

The relationship between self-control and return investment: Evidence from Indonesia

Priyo Suwono¹, Axel Giovanni¹, and Dian Marlina Verawati¹

¹Department of Management, Universitas Tidar, Indonesia

Abstract

Self-control in behavioral economics is a matter of intertemporal choice, namely, consumption time. Human behavior in making economic decisions is determined by wealth and the mental accounting one owns. The number of capital market investors in Indonesia has increased in recent years. In addition to conducting fundamental analysis, investors also need to be able to control themselves to reduce the risk of exposure to bias. This study aims to provide evidence of the role of self-control quality on investment returns. The population of this study was capital market investors on the Indonesia Stock Exchange (IDX), with a sample of 51 investors obtained using a purposive sampling method. The research data is primary data obtained from the questionnaire method and analyzed using cluster analysis and an independent samples t-test. The software tool used for data analysis is SPSS 26. The results of this study provide empirical evidence that the quality of self-control plays a role in the investment returns of capital market investors on the Indonesia Stock Exchange (IDX).

Keywords

Self-control; return investment; mental accounting

INTRODUCTION

A developed country will be supported by progress in its money market and capital market (Sukamulja, 2021). Goldman Sachs (2022), an investment banking company with the largest income in the world today, predicts that in 2075 Indonesia will be in the top five as the country with the largest economy in the world. Efforts to realize these predictions certainly require the role of economic actors to continue to grow, including the role of investments made by investors so that companies can continue to grow. Growing companies will also find it easier to get funds to support funding, operational, and investment activities and switch from private companies to corporate companies (Sukamulja, 2021).

In 2017, the number of capital market investors on the Indonesia Stock Exchange (IDX) was 1,122,668 people and in 2022 the number of investors will increase to 10,311,152 people. This increase in the number of investors is certainly one of the efforts to accelerate the progress of the Indonesian economy and supports Goldman Sachs' prediction that Indonesia will become one of the 5 countries with the largest economy in the world. An increase in the number of investors needs to be balanced by

an increase in the capacity of investors. Both increase the ability to perform fundamental analysis as well as increase the ability of investors to manage psychological decision-making during uncertain conditions in the investment world.

At the moment research conducted in Indonesia is still dominated by fundamental factors. Meanwhile, research on the topic of economic behavior is still limited. Limited research in the field of behavioral economics or behavioral economics is since this field only developed at the end of the 20th century (Barberis, 2018). In addition, there are differences in the underlying assumptions between classical economic theory and behavioral economics. In classical economic theory, humans are assumed to be rational individuals or choose the best option to maximize utility. However, behavioral economic theory has the assumption that humans experience cognitive biases that make decision-making not always follow the optimization model (Thaler & Shefrin, 1981).

Investors as investment decision-makers also have the risk of experiencing cognitive biases that can affect investment results. One example of irrational investors experienced in bulk is the phenomenon of panic selling. According to Shiller (1987), panic selling is a statement of public opinion on various

Correspondence to : axelgiovanni@untidar.ac.id

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economic fundamental factors. As a result, public opinion that tends to be negative will be responded to by investors in the form of mass selling of shares. Panic selling is an example of overreaction bias that can be experienced by investors in making decisions because selling is based on panic over negative news, not based on fundamental or technical analysis.

An example of panic selling occurred in March 2020 which caused the JCI to touch 3,990 or fall by 4.9% (Prayoga, 2020). According to Muhammad Nafan Aji, an analyst at Bina Artha Sekuritas, in his interview with Giri Hartomo (2020) the cause of panic selling is the aggressive spread of the Covid-19 outbreak in Indonesia. OJK as a supervisory institution for financial activities in Indonesia takes steps to protect against a decline in company value caused by the recurrence of investor irrationality. In addition, according to news from CNBC Indonesia (2020) on March 13, 2020, investors' irrationality due to negative sentiment from Covid-19 also caused a weakening of stock markets in Asia such as the Nikkei 225 which fell by 9.56%, the ASX fell by 7.2%, the HSI weakened 5.69%, and SSEC weakened 3.51%. This certainly strengthens the argument that humans can act irrationally and is an important problem to study.

The condition of overreaction bias which is represented as panic selling is a form of self-control problem in investors (Konstantin E. Lucks, 2016; Sekścińska et al., 2021). If the problem of self-control is not addressed immediately, it will not only have a negative impact on the investment returns of individual investors but also the company. For investors, overreaction bias makes them suffer losses because investors feel that by selling shares below the purchase price (cut loss), they will avoid a lower share value decline. For companies, overreaction bias will have an impact on decreasing company value and investment.

The discussion on self-control in the field of behavioral economics is included in intertemporal choices, namely the choice of consumption time. Paul Samuelson (1937) an economist, through his theory of measuring utility, has the idea that humans consider current consumption to be more valuable than future consumption. Then, other economists consider neglecting future consumption as a mistake (Thaler, 2016). This means that there is a problem between the limited availability of an item and the time to consume the item. So

that requires humans to make a priority scale in its completion. The existence of intertemporal choice problems means that individuals need to control themselves in fulfilling short-term interests such as the desire to take a vacation and long-term interests such as investment needs.

The discourse suggests that behavioral economics is an area that has not been extensively explored, and it is evident that cognitive biases can prevent humans from behaving entirely rationally. Therefore, the objective of this study is to empirically investigate the correlation between self-discipline and the returns on investments.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Behavioral life-cycle hypothesis (BLC)

BLC is a descriptive theory developed by Shefrin and Thaler (1988) as a formula for macroeconomic problems, namely the consumption function assessing the increase in household consumption for each increase in wealth. BLC assumes that a household's consumption in one year depends not only on wealth but also on the mental account that holds wealth. There are three features in this theory. The first is self-control. Second, mental accounting, and third, framing. This study uses the BLC theory as empirical support that investment returns are not only driven by wealth but also by investors' mental accounting factors.

An economic theory of self-control

The Planner and Doer Model (Thaler & Shefrin, 1981) is used to studying human behavior. The Planner-Doer model in explaining the problem of self-control assumes that there are at least two characters in a person who have a conflict over a decision to be taken. Based on agency theory, this model states that there is a conflict of interest between the principal (Planner) and the agent (Perpetrator). Planners are defined as those who are long-term-minded, have good intentions, and care about the future. Meanwhile, the perpetrator is defined as a party who is ignorant and wants to live in the present.

The use of the planner and the doer model in this study aims to determine whether investors tend to act as planners or doers and examine whether planners who are

considered as investors who have better self-control will have a higher return on investment than investors who have tendencies as doers.

Self-control-intertemporal choice

Intertemporal choices are choices that are common in everyday life and are important where time, costs, and benefits are spread over time (Loewenstein & Thaler, 1989) The importance of discussing intertemporal choices is also supported by the research results of Loewenstein & Thaler (1989) that people make purchases of savings on low-value goods but ignore savings with the same value on high-value goods so that the view that humans make decisions by maximizing profits does not always occur. The link between intertemporal choice and self-control is how a person makes decisions that will not only have an impact on the present but also in the future, for example determining the amount of savings and selecting investment instruments.

An example of the vital role of intertemporal choices in macroeconomics is the concept of what is known as the consumption function (Thaler, 2016). The implications of the consumption function are usually used by the government to predict an increase in household spending if there is an increase in income. Shefrin & Thaler (1988) proposed a theory that later became known as the behavioral life-cycle hypothesis which assumed that a household's consumption in one year depended not only on wealth but also on the mental account that held wealth.

Mental accounting

Mental accounting is defined as a set of cognitive operations used by individuals and households to organize, evaluate, and track financial activities (Thaler, 1999). According to Thaler (1999), three components make up mental accounting. The first component, namely the existence of decision-making and evaluation related to costs and benefits. Second, labeling the source and use of funds. And third, frequency, namely the evaluation (periodic) and the best choice as a result of the evaluation. Each component of mental accounting violates (the economic principle of functionality) so mental accounting will influence individual and household choices.

Research has found that mental accounting can influence how people spend their current funds, choices about how much

debt they can bear, decisions about the type and timing of investments, levels of consumption, marketing decisions, and inconsistent judgments about purchasing decisions (Shafir & Thaler, 2006; Thaler, 1985, 1999; Zhang & Sussman, 2018) The following is a discussion of the four aspects of mental accounting used in this study to observe self-control and examine its role in investment returns obtained by investors (Thaler, 2016).

Perception

Perception assessment is based on the concepts of acquisition utility and transaction utility introduced by Thaler (1999). Acquisition utility is based on a standard economic theory called consumer surplus. Acquisition utility is a consumer's assessment of a purchase based on the value of the item purchased. Acquisition utility occurs if the consumer considers that the utility of the product purchased is following what is needed and the acquisition price does not exceed the price that is willing to be paid.

The second concept is transaction utility, namely the consumer's assessment of purchase based on the "feeling" of gains and losses in purchasing goods. This utility is measured by the difference between the price paid and the reference price, giving rise to the possibility of positive transaction utility and negative transaction utility (Thaler, 1999, 2016). Positive transaction utility occurs when consumers feel that the agreed goods purchase transaction has a low acquisition price or is below the reference price, and vice versa. Negative transaction utility occurs when consumers feel that the agreed goods purchase transaction has an expensive acquisition price or is above the reference price.

Sunk cost

Embedded costs are defined as lost costs because the funds that have been spent cannot be returned (Thaler, 2016). Thaler calls embedded costs SIF (supposedly irrelevant factors). The negative effect of sunk costs is that it causes individuals to exert resources excessively, and defend themselves against negative consequences (Staw, 1976). The negative effect of sunk costs can also be attenuated by what Gourville & Soman (Gourville & Soman, 1998) call depreciation of payments, namely the temporary separation between initial costs and ultimate benefits.

Research conducted by DellaVigna & Malmendier (2006), Gourville & Soman, (1998), and Shafir & Thaler, (2006) concluded that the weakening of the embedded cost effect can also cause cognitive biases such as overconfidence in viewing consumption levels, and human inconsistency in viewing a transaction.

The results of the studies above illustrate that sunk costs have various negative effects so economists suggest considering sunk costs as an irrelevant factor for decision making. However, such advice is difficult for humans to follow. This is because humans tend to avoid losses. Based on the results of research conducted by Arkes & Blumer (1985) that the more often investors do not include embedded cost factors in decision-making considerations, the more rational the actions taken will be.

Budgeting

The budget is a form of mental accounting and is considered a violation of the economic principle that money is fungible so that it can limit its use. This will affect the decision-making behavior of individuals or organizations (Thaler, 2016). Research conducted by Hastings & Shapiro (2013) analyzed three psychological models of decision-making, namely the budgeting model, the loss aversion model, and the salience model for household gasoline purchases. The results of his research state that the budgeting model is suitable for gasoline buying behavior by households.

The budget has the benefit of maintaining the behavior of its users so as not to consume excessively. Heath & Soll (1996) conducted a study on the effects of budgets on MBA students at Chicago University. The results of the study concluded that students who had spent their weekly entertainment budget were less likely to participate in other entertainment programs because the entertainment budget for that week had already been used. Even the benefits of this budget make companies and organizations use the budget as a means of financial control. Thaler (2016) argues that budgets exist for reasonable and understandable reasons, for example, to help with financial planning and live life according to ability.

The results of research conducted by Heath & Soll (1996) and Hastings & Shapiro (2013) provide an understanding that at a certain level, the budget is useful to assist

investors in maintaining consumption spending. However, how flexible the budget rules that are applied can determine the success of implementing this strategy in achieving investment objectives.

House money effect and break-even effect

The house money effect and break-even effect are two types of mental accounting bias based on the assumption of prospect theory (Kahneman & Tversky, 1979) that human decision-making is influenced by reference points. The reference point in this study is the profit and loss experienced by investors in influencing decision-making ability. Thaler & Johnson (1990) describe three rules of mental accounting for these two effects. First, profits can magnify the possibility of taking higher risks. Second, losses can reduce the desire to take risks. The final rule is at a loss, the odds that offer to return to breakeven are attractive offers for humans to take risks.

Investors who experience profits have the opportunity to experience the condition of the house money effect. According to Thaler (2016) the house money effect is defined as a person's tendency to extrapolate current results to the future. In simple terms, the House money effect is a bias that makes investors tend to treat money received from a profit situation differently, so they dare to take higher risks. For example, some investors have rules, if, for every investment profit of one million rupiahs earned, the investor will separate the profit of one million rupiahs from the investment account and regard this money as money that is free to use to buy consumer goods. Investors who experience losses have the opportunity to experience a break-even effect. The break-even effect is a condition that assumes that in a loss situation, humans will take more risks if an opportunity offers a break-even point. A description of the break-even effect in the investment world can be seen from research conducted by Chevalier & Ellison (1997). They conducted research on risk-taking by investment managers in response to incentives provided by investors. As a result, investment managers will take high risks by beautifying their portfolio performance in the fourth quarter, known as window dressing. That is, when the investment manager's performance is below the market standard measure, they will be willing to take risks to break even. For example, aligning performance with a reference to the composite

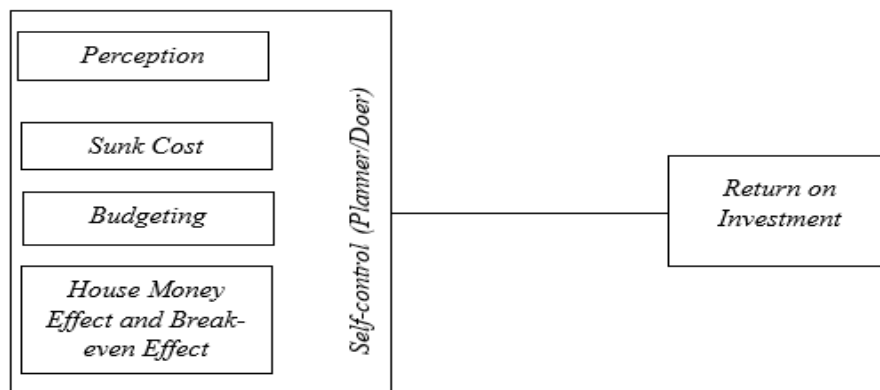


Figure 1.
Conceptual model

stock price index (IHSG). Traders can also experience a break-even effect if they have poor self-control so they will take more risks when they experience losses just to break even (Thaler, 2016).

The level of self-control contributes to return investment

Shefrin & Thaler (1988) view through the Behavioral Life-Cycle Hypothesis (BLC) theory that the level of household consumption and savings is not only determined by the wealth factor but also influenced by the self-control owned by the household.

Based on the results of previous research showing that self-control influences various positive outcomes (Tangney et al., 2004). Self-control plays a role in increasing investment decisions, levels of risk-taking, reducing narrow framing, financial behavior, and perceptions of fairness by employees (Atmaningrum et al., 2021; Konstantin E. Lucks, 2016; Lubatkin et al., 2007; Sekścińska et al., 2021).

The theories and results from previous studies that have been described support the hypotheses put forward in this study, there are also hypotheses put forward.

H1: There is a role for the quality of self-control to return investment.

METHODS

This study uses a quantitative approach with a survey method to prove the hypothesis that a good level of self-control is beneficial in providing the return on investment desired by

investors. The nature of this research is descriptive research to describe the role of self-control as measured through a mental accounting approach to investors' investment returns.

This study took samples using a non-probability sampling technique where the research sample was selected based on the purposive sampling method, namely sampling based on predetermined criteria. The sample criteria in this study are investors who have invested in the Indonesia Stock Exchange (IDX) and have been investing for at least 1 year. The sampling media utilizes digital media such as Google Forms to reach more investors as respondents in this research. Based on the purposive sampling method and the sampling strategy used, the number of respondents in this study was 51 investors.

The data sources used in this research consist of primary data and secondary data. Primary data was obtained through a questionnaire consisting of 22 questions divided into 6 aspects which were asked to respondents and secondary data was obtained from literature studies and previous research to support the development of hypotheses in the research such as KSEI, Bloomberg, CNBC, OKE Finance, Elsevier, Wiley, and American Economic Review.

Analysis techniques

Cluster analysis

In accordance with the economic theory of self-control, participants will be categorized into two groups through cluster analysis. The

Table 1.
Measurements

Variables	Indicators	Reference
Self-control	Perception Sunk Cost Budgeting House Money Effect and Break-even Effect	(Thaler, 2016; Thaler & Shefrin, 1981)
Return Investment	Return on Investment (ROI)	(Sukamulja, 2021)

first group, referred to as the Planner group, consists of participants who exhibit greater self-control than those in the Doer group, as they are more inclined to consider long-term objectives in their financial decision-making process. The second group, known as the Doer group, includes participants who demonstrate less self-control than those in the Planner group, as they tend to act impulsively in economic transactions and give less consideration to long-term objectives when making financial decisions.

Independent samples t-test

The t-test is done by comparing the difference between the two mean values with the standard error of the difference in the mean of the two samples and it is necessary to do a normality test first and this study uses the Kolmogorov-Smirnov test to test whether the research data is normally distributed.

According to Ghozali (2018), to find out whether the two groups have statistically significant differences, two stages of analysis must be carried out. The first stage, testing the assumptions of whether the population variance of the two samples tested is the same or different by looking at the Levene test value. After knowing whether the variance is the same or not, the second step is to look at the t-test value to determine whether there is a significant difference in the average value of the self-control variables owned by the planning group and the executing group on return investment.

RESULTS AND DISCUSSION

The object of this research is investors who invest in PT Bursa Efek Indonesia or also known as Indonesia Stock Exchange (IDX) with a minimum investment period of 1 last year. Table 4.1 is the demographic data of investors who were respondents in this study with a total of 51 observations of investors.

Descriptive statistics

The percentage of investors with ages between 31-40 years is 6% and ages 41-50 years is 10%. Meanwhile, the average respondent is aged <30 years, with a percentage of 84%, far above the data percentage held by KSEI as of May 2023 of 57.81%. The existence of this large percentage difference still illustrates that the majority of capital market investors in Indonesia are of productive age and have an awareness of the importance of investment to protect wealth from inflation.

The average productive age investor correlates with investment experience in the capital market. The average respondent's experience as an investor is <3 years with a percentage of 70.6%, followed by 3-5 years of investment experience of 21.6%, and >5 years of investment experience of 7.8%.

Based on education level, the majority of investors are high school (SMA) and bachelor graduates with a percentage of 92.2% of the total observations. This finding is also supported by data owned by KSEI (2022) that investors who have a high school education level and below are 90.47%. These results are expected to be a factor that can break the view that capital market investment is only for highly educated people to increase the number of investors and the number of investment transactions.

Investors who were respondents in this study made an average of buying and selling shares every month. While the frequency of investors checking stock price movements, respondents tend to do it daily. According to (Konstantin E. Lucks, 2016), the higher the intensity of investors in reacting to investment experiences such as making buying and selling transactions and checking stock price movements, will have an impact on reducing self-control and reducing investment levels. The ANOVA test in the cluster analysis

in Table 2 shows the significant value of each indicator of the self-control variable with the indicators of perception, sunk costs, and the house money effect and break-even effect of 0.000, 0.000 and 0.011 respectively < 0.05 , while the budgeting indicator has a significance value of 0.440 > 0.05 . These results indicate that the indicators of perception, sunk costs, and the house money effect and break-even effect can be used to differentiate the characteristics of cluster 1 and cluster 2, while the budgeting indicator cannot distinguish the characteristics of the two clusters.

The results are in Table 3. It is known that in Levene's test column, there is an F value of 9.662 with a significance of 0.003 < 0.05 so that H_0 is rejected and H_1 is accepted, that is, the variance of the two groups is stated differently so that it is known that the sig. (2-tailed) of 0.024 < 0.05 . These results indicate that there is a significant difference in the average return on investment between the actor group and the planner group.

Self-control and return investment

Based on the results of the different t-tests, the sig. (2-tailed) of 0.024 < 0.05 . This value describes that there is a significant difference in the value of return on investment owned by the actor group and the planner group so H_1 is accepted that the quality of self-control plays a role in return investment. The better the ability of self-control owned by investors will increase the return on investment obtained.

The results of this study support the theory of the behavioral life-cycle hypothesis (Shefrin & Thaler, 1988) that investor behavior is one of the factors that influence return investment. These results also support research conducted by Sekścińska et al., (2021) that the level of self-control is positively related to investment tendencies and negatively related to risk-taking. Research conducted by Konstantin E. Lucks (2016) that reducing self-control will reduce the average investment level.

Perception and return on investment

Assessment of perception or perception is based on the concept of acquisition utility and transaction utility. Investors in the planning group as a group that conducts transactions based on acquisition utilities will avoid buying and selling shares which can disrupt investment plans. For example, avoid the

temptation to buy low-priced stocks when there is a decline in stock prices before doing a fundamental analysis. Conversely, investors in the actor group who tend to make transactions based on transaction utility will interfere with their investment plans, such as selling winning shares too quickly because they are happy when they sell shares in a gain position even though the gain is relatively small.

Based on the ANOVA test at the cluster analysis stage, the perception indicator has a sig value. 0.000 < 0.05 so it was concluded that there was a significant difference between the perceived value of the actor group and the planner group. These results describe that investors in the planning group have perceptions of economic transactions based on acquisition utility and are considered to have good self-control to carry out their investment plans so that they have an average return on investment that is 18.3% higher than the actor group. The results of this study are following the results of research conducted by Thaler & Benartzi (1999) that perception can affect the total percentage of investment.

Sunk cost and return on investment

Based on the ANOVA test at the cluster analysis stage, the sunk cost indicator has a sig value. 0.000 < 0.05 , so it can be concluded that there is a significant difference between the value of the sunk costs for the actor group and the planner group. These results describe that investors in the planning group have better self-control than the actors in not including sunk costs in making investment decisions. Groups of actors who more often include sunk cost factors in their decision-making will tend to maintain their shares that experience long-term losses. Meanwhile, investors in the planning group will consider the opportunity cost with a focus on investment analysis so that the planning group has a higher average return on investment of 18.

Budgeting and return on investment

Budgeting is a form of mental accounting that violates the basic economic principle that money is fungible. Although the budget is a form of violation of the basic principles of economics, the budget has various benefits such as maintaining consumptive behavior, and financial control tools (Heath & Soll, 1996).

Based on the ANOVA test at the cluster analysis stage, the budgeting indicator has a sig. $0.440 > 0.05$ so it was concluded that there was no significant difference between the budgeting values of the actor group and the planner group. These results describe that the average investor in the actor group and the planner group both apply the principles of budgeting and consider that budgeting is important as a tool that can fulfill needs and desires such as food, entertainment, and investment.

Although budgeting is considered a violation of basic economic principles, this principle has been applied at various levels to maintain financial health, starting from the individual, and company to country scale. Thaler (2016) also argues that budgeting exists for reasonable and understandable reasons, for example, to help with financial planning and live life according to ability.

House money effect and break-even effect and return on investment

The house money effect and break-even effect are two types of mental accounting cognitive biases based on prospect theory (Kahneman & Tversky, 1979) that human decision-making is influenced by the reference point between profit and loss. Thaler & Johnson (1990) describe 3 mental accounting rules regarding these two cognitive biases. First, profits can magnify the possibility of taking higher risks. Second, losses can reduce the desire to take risks. Third, in a loss situation, some opportunities offer to return to the breakeven point which is an attractive offer for humans to take risks.

Based on the ANOVA test at the cluster analysis stage, the house money effect and break-even effect indicators have sig values. $0.011 < 0.05$ so it is concluded that there is a significant difference between the value of the house money effect and the break-even effect between the actor group and the planner group. These results describe that investors in the planner group have better self-control than the actor group to avoid these two cognitive biases in making investment decisions.

The actor group experiences the house money effect more often than the planner group. This means that when they experience profits either from previous investment results or other sources of funding, they will take higher risks when investing, such as buying stocks that have increased in price unnaturally or are based solely on stock trends to pursue

even higher profits. On the other hand, investors in the planner group will maintain the profits obtained by putting the profits into shares that are considered safe to maintain the increase in their wealth.

The actor group also experiences break-even effects more often than the planner group. When faced with a loss situation, investors in the perpetrator group activate a sense of dislike for losses (loss aversion) so that they are more sensitive and afraid to take risks than investors in the planning group. Conversely, in a loss condition where there is an opportunity to return to the breakeven point, the actor group will be more willing to take risks to be able to return the investment funds that have been lost. An example is an investor who turns into a trader by buying a high-risk stock in hopes of erasing previous losses.

The success of investors in avoiding these two cognitive biases makes them in the planner group have an average return on investment that is 18.3% higher than the actor group.

CONCLUSION

Perception, sunk costs, and the house money effect and break-even effect are indicators that have different characteristics between the actor group and the planner group. Meanwhile, the budgeting indicator is a shared characteristic of the actors and planners.

The quality of self-control plays a role in the return on investment owned by capital market investors in this study. The planning group as a group with good quality of self-control has an average return on investment of 40.9% compared to the actor group with an average return on investment of 22.6%.

It is suggested that future studies should expand their sample size to more accurately represent the range of self-discipline exhibited by investors. This would allow for a more robust empirical demonstration of how self-control influences investment returns. Additionally, considering the economic conditions of a country could yield more holistic findings.

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