all three types of financial literacy scores are higher than 2 points, indicating that, on average, stock investors in Indonesia possess a considerable level of financial literacy. This suggests that Indonesian investors are relatively well-informed about financial matters, which may positively impact their investment decisions.

Among the three categories, financial report literacy obtains the lowest average score. This outcome aligns with expectations as comprehending and analyzing financial reports necessitates a higher skill level. On the other hand, stock investment literacy attains the highest average score, which can be attributed to the fact that the respondents are active stock investors with at least one year of experience. Their continuous engagement in stock trading has likely honed their knowledge and skills in this specific area. The low percentage of respondents with low general financial literacy is an intriguing observation. It seems that stock investors in Indonesia are predominantly individuals with higher general financial literacy, leading to the reduced occurrence of respondents with low proficiency in this aspect. This trend supports the hypothesis that higher financial literacy is associated with greater participation in the stock market, as suggested by Kadoya et al. (2017). The research also indicates a low percentage of respondents with low stock investment literacy. This phenomenon can be attributed to the experience gained by investors during their investment activities, equipping them with the necessary skills and knowledge to navigate the complexities of stock investing effectively. Such first-hand experience seems to have a positive impact on investors' competence in this domain.

The research highlights that stock investors in Indonesia, on average, exhibit a high level of financial literacy, particularly in stock investment literacy. This suggests that the majority of investors are well-informed and equipped to make informed decisions in the stock market. Additionally, the prevalence of higher general financial literacy among investors indicates a strong correlation between financial literacy levels and stock market participation. The study underscores the significance of financial education and experience in fostering competent investors and ultimately contributes to a deeper understanding of the financial landscape in Indonesia. Policymakers and financial institutions can use these insights to design targeted interventions to further enhance financial literacy and, in turn, bolster the country's overall financial health.

Table 4.2: Score of Respondents' Behavioral Bias Tendency

Score of Behavioral Bias

	Overconfidence	Herding Behavior	Disposition Effect	Sentiment
average	8.5	4.5	7	7.7
minimum	2	0	0	0
maximum	15	13	16	16
# respondent with high tendency of bias	75	29	49	56
% respondent with high tendency of bias	49.00%	19.00%	32.00%	36.60%

The findings presented in Table 4.2 shed light on the prevalence of behavioral biases among Indonesian stock investors, specifically focusing on overconfidence, herding behavior, disposition effect, and sentiment. Surprisingly, the results indicate that none of these biases are widespread among the investors in this study. Each behavioral bias type garnered an average score below 9, suggesting that the respondents, on average, exhibit relatively low levels of biased decision-making. Analyzing the individual behavioral biases, it is evident that overconfidence obtained the highest average score of 8.5, indicating a somewhat stronger inclination towards overconfidence among some investors. On the other hand, herding behavior displayed the lowest average score of 4.5, implying that this type of bias is least prevalent among the respondents. Despite these scores, it is noteworthy that for all behavioral biases, the percentage of respondents exhibiting a high tendency of bias is below 50%. These results collectively indicate that behavioral biases are not significantly common among Indonesian stock investors.

This research's outcomes stand in contrast to various existing studies that have consistently identified behavioral biases as common pitfalls affecting investors' decision-making. The discrepancy might be attributed to the unique characteristics of the respondents in this study, specifically the requirement of having at least one year of experience in stock investing. It is plausible that investors with a higher tendency towards behavioral biases experienced initial losses and subsequently discontinued their stock investments. As a result, the sample might exclude individuals who are more prone to these biases, leading to a potential selection problem. Moreover, the experience of investors could be a crucial factor contributing to the observed results. The research by Hon-Snir, Kudryavtsev, and Cohen (2012) supports the idea that investors' experience can mitigate the effects and tendencies of behavioral biases in their decision-making process. As the respondents in this study possess a minimum of one year of investment experience, their exposure to market fluctuations and decision-making situations might have helped them develop a more rational and less biased approach to investing. The findings imply that having prior investment experience plays a role in tempering behavioral biases among Indonesian stock investors. This insight highlights the importance of financial education and market exposure, which could help novice investors learn from early mistakes and develop a more rational investment approach.

In conclusion, the research demonstrates that behavioral biases do not prevail significantly among Indonesian stock investors. The unique characteristic of the respondents' experience in stock investing and potential selection effects could explain the deviation from previous studies. These results emphasize the significance of investor experience and its potential role in reducing behavioral biases. Nevertheless, further research is warranted to corroborate these findings and explore the interplay of experience, education, and individual biases in investment decision-making within the context of the Indonesian stock market. Such investigations would contribute to a deeper understanding of investor behavior and could inform the development of effective strategies to enhance investors' decision-making processes and overall financial well-being.

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