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The Effect of Behavioral Biases on Risk Perception

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ABSTRACT
Behavioral biases can lead investor to have investment decisions that reverse with the principle of rationality. It also cause investors to have bias in risk assessment. This study aims to test the role of behavioral biases (sentiment, overconfidence, salience, overreaction, herding, and disposition effect) on risk perception. Used 150 sample of investors in Indonesia, the result showed that investor sentiment and overconfidence have positive effect on risk perception. Meanwhile overreaction, herding, and disposition effect have negative effect on risk perception. This result indicate that behavioral biases can view risk perception in two different way: as an opportunity and also a threat for investor.

Keywords: disposition effect, herding, overconfidence, overreaction, salience, sentiment, risk.

1. INTRODUCTION

The capital market plays a strategic role in the economic activities of a country, as an intermediary for investors who have excess funds and for business owners who need financing. According to Law Number 8 of 1995, the capital market is concerned with public offerings and securities trading, public companies related to the securities that are published, as well as institutions and professions related to securities. The development of investment activity has grown rapidly in the last 10 years (2008-2018). This can be seen from the increasing performance of the composite stock price index (IHSG). At the end of 2008, the IHSG was at the level of 1,355, while at the end of 2018 the IHSG reached 6,194. In addition, in the midst of the unfinished COVID 19 pandemic it should have made economic activity decrease, but the fact is that activity in the capital market is increasing as evidenced by the number of capital market investors who increased by 42% in November 2020 compared to the November 2019.

One aspect of cognition from individual investors is the level of risk and level of trust [1] . The role of information, both accounting information and information related to issuers, must be understood by investors to get good stock performance. However, in fact, the average investor only focuses on certain information and uses the rule of thumb because there is behavioral bias without reading the details of the financial statements which results in making inappropriate investment decisions.

This study tested the impact of behavioral biases on risk perception. There are some example of behavioural biases on investment decision making. Based on [2], investor sentiment, overconfidence, overreaction, and herding were behavioral bias that influence investment decision making. This finding was supported by [3]. [4] also explained that salience is behavioral bias which investor tend to buy a familiar stocks. [5], also explained that investor in Indonesia tend to not sell their stocks when the price is fall and sell their stocks quickly when the stocks made profit.

A study on behavioral bias and risk is needed as a policy recommendation for the Indonesia Stock Exchange, the Financial Services Authority, and the Ministry of Finance to stabilize capital market conditions by increasing market efficiency. In addition, it can serve as a reference for self-understanding for investors so that they can anticipate behavioral bias in assessing investment risk

2. LITERATURE REVIEW

2.1 Behavioral Finance

The assumption that investors are always rational has become a debate over traditional financial theory which cannot provide a sufficient explanation of stock market anomalies. Under certain conditions investors can ignore fundamental judgments and be attracted to securities that are actually rising at an unreasonable price. The traditional financial theory is based on 4 assumptions :

1. Rational Investors
2. Efficient Market
3. Investors design their portfolios according to the mean variance portfolio rule
4. The expected return is based on a function of the risk itself.

The field of behavioral finance offers an alternative to these four bases. First, normal investors are often irrational, markets are inefficient, investors do not design portfolios according to the mean variance portfolio rule, and expected returns are measured not only based on risk. Behavioral finance emerged as a branch of social psychology that captures the human side of decision making. There are psychological factors that can affect the investment and the results to be achieved. According to [6] behavioral finance is a study that studies aspects of psychology that can affect financial attitudes. According to [7], financial behavior is studying how humans actually behave in a financial determination. [8] divides financial behavior specifically into two parts, namely cognitive (the way humans think) and limits to arbitrage (utilizing inefficient markets). Thus, behavioral finance is the study of how human psychology affects the financial and investment decision-making process.

The first assumption in behavioral finance is that investors will minimize expectation of regret (regret). The second, behavioral finance theory is a positive theory that describes what has happened (ex post). Third, investors are loss averse in line with [9] prospect theory. Prospect theory explains that investors will become risk averse if they are experiencing profits and vice versa will become risk takers if they experience losses. Fourth, investors' predictions are often biased because of errors in processing information. Fifth, investors try to get satisfying returns. Sixth, investors are assumed to make decisions related to emotional, social, and psychological issues.

2.2 Risk Perception

Risk can be defined in various ways. Risk can be defined as an adverse event. Another definition that is often used by investment analysts is the possibility that the results obtained deviate from the expected. Perceptions of risk tend to be influenced by cognitive biases that arise from ways of thinking (heuristics) that act as shortcuts to enable fast processing and simplification of information. This heuristic often emphasizes the individual's fear arising from the possibility of a lack of information or control [10]. Perception of risk is the view of individual investors on how much risk will be obtained when making investment decisions. In the midst of uncertainty, risk perception plays an important role in individual behavior. Risk perception is very dependent on the psychological characteristics and circumstances of each individual.

Based on the previous literature, the hypotheses are proposed:

H1 : sentiment investor has positive effect on risk perception

H2: overconfidence has positive effect on risk perception

H3: salience has negative effect on risk perception

H4: overreaction has negative effect on risk perception

H5: herding has negative effect on risk perception

H6: disposition effect has negative effect on risk perception

3. METHODOLOGY

This study used 150 investor in Indonesia as a sample. The number of domestic Indonesia in 2021 is 251.400 investor (Kontan.co.id,2021) Using Yamane's Taro Formula with 10% error, the minimum sample requirement is

$$n = N/(1+Ne^2)$$

$$n= 251.400/(1+ 251.400x0.1^2) = 100$$

This study used SPSS 21 to test the hypotheses. The independent variable is known as the exogenous latent variable, while the dependent variable is known as the endogenous latent variable. The independent variable in this study is behavioral bias: investor sentiment, overconfidence, salience, overreaction, herding, and disposition effects. The dependent variable in this study is perceived investment risk. The variables were measured using a questionnaire. Table 1 showed the operational definition of variables.

4. RESULT AND DISCUSSION

Table 2 showed the demographic analysis of respondents. Most of respondents were <25 years (60%), male (60%), bachelor (70%), have 1-5 year experience in investment (88%), and have portfolio < IDR 5000000(40%).

The measuring instrument must meet the criteria of valid and reliable. Valid means that what is being measured is precise, while reliable means is reliable used anytime,anywhere, and the results will remain the same. The validity in this study used pearson's product moment. Invalid item were removed. The r critical value was 0.1603. Ther reliability test in this study used cronbach's alpha. All alphas value exceed 0.6 indicate that each construct of reliability was accepted. The result of validity and reliability test were showed in Table 3.

The result of the hypotheses testing were showed in table 4. The result showed that investor sentiment and overconfidence have positive impact on risk perception meanwhile overreaction, herding and disposition effect have negative effect on risk perception. Salience and overreaction have no impact on risk perception.

Hypothesis 1 is supported. Sentiment investor has positive effect on risk perception. Investor sentiment can influence the level of investor confidence. They are really sure that company will have positive cash flow in the next period without fundamental analysis. It means that the sentiment investor will view the risk as an opportunity to get higher return. They do not consider firm characteristics and tend to find the risk.

Table 1. Operational Definition of Variables

Variable	Definition	References
Investor Sentiment	Investors' confidence in the company's future cash flows that are not supported by (fundamental) accounting information [11]	[2]
Overconfidence	Excessive belief in the abilities, skills, and knowledge of individuals [12]	[2]
Salience	Tendency to feel more comfortable choosing the familiar stock [13]	[4]
Overreaction	Investors overreact to unexpected news [14]	[2]
Herding	The tendency of investor behavior to follow the actions of other investors [15]	[2]
Disposition Effect	Investor reluctance to sell assets that are loss (losser) and are more likely to sell assets that have made a profit (winner) [16]	[5]
Risk Perception	The view of individual investors on how much risk will be obtained when making investment decisions. [17]	[5]

Hypothesis 2 is also supported. Overconfidence has positive effect on risk perception. The investor have excessive belief in their knowledge and abilities, therefore they will not afraid of risk. They will face the risk and feel comfortable to take a higher risk particularly when their portfolio performance is high.

Hypothesis 4 is also supported. Overreaction has negative effect on risk perception. Investor overreact the information or event because they do not confidence with their ability and knowledge. The investor will avoid the risk and react the information quickly although they still do not really know that the information will bring impact on their portfolio or not.

Hypothesis 5 is also supported. Investor tend to herd the flow because they do not want to face the risk. Investor that follow the flow think that their portfolio will be more safety if they follow the majority of investor. They will have perception of risk as a negative signal that must be avoid to have optimal portfolio.

Hypothesis 6 is also supported. Investor will sell their asset quickly when the asset can make a profit even low profit. Investor who influenced by disposition effect do not want to face the risk if their price asset will fall in the future. Therefore they will have negative perception about risk and realized the gain too soon. When their portfolio are loss, they do not want to take risk by reallocate their asset. They prefer to wait that someday their portfolio will make a profit.

Table 2 Demographic Analysis

Profile	Percentage
Age	
< 25 years	60%
25-40 years	20%
41-56 years	10%
> 56 years	10%
Gender	
Male	60%
Female	40%
Education	
Senior high school	20%
D3/ S1	70%
S2	10%
Investment Experience	
1-5 years	88%
6-10 years	10%
11-15 years	2%
Investment Portfolio	
< Rp5.000.000	40%
Rp5.000.000 - Rp15.000.000	20%
Rp15.000.001 – Rp25.000.000	36%
> Rp25.000.000	4%

Table 3 Validity and Reliability Test

Latent Variable	Correlation coefficient	Cronbach's Alpha	Results
Investor Sentiment: IS1 IS2 IS3 IS4 IS5 IS6	0.582 0.592 0.561 0.492 0.728 0.827	0,811	Accepted
Overconfidence: C1 C2 C3 C4 C7 C8	0.531 0.511 0.483 0.491 0.615 0.582 0,612	0,765	Accepted
Salience S1 S2 S3 S5 S6	0.634 0.537 0.461 0.575 0.566	0,787	Accepted
Overreaction OR1 OR2 OR3 OR4	0.745 0.595 0.653 0.668	0,714	Accepted
Herding H1 H2 H3 H4	0.674 0.669 0.527 0.685	0,766	Accepted
Disposition Effect D1 D2 D3 D5 D7 D9 D11	0.634 0.637 0.569 0.655 0.566 0.674 0.769	0,771	Accepted
Risk Perception R1 R2 R3 R4 R5 R6	0.692 0.545 0.595 0.643 0.868 0.656	0,721	Accepted

Table 4 Hypotheses Testing

Constant	53.833**
Investor Sentiment	1.021**
Overconfidence	1.286**
Salience	2.161
Overreaction	- 1.132 *
Herding	-1.033**
Disposition Effect	-1,131**
R Square	0.326

* significant at 10%
** significant at 5%

Hypothesis 3 is not supported. Salience means the investor tendency to buy a familiar stock. Salience can be viewed in two perspective. Investor who only buy the familiar stock want to avoid the risk so they will have negative perception about the risk. However salience can be explained as the investor courage to buy the familiar stock without consider the accounting information. This means that they are risk seeker and have positive perception about the risk.

5. CONCLUSION

Behavioral bias causes investors fail to make rational investment decisions and biased in considering investment risk. This study aims to examine the effect of behavioral biases on risk perception. The result showed that behavioral bias have significant effect on risk perception. Risk can be viewed as an opportunity to have higher return. On the other hand, risk can be viewed as a threat of the portfolio.

AUTHORS' CONTRIBUTIONS

Ninditya Nareswari is the member of research team and corresponding author in this study
Geodita Woro Bramanti is the member of research team in this study
Aang Kunaifi is the member of research team in this study

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