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Investor Bias Behavior in Investment Decision Making

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ABSTRACT
The purpose of this study is to provide empirical evidence regarding investor bias behavior on investment decisions in the Indonesia Effect Exchange. This research was conducted on individual investors sample of 200 respondents in Jabodetabek purposive sampling. The data analysis method using Structural Equation Modeling (SEM) with Partial Least Square (PLS), is done by looking at the probability value and the t-statistic value. The results of this study investment bias behavior on investment decision making, namely Overconfidence bias, Representativeness bias, Loss aversion bias in stock trading are significant positive influence on investment decision making.

Keywords: *Behavioral bias, investment decisions, Overconfidence bias, Representativeness bias, Loss aversion bias*

1. INTRODUCTION

Many people even state that investment psychology has the biggest role in investing and influences the results to be achieved. Psychological factors also shape investors' financial behavior in buying and selling shares on the stock exchange, which triggers behavioral bias. Kim and Nofsinger [1] revealed that "differences in a person's behavior are often associated with demographic conditions, cultural differences, life experiences and education". Even according to Wolosin et al. [2] "the behavioral bias of people in Asia is generally higher than the bias of the behavior of people in America." Prosad et al. [3] "examined behavioral bias among investors in India including overconfidence, excessive optimism, herding and disposition effects. The results show that biased behavior is influenced by age, profession and frequency of trading. Indian investors are most likely to have overconfidence behavior, followed by optimism, herding and the disposition effect. Although there have been many research results which state that the behavior bias of Asian people is generally higher than in the Americas and Europe, there are still few studies that specifically reveal the types of behavioral bias that occur in Asian societies, especially Indonesia."
According to Grossman and Stiglitz [4], "rational investors will choose to engage in investment if the expected return can cover all costs incurred. Conversely, individuals who make irrational decisions will experience bad results. This causes the market to be inefficient. This inefficient market can also be explained by prospect theory." The prospect theory proposed by "states a variety of thought states that can influence the decision-making process of investors, including bias in investor behavior which refers to the existence of prospect theory. This theory produces two functions, namely a value function and a weight function. The value function consists of the value of gains and losses, while the weight function is based on the probability weight decision. Normally, the function of the convex value (concave) shows the gain, while the loss is concave (convex). Furthermore, the form of the value indicating loss will be steeper than that indicating profit because realized gain is preferable to loss."
According Olsen [5] "Investors have a tendency to seek satisfaction or pride in their actions." According to Elster [6] and [7] "in obtaining information, investors are considered to have limitations in the process because there are cognitive constraints which tend to act heuristically in decision making. In addition, investors are assumed to understand risk, so that not all investors are risk averse." According to Shefrin [8] "behavioral finance is very important for practitioners or market players to reduce errors. Practitioners and market participants will be given alert signals or reminded not to repeat the same mistakes again." Odean [9] "developed research conducted by Shefrin and Statman [10] which resulted in formulations about disposition effects that are often used by other studies regarding disposition effects."
The theoretical model developed by Odean and Gervais [10] and Odean [9] states that investors who are overconfidence (high self-confidence) will be more ready to be involved in stock trading than investors who make decisions on a rational basis, even though they produce returns that continue to fall. This is in line with the new financial theoretical view which explains that investors often behave irrationally."
Overconfidence bias is a feeling of being overly confident in one's abilities or knowledge in making investment decisions [11]. Representativeness bias is decision making

based on stereotypical thinking or analogies and will cause investors to make wrong financial decisions, which do not increase the yields [12]. Loss aversion bias is a very strong feeling of urge to avoid loss rather than gain [13].

2. LITERATURE REVIEW

Behavioral Theory
Theory of Planned Behavior or TPB (Theory of Planned Behavior) is a next development of the Theory of Reasoned Action. TPB is a conceptual framework intended to explain the predictors of certain behavior. Based on Ajzen [14], the main factor of individual behavior is influenced by the individual's intention (behavioral intention) towards that particular behavior. The intention to behave is influenced by three elements, which are (1) attitude; (2) subjective norm; and (3) perceived behavioral control. This theory underlies the theory of investor behavior in making investment decisions.
This theory discusses a lot about irrational investor behavior (behavioral bias). This financial behavior began to be known by various parties, especially academics after [15] and [16] put forward the psychological aspects of investing and stockbrokers Tversky and Kahneman [17] conveyed an assessment of conditions of uncertainty that could produce heuristics or bias. According to Kim and Nofsinger [1] behavioral finance is a study of cognitive and emotional errors in financial decision making that can lead to bad investor investment decisions. Meanwhile, Olsen [5] states that behavioral finance seeks to predict financial markets which focuses on the application of psychological and economic principles as a development in the financial decision-making process. In financial theory, the behavior of financial data and market aspects is assumed to influence the choice of investors' decisions to invest, which in turn will affect investment performance.

3. RESEARCH FRAMEWORK

Research conducted by Kaustia [18] which replicates research from Odean [9] found that investors will continue to sell even when the stock price is at a loss. This is due to differences in investors in the countries tested, namely Finland and the United States, whose study data were taken from the Finnish Central Securities Depository (FCSD). His research reveals how the crisis happened and what causes it. This research qualitatively leads to psychological aspects, namely aspirations, cognition, emotions, culture and perceptions of justice to be the center of financial behavior that can determine the fate of the economy [20]. Sitinjak and Ghozali [19] conducted research on the effect of disposition effects, aspects accounting cognition and information in Indonesia. The results of his research show that investors in Indonesia tend to sell their shares quickly when they experience a profit, and vice versa when they experience a loss on their stock investment. This result is in line with Kahneman and Tversky's [20] theory of prospect which was developed into a disposition effect by Shefrin and Statman [21], then developed by Odean [9] who found a disposition effect formulation. Research conducted by Mahmood et al. [22] revealed that herding and heuristics positively affects the investment performance. Meanwhile, the attitude toward risk (prospect) negatively affects the investment performance. Fama [23] states that investors will use all available information, which is a cost-free commodity. Investors are always considered to be motivated to maximize returns with a risk averse attitude in making investment decisions. Thus, a truly efficient stock market will be created where all decisions are made based on rational decisions, there is no room for irrational decisions and no deviations are found in the stock market.

4. RESEARCH METHODS

4.1 Research Design

This research uses quantitative methods with a descriptive research design. Descriptive research is research that has the aim of testing the empirical truth of a hypothesis. The empirical truth in question is the relationship between two or more research variables that are formulated in the hypothesis. This study used the primary data, whereas the data was collected by the author directly from the subject under study.

4.2 Population, Sample Selection Technique and Sample Size

The population used in this study is that investors have made stock transactions located in Jabodetabek (Jakarta-Bogor-Depok-Tangerang-Bekasi).
This study uses a non-probability sampling method with purposive sampling technique, which is a sampling technique based on research objectives. Samples taken by researchers are investors who have traded shares at least two transactions in the Indonesia Stock Exchange (IDX). As many as 200 samples of questionnaires were distributed online which was made using Google Form. Questionnaires were distributed for one month, from early October 2020 to late November 2020.

4.3 Data Analysis

This research uses a partial least square (SEM-PLS) structural equation model and uses the SmartPLS v.3.2.8 software.

4.4 Hypothesis Testing

The result of hypothesis testing can evaluated through the T-Statistics value and the P-Value tested through bootstrapping. If the T-Statistics value of a variable is greater than 1.96 and the P-value is less than 0.05, then the research hypothesis is not rejected. If the T-Statistics of a

variable is less than 1.96 and the P-Value is greater than 0.05, the hypothesis is rejected. There are three research hypotheses, namely:

Overconfidence bias
H1: Overconfidence bias significantly and positively influences the investment decision making.

Representativeness bias
H2: Representativeness bias significantly and positively influences the investment decision making.

Loss aversion bias
H3: Loss aversion bias significantly and positively affects the investment decision making.

5. RESEARCH RESULTS AND DISCUSSSION

Table 1 R-square value

Endogen Variable	R-square Value
Investment Decision Making (Y)	0.763

Source: Processed data, smartPLS v. 3.2.8

Based on the table above, R2 for investment decision making is 0.763 which means that the percentage of investment decision making which can be explained by overconfidence bias, representativeness bias, and loss aversion bias is 76.3%.

Table 2 Q-square value

Endogen Variable	Q-square Value
Investment Decision Making (Y)	0.447

Source: Processed data, SmartPLS v. 3.2.8

Based on the table above, Q2 for investment decision making is 0.447, which means that a Q2 value of more than 0.15 has a predictive relevance value with a strong level.

Table 3 F-Square Value

Variable	Investment Decision Making (IDM)
Overconfidence Bias (OB)	0.066
Representativeness Bias (RB)	0.376
Loss Aversion Bias (LAB)	0.137

Source: Processed data, smartPLS v. 3.2.8

Based on the table above, the overconfidence bias variable has a weak change effect of 0.066, the representativeness bias variable has a strong change effect of 0.376, and the loss aversion bias variable has a weak change effect of 0.137 on investment decision making.

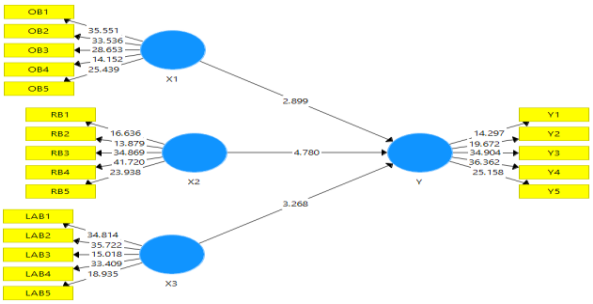

Figure 1 Bootstrapping Output
Source: Processed data, smartPLS v. 3.2.8

Table 4 Path Coefficient Results

Indicator	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
OB -> IDM	0.218	2.899	0.002
RB -> IDM	0.427	4.780	0.000
LAB -> IDM	0.324	3.268	0.001

Source: Processed data, smartPLS v. 3.2.8

Based on the table above, the results of the path coefficient, the overconfidence bias variable has a positive influence on investment decision making with a value of 0.218, the representativeness bias variable has a positive effect on investment decision making with a value of 0.427, while the loss aversion bias variable has a positive effect on investment decision making with a value of 0.324

Hypothesis Test Results
The results of this hypothesis test are to determine whether the hypothesis of the research conducted by researchers is accepted or rejected. Then this can be seen through the t-statistics value with a minimum limit of 1.96 and a p-value smaller than 0.05 so that the hypothesis can be accepted.
Based on the table above, it can be seen whether each hypothesis is accepted or rejected:

a. Based on testing the overconfidence bias (OB) variable on investment decision making (IDM), the t-Statistics value of 2.799 is greater than 1.96 while the P-value of 0.002 is smaller than 0.05.
   The results of this test prove that H1 was accepted.
b. Based on testing the representativeness bias variable (RB) on investment decision making (IDM), the t-Statistics value of 4.770 is greater than 1.96 while the P-value of 0.000 is less than 0.05.
   The results of this test prove that H2 was accepted.
c. Based on testing the loss aversion bias (LAB) variable on investment decision making (IDM), the t-Statistics value of 3.277 is greater than 1.96 while the P-value of 0.001 is less than 0.05.
   The results of this test prove that H3 was accepted.

6. DISCUSSION

In this section of the discussion, the researcher formulates the results of the research that has been carried out and compares them with the results of previous studies.

Overconfidence bias is the first variable in this study. Based on the theory, overconfidence bias is an attitude of overconfidence in terms of how much prejudice or feeling about how well people can understand their abilities and the limits of their own knowledge. Based on the results of the research conducted, overconfidence bias has a T-Statistics value of 2.799 and a P-value of 0.002. These results indicate that overconfidence bias significantly and positively affects the investment decision making in Jabodetabek area. This is in line with the research results of Jannah & Ady [24] that overconfidence bias has a significant and positive effect on investment decision making.

The second variable in this study is representativeness bias. Representativeness bias is a decision making based on stereotypical or analogy thinking, and will cause investors to make wrong financial decisions, namely decisions in which finance does not increase yields. Based on the results of the research conducted, the representativeness bias has a T-Statistics value of 4.770 and a P-value of 0.000. These results indicate that representativeness bias significantly and positively affects the investment decision making in Jabodetabek area. The results of this study are in line with the results of research conducted by Ramdani [25] which states that representativeness bias has a significant positive effect on investment decision making.

The third variable is loss aversion bias. Loss Aversion Bias refers to the difference in mental level a person has due to loss or gain of the same size. Based on the results of the research conducted, loss aversion bias has a T-Statistics value of 3.277 and a P-value of 0.001. This shows that loss aversion bias positively and significantly affects the investment decision making in Jabodetabek area. The results of this study are also in line with research conducted by Charissa [26] which states that loss aversion bias has a significant positive effect on investment decision making.

7. CONCLUSION

The researcher draws the following conclusions:

1. Overconfidence Bias significantly and positively influences the investment decision making in Jabodetabek area.
2. Representativeness Bias significantly and positively influences the investment decision making in Jabodetabek area.
3. Loss aversion bias significantly and positively influences the investment decision making in Jabodetabek area.

REFERENCES

[1] K. A. Kim and J. R. Nofsinger, “Behavioral finance in Asia,” *Pacific Basin Finance Journal*, vol. 16, no. 1–2, pp. 1–7, 2008.

[2] R. J. Wolosin, S. J. Sherman, and A. Till, “Effects Of Cooperation and Competition on Responsibility Attribution after Success and Failure,” *Journal of Experimental Social Psychology*, vol. 9, no. 3, pp. 220–235, 1973.

[3] J. M. Prosad, S. Kapoor, and J. Sengupta, “Behavioral Biases of Indian Investors: A Survey of Delhi -NCR Region,” *Qualitative Research in Financial Markets*, vol. 7, no. 3, pp. 230–263, 2015.

[4] S. J. Grossman and J. E. Stiglitz, “On the Impossibility of Informationally Efficient Markets,” *The American Economic Review*, vol. 70, no. 3, pp. 393–408, 1980.

[5] R. A. Olsen, “Behavioral Finance and I t s Implications f or Stock-Price Volatility,” *Financial Analysts Journal*, vol. 54, no. 2, pp. 10–18, 1998.

[6] J. Elster, *Alchemies of the Mind. Rationality and the Emotions*. Cambridge University Press, 1999.

[7] D. A. Hirshleifer, “Investor Psychology and Asset Pricing,” *the Journal of Finance*, vol. 4, no. 4, pp. 493–494, 2001.

[8] H. Shefrin, “Behavioralizing finance,” in *Foundations and Trends in Finance*, vol. 4, no. 1–2, Hanover: Publishers Inc., 2010, pp. 1–184.

[9] T. Odean, “Are investors Reluctant to Realize Their Losses?,” *The Journal of Finance*, vol. LIII, no. 5, pp. 1775–1797, 1998.

[10] S. Gervais, J. B. Heaton, and T. Odean, “Overconfidence, Compensation Contracts, and Capital Budgeting,” *Journal of Finance*, vol. 66, no. 5, pp. 1735–1777, 2011.

[11] B. Angga and Susanti, “Pengaruh Financial Literacy, Overconfidence, Regret Aversion Bias, dan Risk Tolerance terhadap Keputusan Investasi (Studi pada Investor PT. Sucorinvest Central Gani Galeri Investasi BEI Universitas Negeri Surabaya),” *Jurnal Ilmu Manajemen (JIM)*, vol. 5, no. 2, pp. 1–9, 2017.

[12] P. G. Sina, “Tipe Kepribadian Dalam Personal Finance,” *Jibeka*, vol. 8, no. 1, pp. 54–59, 2014.

[13] M. M. Pompian, *Behavioral Finance and Wealth Management – How to Build Optimal Portfolios That Account for Investor Biases*. Hoboken, New Jersey: John Wiley & Sons, Inc., 2006.

[14] I. Ajzen, "The Theory of Planned Behavior," *Behavior and Human Decision Processes*, vol. 53, no. 1, pp. 51–58, 1991.

[15] P. Slovic, "Analyzing the Expert Judge: A Descriptive Study of a Stockbroker's Decision Processes," *Journal of Applied Psychology*, vol. 53, no. 4, pp. 255–263, 1969.

[16] P. Slovic, "Psychological Study of Human Judgment: Implications for Investment Decision Making," *The Journal of Finance*, vol. 27, no. 4, pp. 779–799, 1972.

[17] D. Kahneman and A. Tversky, "Prospect Theory: An Analysis of Decision Under Risk.," *Econometrica*, vol. 47, no. 2, pp. 263–291, 1979.

[18] M. Kaustia, "Market-wide Impact of the Disposition Effect: Evidence from IPO Trading Volume," *Journal of Financial Markets*, vol. 7, no. 2, pp. 207–235, 2004.

[19] E. L. M. Sitinjak and I. Ghozali, "The Investor Indonesia Behavior on Stock Investment Decision Making: Disposition Effect, Cognition and Accounting Information," *Research Journal of Finance and Accounting*, vol. 3, no. 8, pp. 93–100, 2012.

[20] D. Kahneman and A. Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econmetrica, Journal of the Econometric Society*, vol. 47, no. 2, pp. 263–292, 1979.

[21] H. Shefrin and M. Statman, "The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence," *the Journal of Finance*, vol. XL, no. 3, pp. 777–790, 1985.

[22] K. Mahmood, "Do people overestimate their information literacy skills? A systematic review of empirical evidence on the dunning-kruger effect," *Communications in Information Literacy*, vol. 10, no. 2, pp. 198–213, 2016.

[23] E. F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," *The Journal of Finance*, vol. 25, no. 2, pp. 383–417, 1970.

[24] W. Jannah and S. U. Ady, "Analisis Fundamental, Suku Bunga, Dan Overconfidence Terhadap Pengambilan Keputusan Investasi Pada Investor di Surabaya," *Ekspektra : Jurnal Bisnis dan Manajemen*, vol. 1, no. 2, pp. 138–155, 2017.

[25] F. N. Ramdani, "Analisis Pengaruh Representativeness Bias dan Herding Behavior dalam Pengambilan Keputusan Investasi (Studi pada Mahasiswa di Yogyakarta)," Universitas Islam Indonesia, 2018.

[26] E. A. Charissa, "Analisis Pengaruh Anchoring Bias dan Loss Aversion dalam Pengambilan Keputusan Investasi Investor di Yogyakarta," *Universitas Islam Indonesia Fakultas Ekonomi Yogyakarta*, 2018.