

**Factor Influencing Investor's Decision Making in Indonesia: Moderating the Role of Locus of Control****Febria Nalurita**

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**Abstract**

*This study aims to investigate the effect of loss aversion, regret aversion, and market factors, on investment decision making with the moderating role of locus of control. Data collection is done by distributing questionnaires. The survey was conducted on individual investors in the Indonesia Stock Exchange in Jakarta to obtain a sample of 281. This research uses the Structural Equation Modeling approach. The statistical tool used is LISREL 8.8. This study found that loss aversion, regret aversion, and market factors significantly influence investment decision making. Locus of control plays the role of moderation between loss aversion, regret aversion, market factors, and investment decision making. The novelty in this study reveals the research that needs to be done to encourage investors to make rational decisions and control the required rate of returns through their locus of control. This research helps investors to make decisions logically and rationally with an open mind, high-performance thoughts and positive actions for investment goals that produce positive returns.*

**Keywords: Loss Aversion, Regret Aversion, Market Factor, Locus of Control, Investment Decision****Introduction**

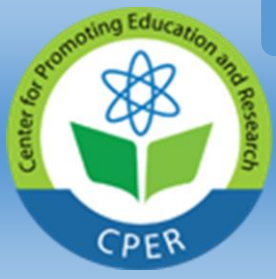
Investment involves the selection of an investor to put the money in the various categories of investment options. The biggest challenge for investors is to choose one or more investment options to invest their money and make the right investment decision because incorrect investment decisions can cause high losses (Subramaniam, 2017). Financial behavior researchers stated that humans do not behave rationally as economists expect, their decisions are influenced by their psychological feelings (Shah et al., 2018). According to Bakar and Yi (2016), psychological factors have a significant impact on the decision-making of individual investors in the stock market. Recent research shows that the average investor makes decisions based on emotions, not logic. Emotions such as fear and greed often play an important role in investor decisions (Chaudhary, 2013).

The strong desire of investors to avoid losses rather than the desire to obtain profits is the loss aversion behavior of investors because emotional losses are felt twice as strong compared to comparable profits (Rekik and Boujelbene, 2013). If

the investor loses averse, this affects the investment decision-making process, the investor might buy more shares are underperforming to recover the previous loss (Budhiraja et al., 2018).

Investors who refuse to admit that they have made wrong investment decisions to themselves are investors who have regret aversion behavior. Fear of regret often occurs when individuals procrastinate decisions-making, therefore regret affects investment decision-making (Talha et al., 2015). Regret aversion encourages investors to hold shares with poor performance, avoids selling shares of poor performance and also avoids recognition of related losses and wrong investment decisions (Bansal, 2015).

Stock market information is used as a guide by investors to get info/public data, previous stock price movements and current stock price changes before investing (Ngoc, 2014). Fluctuations in market information, fundamentals of the underlying stock and stock prices can cause an over-under reaction. This market variable is important for investors and is usually considered for making investment decisions (Trang, 2015).



Investors who believe that the expected results can be influenced through their efforts, skills, and characteristics, this is referred as an internal locus of control, while investors who feel that the desired results are determined by external forces such as chance, luck, fate and the strength of others. This is designated as an external locus of control (Dumitriu et al., 2014).

Many studies in western countries have link investor behavior with irrational investment decisions. Meanwhile, in developing countries such as Indonesia, only a few empirical researches that uses locus of control moderator, to avoid irrational decisions. The novelty of this research is to use locus of control as a moderator that has never been tested before in Indonesia to make investment decisions. This study aims for individual investors to avoid irrational investment decisions and to control the required rate of returns. Especially at the current situation, there was a sharp deterioration in the value of the Jakarta Composite Index (JCI) due to the COVID-19 pandemic on the Indonesia Stock Exchange (IDX), which caused a massive stock sale reaction from investors to regret aversion and loss aversion.

This research is expected to encourage investors to make rational and wise financial investment decisions, so they don't lose money invested. This research is expected to encourage investors to make rational and wise financial investment decisions. Furthermore, investors are expected not to lose the money that has been invested

Financial advisors can be helped to give their clients the right advice. Whereas policymakers can create policies for the protection of investors with targeted regulation.

## Literature Review

### *Investment Decision Making*

Investment is an activity or process of investing money which expected to benefit in the future (Rasheed et al., 2018). The decision-making process explains objectives, explores alternatives, analyzes costs-benefits and finally selects the cheapest option (Jhandir and Elahi, 2014). According to Sindhu and Kumar (2014) states that decisions made by investors regarding where, how and how much funds will be invested in various financial instruments to generate income or increasing value are investment decisions in general.

The traditional investment approach shows that investors are advised to invest in instruments with a large probability of return, but the traditional approach does not tell how to measure risk (Islamoğlu et al., 2015). According to Markowitz, who developed the modern portfolio selection theory, the overall portfolio risk can be lower for each financial asset and even in some cases, that non-systematic portfolio risk can be reduced to zero (Markowitz, 1952). Logical and rational investment decisions are taken by an

open mind and by fostering high-performance thoughts. But investment decisions become biased when decisions are made emotionally and psychologically (Malhotra, 2018).

### *Loss Aversion*

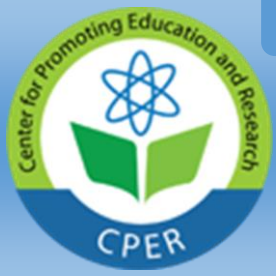
Loss aversion was first shown by Kahneman and Tversky (1979), in Prospect Theory, assuming that losses have a stronger impact than benefits derived from profits. When an investor makes a profit, the investor will be happy and seek more risk by making lots of trades but if the investor suffers a loss with the same weight, the investor tries to avoid it and will feel the most depressed than when obtaining the same profit is a mental punishment called loss aversion (Aziz and Khan, 2016). The loss aversion theory shows that there are various reasons why investors might choose to hold the losers and sell the winners (Jangongo and Mutswenje, 2014). Loss aversion bias can cause incorrect investment: investors hold the loser too long; sell the winning too soon, caused, frightened of the profits will disappear; investors do not want to sell their stocks because of loss aversion, that causes stock returns are not optimal (Pompian, 2015).

Khan et al. (2017) show evidence that when investors lose averse, then they invest less and avoid risky investment because they want to survive from losses, consequently, investors making less risky investment decisions. Ngoc (2014) shows that after achieving a profit, investors become more risk-seeking while, after suffering losses, investors tend to avoid risk.

### *Regret Aversion*

People react emotionally by regretting the decision that has been made because they have made a wrong decision and feel the pain of regret, so this is called regret aversion (Kahneman and Tversky, 1979). People with regret aversion will avoid behavior that creates regret and seeks behavior that causes feelings of pride by applying the principle in stock trading, namely "buys at low prices, sell at high prices" (Gazel, 2015). The fact from Regret's theory explains that investors hold stocks whose value goes down by expecting an uptrend in stock price and faster selling stock whose value rises (Antony and Joseph, 2017). Investors avoid selling their stock as a way to avoid regrets because they have made a bad investment, and are ashamed to report the losses they suffered (Tripathy, 2014).

The findings of Chitra and Jayashree (2014), show the existence of regret aversion bias that affects investor decision making, investors regret buying shares at a higher price and selling their stocks at a lower price. Kengatharan, L., and Kengatharan, N (2014) also showed the influence of regret aversion on individual investment decisions. Investors who regret aversion try to avoid selling their stocks that have decreased in value and quickly selling their stocks whose value has increased.



**Market Factor**

The efficient market hypothesis (Fama, 1970) states that the price of security fully reflects the available information. The implication is that no one can outperform the market, except by chance, because all available information has been reflected in the stock price. Market factors that could influence investment decision making in the stock market, such as changes in market information, changes in underlying stock fundamentals and changes in stock prices can cause over/under-reaction of investors. These changes have been empirically proven to have a high influence on investor decision-making behavior (Vijaya, 2014). There is an optimistic behavior shown by individual investors when the stock market is down, investors wait until the market rises again and then sell their stocks (Abul, 2019)

Ngoc (2014) found market factors to have the highest influence on investors' investment decisions. Investors tend to consider stock market information: general information, past stock price trends and current stock price changes carefully before investing. Similarly, Kengatharan, L. and Kengatharan, N. (2014) explain variables of market factors namely market information and customer preferences have an impact on individual investment decision making. Investors analyze the company of choice, before choosing an investment in a company's stock. Trang (2015) shows that over-under-reaction positively influences investment decision making to produce expected returns. Investors are too careful in examining changes in the stock price invested in and usually, they react quickly to information relating to company shares.

**Locus of Control**

Locus of control is one of the personality variables, which is defined as the belief of someone able or not to control one's destiny (Sinding et al., 2014). Internal versus external control of reinforcement was introduced by Rotter (1966) which describes how a person's actions can control events in his life. The outline, internal locus of control refers to the belief that behavior is determined by one's actions, while external locus of control refers to the belief that the results obtained are strongly influenced by forces other than the investors themselves (Malacarne,2018). Investors often think that personal involvement and effort can change investment returns, but one's memory is unreliable and opportunities for error are always available (Rasheed et al.,2018).

**Hypothesis and Theoretical Framework**

**H1:** There is a significant relationship between loss aversion and investment decision making

**H2:** There is a significant relationship between regret aversion and investment decision making

**H3:** There is a significant relationship between market factors and investment decision making

**H4:** Locus of control moderates the relationship between loss aversion and investment decision making

**H5:** Locus of control moderates the relationship between regret aversion and investment decision making

**H6:** Locus of control moderates the relationship between market factors and investment decision making

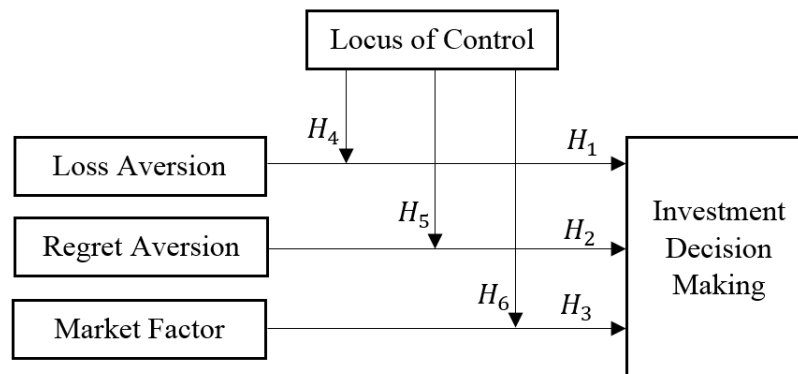


Figure 1. Theoretical Framework

**Research Methodology**

**Population and Sample**

The population in this study is retail investors in the Indonesia Stock Exchange (IDX). Samples taken are retail investors in Jakarta that have the criteria of trading on IDX and having investment experience of more than one year. The sample selection criteria above, a sample of 281 respondents was obtained.

**Data Analysis Technique**

Data collection was carried out by distributing questionnaires at various brokerage offices (securities companies) in Jakarta. The data collection technique in this research is convenience sampling. Measurement of the variables of this study uses a six-point Likert scale where 1 represents Strongly Disagree and 6 represents Highly Agree. Data collected through surveys are processed and analyzed using the LISREL 8.8, with the Structural Equation Modeling (SEM) technique.



This study uses 5 variables, namely loss aversion, regret aversion, market factor, locus of control, and decision making. Loss aversion consists of 5 items referring to Khan et al (2017); Ngoc (2014). The aversion retreat consists of 5 items referring to Chitra and Jayashree (2014); Kengatharan, L., and Kengatharan, N. (2014). The market factor consists of 5 items referring to Ngoc (2014); Kengatharan, L., & Kengatharan, N. (2014). Locus of control consists of 6 items referring to Rasheed et al (2018); Salamanca et al (2016). Decision making consists of 5 items referring to Kengatharan, L., and Kengatharan, N. (2014).

**Validity and Reliability Measurement Testing**

CFA (Confirmatory Factor Analysis) is used to test validity and reliability. Table 1 shows the validity testing of all measurement indicators of the measured variable that is proven to be valid with a Standardizes Loading Factor value above 0.5 or 0.7. Reliability testing used AVE (Average Variance Extracted) which generates values above 0.5 and CR (Construct Reliability) above 0.7 for each variable, proven all measurement indicators are reliable (consistent).

**Table 1. Results of Validity and Reliability Tests**

Items	Estimate Loading Factor	AVE	CR
<b>Loss Aversion</b>		0.62	0.89
LA1	0.69		
LA2	0.78		
LA3	0.85		
LA4	0.75		
LA5	0.85		
<b>Regret Aversion</b>		0.52	0.84
RA1	0.67		
RA2	0.70		
RA3	0.80		
RA4	0.77		
RA5	0.65		
<b>Market Factor</b>		0.50	0.83
MF1	0.54		
MF2	0.72		
MF3	0.74		
MF4	0.75		
MF5	0.77		
<b>Locus of Control</b>		0.56	0.88
LC1	0.80		
LC2	0.80		
LC3	0.77		
LC4	0.80		
LC5	0.59		
LC6	0.71		
<b>Investment Decision Making</b>		0.61	0.89
DM1	0.85		
DM2	0.78		
DM3	0.84		
DM4	0.72		
DM5	0.71		



**Result and Discussion****Table 2. Hypothesis Testing Results Direct Effect**

Hypothesis	Path	Estimate	t-value	Result
H <sub>1</sub>	Loss Aversion → Decision Making	0.30	3.84	Significant
H <sub>2</sub>	Regret Aversion → Decision Making	0.87	25.61	Significant
H <sub>3</sub>	Market Factor → Decision Making	-0.48	-7.62	Significant

**Table 3. Hypothesis Testing Results with Moderation**

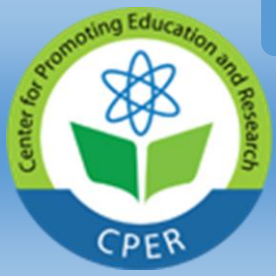
Hypothesis	Independent Variable	Moderator Variable	Dependent Variable	Estimate	t-value	Result
H <sub>4</sub>	Loss Aversion	Locus of Control	Decision Making	0.13	3.38	Significant
H <sub>5</sub>	Regret Aversion	Locus of Control	Decision Making	0.28	4.40	Significant
H <sub>6</sub>	Market Factor	Locus of Control	Decision Making	0.27	4.89	Significant

The first hypothesis shows loss aversion has a positive and significant effect on investment decision making, which is indicated by the estimated coefficient value of 0.30 with the t-value of 3.84 (t-value > 1.96). This means that the higher the loss aversion, the higher the investment decision making. Investors at IDX who have benefited from trading their stocks tend to be more confident to take risks by trading more aggressively, but when they suffer a substantial loss, investors choose to hold loser-stocks that are believed that stocks that lose today will soon outperform profitable stocks today. While investors have large sums of money, investors tend to invest in financial assets that are less risky or if they remain on the stock market, investors' preference is allocated to defensive stocks. The results of this study support the research of Khan et al. (2017) which states that loss-averse investors try to avoid risky investments to survive losses, resulting in making less risky investment decisions to avoid losses rather than gain profits. Ngoc (2014) revealed that after obtaining a profit, investors become more risk-seeking otherwise after suffering losses, investors tend to avoid risk more.

The second hypothesis shows regret aversion has a positive and significant effect on investment decision making, which is indicated by the estimated coefficient value of 0.87 with the t-value of 25.61 (t-value > 1.96). It means that the higher the regret aversion, the higher the investment decision making. Investors who trade on IDX often full of regret because they have made a bad decision, by buying

stocks at a higher price and selling their stocks at a lower price than the purchase price because investors do not have a good investment strategy. To cover up their embarrassment and regret, investors often take action by accelerating selling stocks when the value rises before the price drops below the purchase price. The results of this study support the research of Chitra and Jayashree (2014), revealing regret aversion bias that affects investors in decision making, investors must sell stocks early at a higher price before prices fall below the purchase price and buy stocks early at lower prices due to current prices increase. Kengatharan, L., and Kengatharan, N (2014) also showed the influence of regret aversion on individual investment decisions. Investors who regret aversion try to avoid selling stocks that have declined in value and by quickly selling stocks whose value has increased. Investors aim to immediately get a return.

The third hypothesis shows that the market factor has a negative and significant influence on investment decision making, which is indicated by the estimated coefficient value of -0.48 with the t-value of -7.62 (t-value > 1.96). It means that the higher the market factor, the lower the investment decision making. Market information is useful to help investors predict future trends to avoid irrational decision making. When investors determine their stock preference, initially the investor analyzes the company's stocks to minimize irrational decisions. Over-under-reaction to news and information that comes into the market, could generate different trading strategies. Investors require technical



analysis when making investment decisions, to define market entry and exit position. The results of this study support Ngoc (2014) who found market factors such as general information, past stock price trends and changes in current stock prices to influence investment decisions. Kengatharan, L. and Kengatharan, N. (2014) show that market information and customer preferences have an impact on individual investment decision making. Investors analyze the company before choosing the stock of a company. Trang (2015) shows over-under-reaction influences investment decision making to generate expected returns.

The fourth hypothesis shows the loss aversion moderated by the locus of control on investment decision making is positive and significant, which is indicated by the estimated coefficient value of 0.13 with the t-value of 3.38 (t-value > 1.96). It means that the higher the locus of control will further strengthen the effect of loss aversion on investment decision making. Loss averse investors who have a locus of control, if they have experienced losses prefer to avoid risk, and try to plan investments carefully, therefore, the decision taken is to avoid investing in stocks with high-risk fluctuations. Whenever obtaining again from stock trading, by trusting in its ability, investors feel more willing to take risks by trading more actively. If an investor has a large enough fund, there is a tendency for investment preferences in defensive stocks with low risk and low rate expected return, but in the long term, they could generate a high expected return or at least the same as the market.

The fifth hypothesis shows regret aversion moderated by the locus of control of investment decision making is positive and significant as indicated by the estimated coefficient value of 0.28 with the t-value of 4.40 (t-value > 1.96). It means that the higher the locus of control will further strengthen the influence of regret aversion on investment decision making. The highest influence on investment decisions of investors moderated by the locus of control is regret aversion. IDX investors who have a high locus of control, when they have traded buy but the stock price dropped suddenly due to negative sentiment from the global economic conditions (as recently, there was a case in COVID-19 which caused all stock prices to fall sharply), to convince investor's decision are incorrect and avoid regret, investors immediately decide to take profit, quickly sell their stocks before the price drop again. When investors are late selling their stocks that have been bought, investors at IDX prefer to hold their stocks whose value continues to fall, with the hope that when there is a short-term bullish trend, investors could immediately sell it.

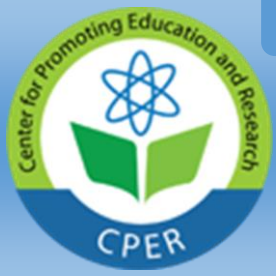
The sixth hypothesis shows that the market factor which is moderated by the locus of control towards investment decision making is positive and significant as

indicated by the estimated coefficient value of 0.27 with the t-value of 4.79 (t-value > 1.96). This means that the higher the locus of control will further strengthen the influence of market factors on investment decision making. Investors in IDX with the high locus of control, through their action, filter information by observing the stock market before making objective or rational investment decisions, trying to take the best time to buy or sell stocks, dare to take positions when stock prices fall, to obtain the required rate of returns or at least the same as the market average. This strategy accompanied by good fundamental and technical analysis skills. Over/under-reaction of news that arises because market information is always updated, produces different trading strategies and empirically proven to influence investment decision making.

### Conclusion

The results of this study indicate that the direct relationship between variable loss aversion, regret aversion, and market factors has a significant influence on investment decision making. This study also shows that the loss aversion, regret aversion, and market factor variables are proven to be moderated by the locus of control of investment decision making. An interesting finding in this study is that investment made carefully by IDX investors further strengthens the behavior of loss aversion, regret aversion, and market factors, the most common thing done by IDX investors with the high locus of control when trading buy but stock prices fall suddenly due to negative sentiment from global economic conditions (as recently there was a case in the COVID-19 case causing the stock market to plummet) to avoid regret immediately decide to take profit, quickly sell its stocks before the price drop again. Loss averse investors who have a locus of control when they have experienced losses prefer to avoid risk, avoid high-risk stock investments so they prefer to invest in defensive stocks. Investors begin to filter information from the stock market before making objective or rational investment decisions, furthermore, previously conducting fundamental and technical analysis.

The research implies that it helps investors to make logical and rational decisions with an open mind, high-performance thoughts and positive actions for investment goals that produce positive returns. Financial advisors could obtain useful information to diagnose which behavioral biases could affect their clients, reminding their clients' goals, financial conditions, risks, and investment horizons, hence, financial advisors could issue good advice. Whereas policymakers are better able to understand investor behavior and protect investors by formulating policies that pay attention to these psychological factors to ensure a smooth market.



The limitation in this study is first, the research is only conducted at retail investors and, secondly, it is quantitative research. Further research suggests that it could be tested on institutional investors to explore the factors of institutional investor behavior that are moderated by the locus of control. As well as adding qualitative research to capture preferable investor behavior.

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