

Disposition Effect on Investment Decision Making: Explanation of Regulatory-Focus Theory

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Abstract The disposition effect is the tendency of investors to sell stocks early when the price increases and hold stocks longer when this price decreases. As a consequence, investors may lose opportunities to gain greater profits from a stock winner whose price continues to rise; in contrast, they can suffer greater loss when the stocks continue to decline. The disposition effect is a phenomenon widely studied in behavioral finance. There are two main competing theories attempting to explain this phenomenon: the prospect theory and the regret theory. Although both theories give a fairly comprehensive explanation, they fail to take into account the motivation of investors in making investment decisions. This paper seeks to make a critical review of both of the main theories as well as provide a new explanation related to the motivation of investors from the perspective of the regulatory-focus theory. Regulatory-focus theory explains that individuals can be categorized into two groups, i.e. the prevention group and the promotion group. Regulatory-focus theory adds a more specific explanation that the disposition effect is more likely to occur in the prevention rather than the promotion group. The explanation of the disposition effect based on regulatory-focus -is a novelty in this paper.

Keywords Disposition effect • Regulatory focus theory • Prospect theory • Regret theory

1 Introduction

The disposition effect is the tendency of investors to sell stocks early when the price increases and hold stocks longer when the price decreases (Shefrin and Statman 1985). As a consequence, investors may lose opportunities to gain greater profits

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E. Lau et al. (eds.), *Selected Papers from the Asia-Pacific Conference on Economics & Finance (APEF 2016)*, DOI 10.1007/978-981-10-3566-1_2

from a stock winner whose price continues to rise; in contrast, they can suffer from greater loss when the stocks continue to decline. The disposition effect is a phenomenon that has been extensively studied in behavioral finance since it was revealed by Shefrin and Statman in 1985. In addition, it has been studied and found to occur within individual investor trading patterns (Dhar and Zhu 2006; Leal et al. 2010) as well as aggregate market-trading patterns (Chang 2008; Ferris et al. 1988). It was also found among professional investors (Coval and Shumway 2005; Fu and Wedge 2011; Shapira and Venice 2001) as well as the trade regime and cultures around the world (Barber et al. 2007; Boolell-Gunesh et al. 2012).

Shefrin and Statman (1985) developed a model consisting of four main elements to explain the disposition effect: *prospect theory*, *mental accounting*, *seeking pride and avoiding regret*, and *self-control*. Prospect theory offers an explanation of the disposition effect by assuming that the behavior of selling winner stocks too early and holding loser stocks too long is due to the investor being loss averse. Investors are reluctant to accept the loss of probabilities of a decline in prices that may occur when the stock price moves up, and this is realized by selling winner shares too early. Meanwhile, investors are reluctant to accept the loss of a decline in prices that may occur when the stock price moves down, and this is realized by the investor holding loser stocks too long. Mental accounting briefly describes that decision makers tend to separate different types of investments into multiple accounts and then apply prospect theory in decision-making on each account by ignoring the interactions among accounts. Seeking pride and avoiding regret is a behavior that can be induced by selling winner stocks too early and holding loser stocks too long. Selling loser stocks can induce regret, whereas selling off the winning ones can induce pride. Self-control is a mechanism used to explain the reasons of the investors to realize their losses.

In terms of progress, most researches performed have referred to the explanation of prospect theory (Kahneman and Tversky 1979) to describe the phenomenon of the disposition effect (Barberis and Huang 2001; Henderson 2012; Odean 1998; Weber and Carmerer 1998). Others used regret theory (Loomes and Sugden 1982; Bell 1982) to explain the phenomenon of the disposition effect (Dodonova and Koroshilov 2005; Fogel and Berry 2006; Meurmann and Volkman 2006). The proponents of regret theory assume that prospect theory has a weakness. It does not compare the selected options with the unselected ones in investment decision-making, whereas, in reality, investors always compare the selected options with the unselected ones and use the performance of the market portfolio as a benchmark. Regret theory explains the disposition effect based on the anticipation of regret by investors in the domain of gains realized by selling winner stocks too early, whereas in the loss domain investors hold loser stocks too long.

In addition to criticism from the proponents of regret theory, prospect theory has also been criticized by some researchers finding some results that are inconsistent with the predictions of prospect theory to explain the phenomenon of the disposition effect. Some found that prospect theory cannot explain the disposition effect because the explanation of prospect theory is based on loss aversion, which does not consider the initial investment when investors buy the stocks. If prospect theory

predicts that investors are loss averse, it has some consequences on the high equity premium. It leads to some difficulties for investors to determine the choice of investment and also to decide to sell the winner stocks (Barberis and Xiong 2009). The concept of investing happens not only after the decision of share purchase or ex-post but also before the decision of stock purchase or ex-ante. Loss aversion can not be used to explain the decision ex-ante, so prospect theory based on loss aversion can not be used to explain the disposition effect (Hens and Vleck 2011).

As an alternative, regret theory has several advantages over the prospect theory to explain the disposition effect. It assumes that after making a decision under an uncertain condition, investors may regret if the decision is wrong or even right; however, after the emergence of information related to the post-decision, it leads to the selected option being no better than the unselected one. This intuitive assumption implies that the utility function of investors is affected by the realization of the unselected option or of the alternative one. Thus, the investor will always distinguish the selected option from the unselected one and compare the performance of the selected option with that of the unselected one as well as compare the performance of the selected option with that of the market portfolio as the benchmark. Based on these assumptions, investors always anticipate regret in making decisions about the investment. This is realized by selling the winner stocks earlier and holding the loser stocks longer, thus leading to the increased disposition effect (Dodonova and Khoroshilov 2005; Fogel and Berry 2006; Muermann and Volkman 2006).

Although the proponents of regret theory states that it has more advantages than the prospect theory, in reality both of them have some limitations in explaining the phenomenon of the disposition effect. Regret theory assumes that every investor always compares the selected option with the unselected one and compare the performance of the selected option to that of the market portfolio as the benchmark. It considers that all investors are very fragile in their utility function depending on the performance of the selected option and that of the market portfolio as the benchmark. In fact, investors have some motivation to make their utility function not as fragile as it is predicted by regret theory. Furthermore, the motivation of every investor has some implications in the ways used to achieve the objectives (Idson et al. 2000). In making decision about investment, investors are always going through a process of self-regulation (Zhou and Pham 2004). This is the process in which a person defines the objectives to choose the means to achieve the goal and to assess the progress of the achievements (Carver and Scheier 1998).

The limitations of Prospect Theory to explain the disposition effect are thoroughly described as follows: First, it does not take into account the selected and unselected options when making investment decisions. In fact, investors always compare the selected option with the unselected one to get the best. Second, it does not take into account the initial investment. The explanation of prospect theory, which is based on loss aversion, has some implications in the high equity premium leading to some difficulties for investors to determine the choice of the initial investment as well as the choice to sell the shares after the decision. It means that the predictions of prospect theory, i.e., that investors tend to sell winner stocks

earlier, does not occur. Thus, the disposition effect cannot be explained by prospect theory. Third, it does not explain when or under which conditions investors decide to sell winner shares. Fourth, it does not explain how long investors decide to hold loser stocks. Fifth, it does not take into account the sensitivity of investors regarding gain or loss. In reality each investor has a different regulatory focus with a different sensitivity to gain or loss.

The limitations of Regret Theory in explaining the disposition effect are thoroughly described as follows: First, it does not take into account the various sensitivities of investors regarding gain or loss. In reality, every investor has different regulatory focus that has a different sensitivity toward gain or loss. Second, it does not explain when or how fast investors decide to sell winner shares. Third, it does not explain when or how long investors decide to hold loser stocks.

This paper offers some propositions developed based on regulatory-focus theory to overcome the limitations of prospect theory and regret theory to explain the disposition effect. This paper divided into five sections: introduction, regulatory-focus theory, proposition, discussion, and conclusion.

2 Regulatory-Focus Theory

Regulatory-focus theory states that self-regulation is composed of two different systems: promotion focus and prevention focus (Higgins 1997). Promotion focus is determined by regulatory nurturance needs depending on the approach strategy toward the desired goal, whereas prevention focus is determined by regulatory security needs depending on the strategy of avoiding a series of undesirable conditions. The active-promotion focus under the pursuit of the ideal requirements is defined as the active pursuit of desires, dreams, and aspirations. Meanwhile, the prevention focus, under the active pursuit of what it should be, is defined as active to fulfill responsibilities, obligations and duties (Higgins 1998). The focus of self-regulation of promotion is prepared by considering approaches to the desired state and avoiding incompatibility with the desired state (Florack et al. 2013).

Different tendencies in the strategy of individuals with a promotion focus versus those with prevention focus lie in goals with different destinations based on the individual investor's sensitivity to positive and negative results. Individuals with a promotion focus are more sensitive to positive results compared with those having a prevention focus. Meanwhile, individuals with a prevention focus are more sensitive to negative outcomes compared with those having a promotion focus (Florack et al. 2013). The sensitivity of the individual regarding positive and negative results determines the choice of strategies in achieving the desired goals. In the context of investment, individuals with a promotion focus are more sensitive on positive results, which causes them to hold stocks with superior performance longer and sell stocks with inferior performance earlier. Individuals with a prevention focus do the opposite: They sell stocks with superior performance earlier and hold stocks with inferior performance longer (Kim and Ha 2016).

If investors act in accordance with the sensitivity of the results, investors with a promotion focus will take some actions based on their sensitivity to positive results, whereas those with a prevention focus will act in accordance with their sensitivity to the negative result. Thus, they act in accordance with the regulatory fit. The individual investors acting in accordance with regulatory fit tend to have lower regret intensity compared with those who do not act in accordance with regulatory fit. The ones acting in accordance with regulatory fit feel continuously involved in sustainable activities and have an orientation and interest in the decisions made (Higgins 2000a). Regulatory fit makes people feel stronger and justified in what they have already done so that they are able to pursue the same goals with different orientations and in different ways (Higgins 2000b). Regulatory fit affects the strength of the value of the experience and the feelings of success, which is independent from pain and/or pleasure felt toward the results (Frijtas and Higgins 2002).

Individuals with a promotion focus are more prone to accept a new investment choice and take risks, and they tend to rely on emotion and bias in making investment decisions. In contrast, individuals with a prevention focus prefer to hang on to old investments or maintain the status quo, are more conservative in selecting investments, and indicate an attitude of manipulative prevention (Kirmani and Zhu 2007). In general, the individual with a promotion focus tries to compete in achieving the goals by taking as many options as possible to reach the objectives. Meanwhile, individuals with a prevention focus concentrate on the avoidance of overlapping goals resulting in careful decisions and a limitation of choices obviously selected (Zhu and Meyer-Levy 2007). Individuals with a promotion focus emphasizes on speed rather than accuracy, whereas those with a prevention focus emphasize on accuracy rather than speed (Pham and Chang 2010).

3 Proposition

Based on regulatory-focus theory, prepositions can be formulated by distinguishing the regulatory focus of investors and entering the rate of gain or loss. Regulatory-focus theory differentiates individuals into two types, namely, those with a promotion focus and those with a prevention focus. Each has a different sensitivity toward positive and negative results. Individuals with a promotion focus are more sensitive to positive results or gain, but those with a prevention focus are more sensitive to negative results or loss. Then, the gain and loss are grouped into two categories to view the sensitivity of each, namely, small-to-large gain and small-to-large loss.

Investors with a promotion focus are sensitive to positive results and will move from the absence of positive results (0) to the presence of positive ones (+1). Thus, it can be understood that the regulatory fit of investors with a promotion focus is in the domain of gain. They will take some actions in accordance with their regulatory fit, demonstrated by taking a risky option to achieve the goal, and obtain a desired, positive result. If the desired, positive results have already been achieved,

individuals with a promotion focus will take the conservative option. They become risk seekers when they choose a risky option and become a risk averse when they choose a conservative one. Thus, proposition 1, i.e., that investors with a promotion focus remain in the domain of the gain, is formulated as follows:

Proposition 1a *Investors with a promotion focus will choose a risky option by holding winning stocks longer when the gain obtained is considered still relatively small, thus resulting in a decrease of the disposition effect.*

Proposition 1b *Investors with a promotion focus will select the conservative option by selling winning stocks earlier when the gain obtained is deemed to have been relatively large, thus resulting in an increase of the disposition effect.*

When investors with a promotion focus are in the domain of loss, they will choose the conservative option, sell loser stocks, and then switch to the new option of stock investment allowing them to move from the absence of positive results (0) to the presence of positive ones (+1). Thus, Proposition 2, investors with a promotion focus on the domain of loss, is formulated as follows:

Proposition 2 *Investors of promotion focus will select the conservative option by selling loser stocks earlier without any considerations of small or large loss resulting in a decrease of the disposition effect.*

Investors of prevention focus, who are sensitive to the negative results, will move from the negative results (−1) to the absence of a negative result (0). Thus it can be understood that the regulatory fit of investors of promotion focus is in the domain of loss. Investors of prevention focus will act in accordance with the regulatory fit indicated by taking a risky option to achieve the goal to get the absence of negative results. If the absence of negative outcome is reached, the individual of prevention focus will take the conservative option. They become risk seekers when they take a risky option, and become a risk aversion when they take the conservative one. Thus, Propositions 3a, 3b, investors of promotion focus on the domain of loss, is formulated as follows:

Proposition 3a *Investors of prevention focus will choose a risky option to hold loser stocks longer when the loss suffered is considered still relatively small, so enable them to be back on non-loss state resulting in an increase of the disposition effect.*

Proposition 3b *Investors of prevention focus will select the conservative option by selling loser stocks earlier when the loss obtained is deemed to have been relatively large, so that it is very unlikely to return to the non-loss state, resulting in a decrease of the disposition effect.*

When investors of prevention focus are in the domain of gain, they will choose the conservative option, sell the winner stocks earlier to realize the expected profits without any regard to the amount of profit. Thus, Proposition 4, investors of prevention focus on the domain of gain, is formulated as follows:

Proposition 4 *Investors of prevention focus will select the conservative option by selling winner stocks earlier regardless of whether the gain is small or large, resulting in an increase of the disposition effect.*

Based on the Propositions 1a, 1b, 2, 3a, 3b and 4, it can be understood that investors of prevention focus are more susceptible to the disposition effect than those of promotion focus. In the domain of gain, Proposition 4, investors of prevention focus tend to sell the winner stock faster than those of promotion focus because investors of prevention focus do not pay any attentions to amount the gain obtained. In the domain of loss, Proposition 3a, investors of prevention focus tend to hold the loser stocks longer than those of promotion focus because they pay close attention to the amount the loss and the possibility of returning to the position of non-loss. Thus, Proposition 5, the differences in the susceptibility of investors of prevention focus and of promotion focus towards the disposition effect is formulated as follows:

Proposition 5 *Investors of prevention focus are more prone to the disposition effect than those of promotion focus.*

4 Discussion

Regulatory focus theory is able to explain the disposition effect in a simpler and more concrete manner than the prospect and regret theories are. The weakness of the prospect theory which does not distinguish the selected and unselected options can be overcome with the risky and conservative options under the consideration of the regulatory focus theory. Basically a risky option maintains the selected stock in which the investors choose the tactics of the risk seekers. While the conservative option does not preserve the selected stocks in which the investors choose the risk aversion tactics. Determining a risky and conservative option is based on the comparison of the performance of the selected stocks and of the unselected ones, as well as the performance of the market portfolio as a benchmark.

Principally, every investor must select the stocks likely to generate gains. They have some assessments taking into account the performance of the market portfolio as a benchmark in determining the choice of the initial investment, and the performance of the investment or of the selected option by comparing the target gain achieved to that of the market portfolio as the benchmark. If the target of the gain is reached or the performance of the selected option has outperformed the market portfolio during a certain period of time, the investors will take the conservative option by selling winner shares earlier. The condition is more extreme to occur in the investors of the promotions focus. The investors of prevention focus, however, who are non-loss-oriented, may take the conservative option without considering whether or not the targets have been gained as they are sensitive to the negative results.

If the selected option generates loss, investors with a promotion focus can immediately respond by choosing the conservative option, selling the loser shares

and switching to other stocks that are likely to provide gain because they are gain oriented. Meanwhile, for investors with a prevention focus, it will not be easy to select the conservative option when the selected one produces loss. Investors with a prevention focus will choose a risky option until the loss may still be deemed to be closed by non-loss or break-even states, but the loss is so big that there is no point to turn back to a non-loss state. In contrast, investors with a promotion focus will select the conservative option and sell the loser stock. The explanation of regulatory-focus theory is able to overcome the weakness of regret prospect theories, which do not concretely explain when investors will sell winner or loser shares.

The prospect and regret theories see risk attitude as a constant trait in a particular domain. In the domain of gain, investors are deemed to have the properties of risk seeker. The explanation of prospect theory toward the disposition effect is based on loss aversion, in which investors will always avoid the loss of paper gain by selling superior stocks earlier in the domain of gain. Meanwhile, in the domain of loss, investors will hold inferior stocks longer because they do not want to realize the loss. Selling winner stocks earlier is the nature of risk-averse investors, and holding loser stocks longer is the nature of the risk-seeking investors. Prospect theory does not answer the questions of under which conditions the investors sell winner stocks and how long investors will hold inferior stocks. Shefrin and Statman (1985) tried to answer these problems by incorporating the concept of self-control in the model developed.

In contrast to the prospect theory, the regret theory explains the disposition effect based on the anticipated regret. Investors always anticipate regret in their investment decisions. In the domain of gain, regret will arise if investors lose the gains already achieved in the form of paper gain such that they will anticipate regret by selling winner shares earlier so as to achieve the real profits. However, in the domain of loss, regret will appear if investors realize the paper loss that they suffer from such that they will anticipate regret by holding loser stocks longer so no real loss results in even more regret. Selling winner stocks earlier in the domain of gains shows that the investors are risk averse. Holding loser stocks longer in the domain of loss indicates that the investors are risk seekers. Regret theory does not respond to the questions of under which conditions the investors sell winner stocks and how long they will hold superior stocks.

Regulatory-focus theory sees risk attitude as a tactic in achieving the goals of investors. In the domain of gain, investors with a promotion focus can choose the tactics of risk aversion or risk seeking depending on whether or not the investment objectives have been achieved. They select the risky option or the tactics of the risk seekers when the investment objectives move from a state of non-gain (0) to gain (+1) that has not been reached. If the purpose of investment in investors with a promotion focus has been reached in a state of gain (+1), then they will choose the conservative options or tactics of risk aversion. In the domain of loss, investors with a promotion focus tend to prefer the conservative option or the tactics of the risk aversion because the orientation of the promotion focus cannot be fulfilled in the domain of loss, in which investors with a prevention focus can choose the tactics of

risk seekers and risk avoiders depending on whether or not the investment objectives have been achieved. Investors with a prevention focus choose a risky option or a tactic of risk seekers when there is a possibility that the investment might move from a state of loss (-1) to a state of non-loss (0). If the investment objectives of investors with a prevention focus have been reached in a state of non-loss (0), then they will choose conservative options or the tactics of risk avoiders. In the domain of gain, investors with a prevention focus tend to choose conservative options or the tactics of risk avoiders because they are non-loss state orientated such that the amount of the gain is not an issue.

5 Conclusion

The disposition effect is the tendency of investors to sell stocks when the price increases and hold stocks longer when prices decrease. There are two main competing theories to explain the phenomenon of the disposition effect, namely, the prospect theory and the regret theory. Although the two theories are good enough to explain the disposition effect, they still have main limitations in that they do not concretely explain the questions of how fast investors sell winner stocks and for how long they hold loser shares. Neither theory take into consideration the various motivations of investors in achieving their investment objectives, thus resulting in various sensitivities of investors in the domains of gain and loss.

To thoroughly respond to the questions that can not be answered by the prospect and regret theories in relation to the disposition effect, this paper proposed five propositions developed based on regulatory-focus theory to answer the questions of how fast investors will sell winner stocks and for how long they will hold loser stocks. Investor with a promotion focus sell winner stocks when the investment objective, which is the gain in the domain of gain, is achieved. They will choose a risky option by holding the winner stocks until they reach the desired gain. If the desired gain is reached, they will choose the conservative option by selling the winner shares. In the domain of loss, investors with a promotion focus will select the conservative option by selling the loser shares earlier because the investment objective cannot be achieved. Investors with a prevention focus will hold loser stocks longer when there is a possibility to achieve the investment objectives. The main investment objective of investors with a prevention focus in the domain of loss is non-loss. Investors with a prevention focus will choose a risky option to hold loser stocks longer when there is a possibility to return to a state of non-loss. If there is no possibility to return to a state of non-loss, investors with a prevention focus select the conservative option by selling loser stocks. In the domain of gain, they will select the conservative option by selling winner stocks earlier, regardless of the amount of the gain already acquired, because the domain of gain is more than enough to make them achieve the investment objective, i.e., a state of non-loss. Changes in the choice of risky and conservative options in the domains of gain and loss occur because the regulatory-focus theory see risk attitude as a tactic in achieving the goal, not as a

consistent trait within a domain. Based on these developed propositions, it can be predicted that investors with a prevention focus are more prone to the disposition effect than those with a promotion focus. The explanation of regulatory-focus theory toward the disposition effect is a novelty in the field of behavioral finance.

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Selected Papers from the Asia-Pacific Conference on
Economics & Finance (APEF 2016)

Lau, E.; Tan, L.-M.; Tan, J.H. (Eds.)

2017, XIV, 143 p. 19 illus., 8 illus. in color., Hardcover

ISBN: 978-981-10-3565-4