

INVESTOR'S DISPOSITION ERROR AND THE ROLE OF REGRET IN STOCK MARKET: AN EXPERIMENTAL EVIDENCE FROM INDONESIA

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Abstract

This study examines experimentally, the role of emotions of regret on investors' disposition error in investment decisions. This experimental study used full factorial design, 2 x 2 (2 decision outcomes: negative and positive; 2 types of action: inaction (hold stocks) and action (sell stocks)). A total of 70 participants were included in this study. The findings showed that investors experience more intense regret over the negative outcomes (real loss and missed gain) than the positive outcomes (missed loss and real gain). As expected, the results revealed that investors experience more regret over negative outcomes which stem from hold loser stock than from identical outcomes that results from sell stock.

Keywords: Type of Action, Outcomes, Disposition Error, Regret

Introduction

The tendency of investors to sell winner too early and ride loser too long, is a form of behavioral biases of investors in the capital market. This phenomenon is known as disposition error or disposition effect (Shefrin and Statman, 1985; Krishnan & Booker, 2002). Disposition error has financial consequence which hurts the wealth of investors (Garvey & Murphy, 2004; Frazzini, 2006; Todd, 2012), i.e. investors earn lower return on their portfolio. Also, various studies have been offering different explanations about the cause (Tehrani & Gharehkooolchian, 2012). However, most of the extant research emphasizes more on aspects of cognitive bias and ignores the emotional aspects of the investors. In fact, investor's emotional aspect plays an important role in explaining their disposition error (Nofsinger, 2002; Ackert, Church, & Deaves, 2003; Fogel & Berry, 2006; Wujin, Meeja, & Hyunkyuu, 2012). Therefore, this is a future research opportunity with an

emphasis on the emotional aspects of investors in an investment decision model.

In addition, studies showed that the phenomenon of investor's disposition error is pervasive, and is occurring in advanced stock market, among individuals and professional institutions (Shefrin & Statman, 1985; Odean, 1998; Locke & Mann, 2005; Amarnani, 2010). Now, this phenomenon is also found in emerging capital markets (Chui, 2001; Brown et al., 2006; Chen et al., 2007). Although this behavioral bias is pervasive and very detrimental to investors, the phenomenon in the case of Indonesia has not received the attention of researchers. In this position, the present study also plays a significant role in filling the existing gap.

Following previous studies, an explanation of this disposition error phenomenon is based on regret theory perspective, known as decision-justification theory (Connolly & Zeelenberg, 2001; Connolly, 2004). Regret theory explains that the intense emotion of regret will be experienced by a person under uncertainty, when they receive a bad outcome, choose the wrong option, apply the bad decision, and when its retrospect is unjustified. In line with this explanation, the emotional effects can lead to behavior biases due to the type of action, namely; action effect, inaction effect, and a negative outcome.

Results of prior studies have given signal of importance on the role of regret emotions on investor's disposition error behavior (Fogel & Berry, 2006; Yahyazadehfar, Ghayekhloo & Sadeghi, 2010; Tehrani & Gharehkooolchian, 2012). Psychologically, their results concluded that investors tend to feel sad and become grieved after making an error in judgment or decision. As a result, investors decide whether to sell or buy securities which are generally influenced by their emotional state. Based on the regret theory, the disposition effect implies that investors who try to avoid regret will have a greater tendency to sell winner than loser. In this case, investors will tend to hold loser too long and sell winners too early. However, investors should try to practice some mechanism for controlling the irrational behavior.

This study focuses on the factors shaping the investor's disposition error in terms of the perspective of regret theory. Specifically, the purpose of the study was to examine the degree of regret or satisfaction as a result of the type of action (omission versus commission bias) and decision outcomes (negative versus positive). Through testing of these behavioral models, this study is expected to have implications on the development of theories and models of investment policies and practices in Indonesia. Firstly, the result of this study is expected to contribute in the form of a model of behavioral finance with an emphasis on the emotional aspect. However, the examination of the emotion of regret model is expected to contribute to the development

of behavioral finance theory. Secondly, is the contribution to the practice implications for investors and other financial practitioners. This study realizes the importance of behavioral models that are able to explain the investor's psychological biases, including investor's emotional bias in their investment decisions. The financial practitioners should recognize emotional biases in theirs and in others, as well as understand the various reasons for mistake-making, as well as avoid the pitfalls caused by human error (Shefrin, 2004).

Literature Review

Explanation of Regret Theory and Phenomena of Disposition Error

Some researchers have attempted to explain the role of regret emotion in explaining disposition error. Nevertheless, among those are researchers who have not still come to a final conclusion concerning why these investor's disposition errors occurs. Likewise, explanation of the regret theory regarding the antecedents and its consequences of regret emotion on investor's disposition error is still under debate. Loomes and Sugden (1982) and Bell (1982) incorporated the emotion of regret in the theory of choice. However, they based the regret theory on two fundamental assumptions. First, many people experience sensations which they called regret and pride. Second, in making decisions under uncertainty, they try to anticipate and take into account those sensations. Based on the regret theory, someone will adjust its utility in a variety of anticipated emotions. The regret theory predicts that one would feel sad if a decision outcome is worse than the result of the different alternative. Thus, one would avoid the various options that made it a possibility due to bad decisions.

Furthermore, Shefrin and Statman (1985) stated that the fear of regret encourage investors to postpone the realization of the loser, while the desire to gain a sense of pride encourage investors to realize profits too early. Someone will avoid actions that cause feelings of regret and look for actions which result to a sense of pride. Feelings of fear of regret encourage investors to postpone the realization of losers. Meanwhile, the search for a sense of pride causes a person to realize profits immediately. Furthermore, profit as evidence of the success of a person is considered more influential on pride than profits due to the environment only. The effect of pride is getting stronger by the testimony of others, because the evidence given to the public was that the decision made is correct (Goldberg & von Nitzsch, 2001). This also explains why market participants are losers but still justify their actions.

Meanwhile, based on the perspective of decision-justification theory, Connolly and Zeelenberg (2002) stated that this theory postulates two core components of the regret associated with the decision. Firstly, the emotion of

regret is as a result of a bad outcome. In this case, one would evaluate or compare with standards. Secondly, the emotion of regret is as a result of bad decisions. Thus, someone will regret worse outcomes compared to standard; and the decision made when retrospectively it would be unjustified. Based on the second component, this theory predicts that a person experiences more intense emotions of regret due to choosing the wrong option, and got a bad outcome in an important decision.

Consistent with the predictions of the regret theory, this model focuses on two factors on the antecedents of regret emotion. First, the research model of the antecedents of emotion regret focuses on outcomes (positive vs. negative) and its influence on the investor's disposition error. Outcome factor does not stand alone, but considers the other moderator variables. Second, the research model expands the antecedents of regret on the type of action (omission and commission bias) and its consequences on the level of investor's disposition error. The influence of decision outcomes on the level of investor's disposition error is expected to change based on the type of action, namely; omission and commission. Previous studies have examined the effect of the type of actions and of the decision outcomes on the emotions of regret. However, extant research about the factors that explain the phenomenon of investor's disposition error is yet to be concluded.

Hypotheses Development

One of the central issues in current research is more regret as a result of the actions they took (i.e. action effect) or as a result of the actions they failed to take (i.e. inaction effect). Hence, the results of existing studies have been inconsistent. Results of the existing study showed that most of the outcomes achieved through the act leads to feelings of more regret than the outcomes achieved through no act (e.g. Baron & Ritov, 1995; Gilovic & Medvec, 1994; Kahneman & Tversky, 1982). Correspondingly, Kahneman and Tversky (1982) stated that feelings of regret generally stems from two sources, namely; the feeling of regret due to "acting" or referred to as the regret of commission, and the feeling of regret due to "do not act" or referred to the regret of omission. Their study found that a person's feeling of regret due to acting on a decision is more painful than the result of not acting on a decision. However, a source of regret which is actually more painful to someone is still being debated.

Meanwhile, the results of Zeelenberg, Van den Bos, van Dijk, & Pieters, (2002) showed that when there is a prior positive outcome, the more regret associated to act than not to act. However, following the prior negative outcomes feelings of regret due to not acting, a finding which was named inaction effect was observed. An emotional reaction to decision outcomes may be influenced by prior outcomes, which might have implications for the

action or inaction difference. In this present research, the effect of the prior decision outcomes would be a concern.

Bad investment decisions have emotional and financial consequences (Kahneman & Riepe, 1998). The emotions of regret are not only experienced often, but also have serious behavioral implications stemming from both the anticipation and the experience of this emotion. However, one's decision to take action or not might be based on prior outcomes. When prior outcomes are negative, people may feel inclined to take action to improve future outcomes, which may make action more normal than inaction. As a consequence of the psychological process, people may regret inaction more than action which is an effect known as the action effect (Zeelenberg et al., 2002). The power of anticipated regret by Cooke, Meyvis and Schwartz, (2001), showed that the experimental subjects preferred to minimize the regret that will come even at the cost of maximizing earnings.

Furthermore, the results of previous studies showed that emotion of regret was closely related to the disposition error (Shefrin and Statman, 1985; Fogel & Berry, 2006; Yahyazadehfar, Ghayekhloo, & Sadeghi, 2010; Tehrani & Gharehkoolchian, 2012). Intense regret will be experienced by a person in important decisions, when they receive a bad outcome, choose a wrong option, and when they are unjustified (Connolly & Zeelenberg, 2001; Connolly, 2004). The emotional effect indicated psychological biases, such as disposition error as a result of the type of action (action and inaction effect) and bad decision outcomes (positive and negative). Therefore, the relevant aspects of regret on the decision was to realize gains or losses, such as the forgone alternative to actual outcomes, and whether outcomes were obtained through acts of omissions or commission (Fogel & Berry, 2006). In this case, Connolly and Zeelenberg (2002) suggested that regret is comprised of two components: an evaluation of the realized outcomes compared to some alternative, and a feeling of self-blame for having made a bad choice.

The research results of Fogel and Berry (2006) showed that the regret or satisfaction with the investment decision is not simply a function of decision outcomes. Instead, the alternatives outcome may affect the evaluation of the decision. Anticipation of regret may lead investors into the trap of holding losing stocks too long. The level of emotion regret over counterfactual outcomes is different from the real outcomes. Likewise, the level of emotion regret over missed gain is different from the actual loss. A missed gain is an opportunity cost. Consequently, previous research indicates that the opportunity cost tends to be underweighted (Kahneman & Tversky, 1982; Fogel & Berry, 2006).

Based on the explanation above, it can be concluded that the investor's satisfaction or regret is not only a function of the decision outcomes, but is also influenced by alternative counterfactual and the type of action taken

(hold versus sell). Investor may avoid regret and seek pride. However, a regret of omission (not to take an action) is more painful than a regret of commission (take an action). In this case, it is expected that the anticipation of regret may lead investors into the trap of holding losing stocks too long while selling winner too early. Based on the explanation of the theory and empirical results discussed above, the following hypotheses can be seen below:

- H₁. Investors experience more intense regret over negative outcomes (real loss and missed gain) than positive outcomes (missed a real loss and gain).
- H₂. Investors experience more intense regret as a result of holding stock than selling stock.
- H_{3a}. When the outcome of decision is negative, investors who have a higher degree of regret will hold the loser stocks longer than selling such stocks.
- H_{3b}. When the outcome of decision is positive, investors who have a higher degree of satisfaction will sell winner stocks earlier than holding such stocks.

Method

Subject.

This study used undergraduate students from a Study Group of Capital Market (SGCM) enrolled in finance and accounting classes. Participants had taken at least one course in financial management, investment and portfolio analysis, and capital market. Subjects were then randomly assigned to each treatment condition between subjects. Testing hypotheses used factorial analysis of variance models. The experiment was conducted in a classroom setting with 70 participants. Therefore, this is in accordance with the advice of at least 5-25 participants per treatment condition (Myers & Hans, 2001: 217)

Design

The experimental design in this study was to manipulate the four experimental conditions. This experimental study used a full factorial design 2 x 2 (two decision outcomes: negative and positive, two types of action: no action (held their shares) and acting (selling shares)). Type of decision outcomes (positive vs negative) consist of (1) a real gain (positive), (2) missed loss (positive), (3) missed gain (negative), and (4) a real loss (negative). Decision outcomes and the type of action factor are between subjects variable.

Treatment Combination and Measurement Degree of Regret/Satisfaction

The research instrument is a modification of the instruments used by Fogel and Berry (2006). First, the modification is done by taking into account the condition of prior outcomes, positive or negative before taking action: sell or hold stock. Seta, McFlory, & Seto, (2001) indicated that prior outcomes (positive or negative) decision affects the degree of regret/satisfaction. Secondly, is taking into account the decision outcomes (negative and positive). Unlike in previous studies, the measurement scale for the dependent variable based on a seven-point Likert scale ranges from 1 to 7 (1= regret very much and 7= very satisfied).

This study used the independent variable, action (hold versus sell), and decision outcomes (positive versus negative). In this study, the experimental condition consisted of four treatment combinations. Four treatment conditions is a combination of two independent variables, namely; two decision outcomes: negative and positive, and two types of action: not taking action (held their shares) and taking action (selling shares). Both factors are between-subjects variable. Thus, each group received one experimental treatment condition.

The dependent variables are the degree of emotional intensity of regret or satisfaction. Degree of regret or satisfaction may lead to disposition error behavior of investors. In addition, the degree of regret is derived from the type of action and decision outcomes of the investment decisions. In accordance with the treatment conditions, each participant was asked to read a case of investment decision of the following form.

Imagine that last year you purchased some stock in Company "GHR" at IDR 15,000 a share. After it fell in value to IDR 11,000 a share, you decided to sell/thought about selling, but decided to hold. You found out that this morning that the current price is IDR 27,000/IDR 6,000 a share.

After reading the above case, the subjects were asked to rate their regret or satisfaction on their investment decisions using a five-point likert scale ranging from 1 to 7 (1= regret very much and 7= very satisfied).

Results

The purpose of this experiment was to examine the role of emotions of regret on investors' disposition error in investment decisions. Specifically, first examine the main effect of outcomes (positive and negative) and the type of action (sell and hold) in relation to hold losing stocks (losers) and gaining stocks (winners). Secondly, examine the interaction effect of the type of action (omission and commission bias) and decision outcomes (negative and positive) at the degree of the emotion of regret.

This study invited 70 undergraduate students from Business Faculty, consisting of 33 men and 37 women as participants through the Study Group of Capital Markets. The characteristics of participants from the four experimental conditions were matched. Matching was based on sex (gender), age, majors, and experience of the subject. However, these results indicated that the effect of the subject characteristic was constant in each experimental condition. After matching, participants were randomly assigned to each experimental condition. Therefore, the distribution of participants in each experimental condition is presented in Table 1 below.

Table 1. Distribution of Participants in each Experimental Condition

Type of Action	Decision Outcomes	
	Negative	Positive
	Negative (Actual Loss or Missed Gain)	Positive (Actual Gain or Missed Loss)
Sell Stocks	1/1 = 14	3/1 = 20
Hold Stocks	4/1 = 18	2/1 = 18

Manipulation check was done to ensure that participants understand the manipulation as defined in the research instruments. Manipulation check was performed based on two factors, namely; the type of action and decision outcomes. Descriptive data of manipulation check results are presented in Table 2. Overall, the manipulation check showed that majority of participants perceived manipulation as contemplated in the research instrument. However, this relates to the condition of the types of action and outcomes.

Table 2. Manipulation Checks in Treatment Combination

Factor	Level	n	Answers	
			Yes	%
Type of Action	Sell Stocks	34	Yes	100%
	Hold Stocks	36	Yes	100%
Decision Outcomes	Negative (Actual Loss or Missed Gain)	32	Yes	100%
	Positive (Actual Gain or Missed Loss)	38	Yes	100%

Note: Manipulation check questions with binary scale (Yes and No). Questions on the manipulation check measure the effectiveness of the experimental treatment condition.

Consequently, the measurement of the degree of regret/satisfaction of investors was done based on the instrument used by Fogel and Berry (2006). The degree of regret/satisfaction on their investment decisions were determined using a 7 points Likert scale (1 = regret very much and 7 = very satisfied). The higher the individual's satisfaction scale, the lower the degree of the investor's regret. Conversely, the lower the scale of individual satisfaction index, the higher the degree of the investor's regret. Table 3

presents the descriptive data on the degree of satisfaction/regret in each treatment combination of experimental conditions

Table 3. Descriptive Data for each Treatment Combination

Type of Action	Decisions Outcomes	Treatment Combination	n	Degree of Regret/Satisfaction	
				Mean	SD
Sell Stocks	Negative (Missed Gain)	1/1	14	2.21	0.579
	Positive (Actual Gain)	3/1	20	4.15	0.813
	Total		34	3.35	1.203
Hold Stocks	Negative (Actual Loss)	4/1	18	1.94	0.873
	Positive (Missed Loss)	2/1	18	6.28	0.669
	Total		36	4.11	2.327

Table 3 reports descriptive data on six treatment conditions. This data reflects the degree of regret experienced by a participant after receiving treatment condition. Based on the degree of regret/satisfaction, a person experiences will influence the investment decisions. The testing result of data normality with the Kolmogorov-Smirnov approach ($p\text{-value} > \alpha = 0.05$) was fulfilled for each treatment condition. Likewise, based on the Levene's test ($p\text{-value} > \alpha = 0.05$), the homogeneity of variance was met for each treatment conditions.

Table 3 reports that the degree of regret in the treatment combination, 1/1 (2.21) is higher than the 3/1 treatment combination (4.15). Furthermore, there is an higher degree of regret due to negative outcomes than positive outcomes when selling stocks. Thus, the high degree of regret shows the high disposition error in 1/1 treatment condition.

Degree of regret at 4/1 and 2/1 treatment combination was also quite high. The emotion of regret on treatment combination 4/1 (1.98) was greater than the 2/1 treatment combination (6.28). Degree of regret reveals that participants' disposition error was higher in the 4/1 treatment combination. The high degree of participants' regret in 4/1 treatment combination condition indicated the high disposition error due to negative outcomes. Specifically, degree of regret at 4/1 treatment combination was greater than the 1/1 treatment conditions. However, this indicates that regret was more intense when action was holding losers. Meanwhile, the degree of satisfaction in the 2/1 treatment combination appears to be higher than the 3/1 treatment combination. Also, this indicates that the degree of satisfaction is higher when selling winner.

This study used a two-way analysis of variance (two-way analysis of variance) on the emotion of regret/satisfaction. Levene's test results indicated that the dependent variables are homogeneous between groups. Overall, the

assumption of the homogeneity of variance is met for a full factorial analysis of variance model.

Testing of the Hypotheses

Testing of the hypotheses was done using a two-way factorial analysis of variance, 2 x 2. In a factorial analysis of variance, the first step is to test the interaction effect (Keppel, 1982: 209). If the interaction effect is significant, then less attention will be paid to the main effects. Analysis tends to focus on a search for the specific conditions contributing to the significant interaction. On the other hand, if the interaction effect is not significant, the attention is directed to the main effects. Analysis of this interaction effect concentrates on individual cell means and joint variation of two factors (type of actions and outcomes). Meanwhile, the main effect analysis concentrates on marginal means and variations of each independent variable averaged over the levels of the other. Significant interaction does not mean losing all the attention on the main effects. Large main effects and interaction effects relatively indicates the importance of considering both effects when explaining and interpreting the data. Therefore, the results of the factorial analysis of variance are presented in Table 4.

Table 4. Results of the Factorial Variance of Analysis

Source	Sum Squares	of df	Mean Square	F	Sig.
Corrected Model	303.714 ^a	3	101.238	241.591	0.000
Intercept	889.950	1	889.950	2123.745	0.000
Type of Action	56.176	1	56.176	134.055	0.000
Type of Outcome	240.667	1	240.667	574.319	0.000
Type of Action * Outcome	14.756	1	14.756	35.213	0.000

a. R Squared = .917 (Adjusted R Squared = .913) dan
b. Dependent Variable: regret/Satisfaction

Based on Table 4, the results of the analysis of two-way factorial analysis of variance showed that the two-way interaction between type of action and decision outcomes were significant ($F = 35.213$ and $p\text{-value} = 0.00$). These results indicated that there was a significant interaction between the type of actions and outcomes in the shape of the degree of regret/satisfaction of participants in the investment decisions. Likewise, the main effect of decision outcome (negative vs positive) ($F = 574.319$; $p\text{-value} = 0.000$) was significant at $\alpha = 0.01$, thus supporting hypothesis, H_2 . Furthermore, the main effect of this type of action (sell vs hold) ($F = 134.055$; $p\text{-value} = 0.000$) was significant, thus supporting hypothesis, H_2 .

Figure 1 shows the ordinal interaction where the relative ranking of the levels of type of action in this case does not change at different level of type of outcome. In this situation, it would be appropriate to conclude that the general treatment represented by the level of negative outcome, results to a degree of regret/satisfaction that is higher than the treatment at the level of positive outcome.

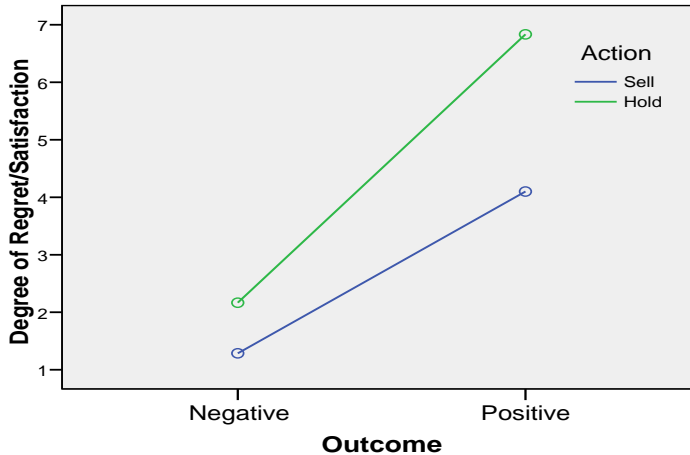


Figure 1. Ordinal Interaction

Based on Table 3 and Figure 1 which explained that the action was holding stocks, the emotion of regret was greater in negative outcomes (1.98) than positive outcomes (6,28). This result revealed that when the outcome was negative, emotion of regret was greater when holding the losing stocks than selling them. This indicated that the disposition error level is higher when participants hold losing stocks. However, this result is consistent with the predictions of the hypothesis, H_{3a} . When the outcome of decision was negative, investors who had a higher level of regret will hold the loser stocks than selling such stocks.

Meanwhile, when the action was selling stocks, emotions of satisfaction were greater on positive outcomes (4.15) than the negative outcomes (2:21). This result revealed that when the outcome was positive, emotion of satisfaction was greater when selling the gaining stocks than holding them. This indicated that when the outcome of decision is positive, investors who have a higher level of satisfaction will sell winner stocks than hold such stocks. The level of participant's disposition error was high when selling the gaining stock too early. However, this result is consistent with the predictions of the hypothesis H_{3b} .

Discussion

The results of the factorial analysis of variance showed that there was a significant two-way interaction ($F = 35.213$ and $p\text{-value} = 0.00$) between the type of action (sell or hold) and outcomes (positive or negative) in shaping the degree of participant's regret/satisfaction in investment decisions. The results indicated that there was a mean difference of the act of holding and selling stocks on different types of outcomes. When the outcomes were negative, emotion of regret was greater on holding actual loss than selling missed gain of stock. This shows that the disposition error was higher when participants hold losing stocks. The results indicated that investors tend to be reluctant to realize losing stocks due to avoided regret. This resulted to the tendency of investor to hold losing stocks too long. Thus, the results support the hypothesis, H_{3a} . The results of this study are consistent with previous studies (Fogel & Berry, 2006). In contrast, the results of this present study do not support previous studies (e.g. Kahneman & Tversky, 1982) which stated that people experience more regret over negative outcomes that stems from action taken than from equally negative outcome that result from actions foregone.

Meanwhile, when type of outcome was positive, the degree of satisfaction due to hold missed loss was higher than sell real gain. These results also support the hypothesis, H_{3b} . This may occur because missed loss will evoke feeling of relief (Loomes & Sugden, 1982) for investors. Consistent with this perspective, feeling of satisfaction was greater on missed loss than real gain. These results indicated that investors are likely to realize the winner earlier to avoid fear of regret. This resulted in an action to sell winner too early. However, anticipation of regret may lead investors to the trap of commission bias, i.e. sell gaining stocks early.

The main effect of the decision outcomes (positive and negative) was significant ($F = 574.319$; $p\text{-value} = 0.00$). This result indicated that there was a mean difference between negative outcomes (actual loss and missed gain) and positive outcomes (missed loss and actual gain). The results of this study support the hypothesis, H_1 . Investors experience more intense regret over negative outcomes (real loss and missed gain) than positive outcomes (missed a real loss and gain). The level of emotion regret over counterfactual outcomes was different from the real outcomes. Degree of regret due to missed gain was less intense than the real losses. The results showed that the emotion of participant's regret due to actual loss is higher than missed gain. Hence, these results indicated that investors suffering from fear of regret are more intense over real loss than missed gain. This occurs because missed gain is an opportunity cost. In addition, previous studies (Tversky, 1982) indicated that the opportunity cost tends to be underweighted. Consistent with this perspective, greater regret occurred on actual loss rather than on

opportunity cost. These results are also consistent with the results of previous studies (Fogel & Berry, 2006).

Likewise, the degree of satisfaction as a result of actual gains was less intense than the loss missed. The results of participants' responses showed that degree of satisfaction with missed loss is higher than real gain. The results of this study also support the hypothesis, H_1 . These results indicated that investors experienced higher satisfaction over missed loss rather than real gain. Therefore, this occurs because missed loss will evoke feelings of relief (Loomes & Sugden, 1982) for investors. The result of this study also supports the results of previous studies (Fogel & Berry, 2006) that the degree of satisfaction with missed loss was closer to the satisfaction with real gain than missed gain.

The main effect of the type of action was significant ($F = 574.319$; p -value = 0.00). This means that there was a mean difference between the act of holding stocks and selling stocks. The results of participants' responses showed that the degree of satisfaction/regret as a result of holding stock is higher than selling stocks. The result of this study supports the hypothesis, H_2 . In this case, investors experience more intense regret as a result of holding stock than selling stock. However, prior studies showed that there were difficulties to determine under condition which type of action will lead to greater regret. This statement was also supported by the interaction ordinal on two factors, namely; the type of action and type of decision outcomes as presented in Figure 1. As discussed earlier, results showed that there was a significant two-way interaction between the type of action (sell or hold) and outcomes (positive or negative) in forming the degree of satisfaction/regret in investment decisions.

Conclusion, Limitations, and Future Research

The results of this experiment concludes that investors tend to hold losing stocks too long as reluctant to realize the feelings of regret. Likewise, they tends to sell gaining stocks early and was reluctant to feelings of regret. Anticipation of regret may lead them into the trap of disposition error. Degree of regret indicated that the level of participant's disposition error was higher over holding losing stocks. These results are consistent with the results of Fogel and Berry (2006).

Consequently, the investment managers should learn to recognize and manage the behavior of their clients to develop long-term relationships through favorable investment results. In this case, investment manager learns about behavioral finance which can guide clients through a life cycle of the investment. In addition, understanding the psychological side of the investor can help financial advisors in providing recommendations for right investment decisions.

The study has certain limitations. First, the measurement of the emotional consequences of regret is only limited to the consequences of disposition error of investors. Future research not only considers the consequences of disposition error, but also the financial consequences. Second, future research not only focuses on the conditional or state variable, but also considers aspects of individual differences or investor personality trait. Third, future research could also directly measure factors affecting disposition error such as responsibility and self-regulation. However, this study is the experimental study; and thus, more future research through surveys and in-depth interviews should be conducted.

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