

JURNAL ILMIAH MANAJEMEN BISNIS DAN INOVASI
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EFFECT OF LOSS AVERSION ON COMPANY PERFORMANCE IN INDONESIA

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ARTICLE INFO

Keywords:

Loss Aversion, ROA, Tobin's Q

Kata Kunci:

Loss Aversion, ROA, Tobin's Q

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Abstract. The loss aversion bias tends to be done by investors to avoid losses that will psychologically be felt greater than the gain they receive. The exploration on this research in Indonesia, is to see how the impact of investor loss aversion to company economic performance. Using quarterly observation data of 7,535 on 190 companies that are still active, exclude the financial sector and registered as members of KOMPAS-100 during the period 2009-2019. In this research, a regression model with panel data, developed to test the hypothesis which formed on this research, by using two dependent variables ROA and Tobin's Q to see if both variable are supporting the previous research. The results of empirical research prove that both models formed proved that loss aversion impacted negative affect on both selected dependent variables, whether it is with additional control variable or not.

Abstrak. Bias loss aversion cenderung dilakukan investor untuk menghindari kerugian yang secara psikologis akan terasa lebih besar dari keuntungan yang mereka terima. Eksplorasi pada penelitian ini di Indonesia, adalah untuk melihat bagaimana dampak dari investor loss aversion terhadap kinerja ekonomi perusahaan. Menggunakan data observasi triwulan sebanyak 7.535 pada 190 perusahaan yang masih aktif, tidak termasuk sektor keuangan dan anggota KOMPAS-100 yang terdaftar selama periode 2009-2019. Dalam penelitian ini dikembangkan model regresi dengan data panel untuk menguji hipotesis yang dibentuk dalam penelitian ini, dengan menggunakan dua variabel dependen ROA dan Tobin's Q untuk melihat apakah kedua variabel tersebut mendukung penelitian sebelumnya. Hasil penelitian empiris membuktikan bahwa kedua model yang terbentuk membuktikan bahwa loss aversion berdampak negatif terhadap kedua variabel dependen terpilih, baik dengan penambahan variabel kontrol maupun tidak

INTRODUCTION

The loss aversion bias is two important articles by Kahneman & Tversky (1979 & 1991). Prospect theory explains some of the biases that lead investors to irrational behavior. Their theory presents several series of research results involving a choice of hypotheses and will be very useful in this study. Most examples of their work relate to risky decisions related to financial outcomes, but many of their studies can also be generalized to other forms of risky options. In this case, individuals tend to evaluate results in terms of deviations from the reference point rather than the net worth level. The identification of these reference points is an important variable that weighs more on losses than on equal profits. Second, individuals treat profits differently from losses in two respects, namely where they generally avoid risk with respect to profits and accept risk in connection with losses. The last part where profit is treated differently from the loss where in this case the loss seems greater than the gain received.

Loss aversion bias studies have been widely used to explain many elusive economic phenomena, given the independence of reference points. Many studies on loss aversion bias in financial markets are very well known (Bazley et al., 2021; Iqbal et al., 2021; Jose et al., 2021), and the rationale for loss aversion bias is that losses are realized in motivating people. Gächter et al. (2009) explain why it can be larger than and can influence strategic changes through your own actions. Much is at the root of loss aversion bias, and the cultural background of the community is one that can affect the extent to which loss is denied (Wang et al., 2017). In this study, researchers combined psychological research with a basic model of traditional modification to examine the impact of investor sentiment on corporate performance. The emotional dimension examined in this case is loss aversion bias.

Furthermore, the next section reviews the literature on loss aversion and hypothesis research and development. Section 3 describes the data use in the research and empirical methodologies developed for this research. The following section will present and interprets empirical results. Finally, the last section of this journal will describes research conclusions, research limitations, and suggestions for the next research and development.

LITERATURE REVIEW

Loss Aversion

The loss aversion bias was explored from prospect theory which pioneered by Kahneman & Tversky (1979). When doing investment, investors are faced with a problem over the way of calculating a profit that is not balanced with the losses suffered on investments made. Investors with this bias use profits to make investment decisions instead of taking losses. This is because, in this case, the investor is trying to avoid the risk associated with the loss of the investment. If an investor believes they have gained when they are unaware of the loss on their investment in the stock market, they are eligible for loss aversion. Investors want to quickly profit from the sale of their investment, as prices change very quickly. They sell assets that are less valuable in the market compared to the price they bought at the beginning of the investment.

On the case of people regret aversion as form of loss aversion discussed in detail by Shiller (1999), where people make small mistakes, even if they want to avoid them, when they make a mistake they tend to feel greater pain and regret pain when making an error. Psychologically, the impact of losses on investor behavior on investment give stronger effect than the impact of the gain received, this characterizing the form of loss aversion bias which clarify more the form of investor pessimism that underlies this bias. From this it can be concluded that if an investor is very sensitive to the losses incurred and tends to avoid possible losses, it will ultimately influence the investor's decision regarding the execution of the investment. Investor fear of loss can be seen in investment decisions regarding trading strategies. In this strategy, winning stocks are sold by investors much more than stocks that are falling or losing.

To understand decision-making decisions made by investors, many researchers in research or writing use prospect theory (Fan et al., 2013; Gao et al., 2021; Zhao et al., 2021), which on a normative model in which case the investor is based on certain criteria, has a tendency to maximize the utility function of their investment behavior. Benartzi & Thaler (1995) first applied the application of prospect theory on their research at a premium risk, where they contributed them on the research simulations based from Mehra & Prescott (1985) study. While other research from Thaler & Johnson (1990), the level of investor loss aversion has shown to be primarily dependent on past investment performance in profits or losses. For example, if an investor realizes a profit gained in the past, the investor develops a weak loss aversion, on the other side if the investment suffers a loss, the impact to the investor also shows a strong loss aversion. It can be said that this

attitude of loss aversion will continue to make investors increasing suffer loss on their investments and tend not to sell their investments in the hope that they will once again experience losses on their investments, while according to Kaestner (2005) the motives of investors on selling their profitable assets because investors fear of losing or try to avoid losing their profits that they have earned from their profitable assets.

The origins ideas investor behavior bias are explained through investors' aversion to ambiguity by Ellsberg (1961), on their paper it raises the idea that an investors prefer to choose situations in which the probability distribution of a game is uncertain. Amonlirdviman & Carvalho (2010) analyzes the issues that might be face by investor portfolios where they face on the selection of domestic and foreign equity investment in situation of asymmetric consideration. Surprisingly, the authors argue that investors who tend to avoid investment losses behave like investors with default expected profit preferences and a reasonable level of risk aversion. Through numerical experiments, Yang et al. (2009) discusses dividend distribution policies that address the problem of interpoint decision making under uncertainty when subjects are psychologically biased, and experimental results show inconsistent time preferences. It shows that optimal dividend distribution while avoiding losses is very different from distribution. In the absence of this psychological factor, the combination of the two would result in a different pattern of dividend payments. Yao & Li (2013) explained the main point where the degree of incompleteness of information will increase and become more prominent when a certain threshold is reached, resulting in intrinsic loss aversion and investor optimism, and when information becomes unavailable. Is emphasized. Obviously, the study models investor bounded rationality as a decision-making mechanism that does not fully understand the information available, psychologically adapting and acting rationally.

Many studies showed that people in general or even investors prefer to invest on well-known assets instead of unknown asset because they are afraid to take risks of different degrees and loss probabilities. Bao & Meng (2017) argue that investor loss aversion to a loss, is similar to behavioral science in general and has been proven in various applications in various research fields, including in housing investment studies. Researchers use the loss aversion literature to assist future research in conducting surveys of business and economics publications and real estate publications. It is proven in research that the impact of avoiding visible losses has an impact on the price and volume of housing investment. The lower participation rate as a result of investors' aversion to higher

losses, is shown by Dimmock & Kouwenberg (2010) which in their research examines if loss aversion by investors will affect the participation of individual investors in the equity market, to allocate investment in equity among mutual funds, individual funds and shares. Grüne & Semmler (2008) used a probabilistic growth model and a probabilistic version of the dynamic adaptive grid scheme method to represent the loss aversion asset price in the manufacturing economy and calculated the above asset price characteristics from the loss preference model. By applying the loss aversion method, the results of the study showed significantly better than pure consumption-based asset pricing, including habit formation. While Polman (2012) eight studies tested predictions that making decisions for someone else was less disgusting than making decisions on their own. He found that in scenarios that describe risk-free choices, gambling, and aspects of social life such as probability and status, loss aversion for those who chose for the needs of others was significantly reduced. In addition, the relatively realistic conditions that make people unbalanced are desirable choices for others when the other person making the choice is physically present and the decision is betting real money. At the end of his study, the key is that loss aversion is mitigated if the factors are related to self, other differences in decision making, decision-making comprehension considerations, focus, regulation, and bias such as deliberations.

The limitations of arbitration and psychological elements are the two topics discussed by Barbers & Thaler (2002), the author also presents many applications for total stock markets, cross-sectional rates of average earnings, personal trading behavior, and financial behavior to corporate finance. The impact of changes in the economy that makes investors have the behavior to avoid losses on their investment consumption is being discussed by Gebhardt (2011), in which case investors suffer a loss of utility when it consumes less than the members of the reference group. As a result, there is an incentive to share a portfolio of higher risk assets with peer groups. Therefore, the risk premium can be kept in equilibrium that deviates from the risk premium obtained without avoiding the loss due to relative consumption. Under asymmetric dependence, the loss aversion portfolio outperforms the average diversified portfolio as long as the investor has sufficient loss aversion and is highly dependent. This discovery was discovered by Fortin & Hlouskova (2011), which studies the linear allocation of loss aversion assets by investors and compares them traditionally with the investor's mean variance and the investor's conditional at value-risk. In a study using 13 EU and US assets, the investor loss aversion portfolio significantly exceeded the average diversification and conditional risk values of the investor portfolio, and the

investor loss aversion by dynamically updating the loss aversion parameters. The opinion that the performance of the portfolio will be significantly improved has been proved. Durand et al. (2019) in his journal on aversion to loss of myopia, personality, and gender, as the tendency to neurosis increases, so does the tendency of investors to express aversion to loss of myopia, treatment of investors who invest less frequently and those who invest frequently becomes greater. Khan et al. (2017) through their research, analyze the impact of bias from a high level of trust and loss aversion in decision makers, they concluded that investor loss aversion has a poor and widespread effect on character investors' funding decisions. Shafqat & Malik (2021) verify that loss aversion has a negative impact on the trading frequency of individual investors listed on the Pakistan Stock Index (PSX).

Hypothesis Development

A literature discussion of prospect theory has shown that loss aversion bias affects a company's performance as it greatly influences an investor's behavior when making decisions and an investor's strategy when buying and selling assets. The company has sometimes faced several situations where the market price is at a very important performance stage and it could put it in a risky situation where the market price is very low. On the other hand, the classical financial model expects agents to be rational and competent, but in reality, when market-relevant information occurs at the decision-making level, agents often mistreat the information, which is explained by behavioral bias. It affects the market price of investors and in turn the company. Bouteska & Regaieg (2020) on their researched, documented that investor loss aversion negatively affects the economic performance of US companies.

As clearly explains that investment sentiment and corporate performance are two factors that can have a significant relationship, loss aversion bias can affect corporate performance, especially at the expense of corporate asset performance, so the hypothesis presented in this study is that:

H1: Loss aversion negatively affect the performance of company in Indonesia.

DATA AND METHODOLOGY

Measurement data and variables

In this research, the sample is 190 non-financial companies in Indonesia that are still actively traded in IDX and registered as KOMPAS100 for the period January 1st, 2009 to December 31st,

2019 with 7,535 quarterly observations during the research period. The company's quarterly data is taken from S&P Capital IQ.

The first empirical model is built for control variables and independent variables that can affect company performance are market capitalization, company book value, and company asset return (ROA) as indicators of company economic performance and their use as stock market performance indicators. The loss aversion variable in hypothesis of this research was tested with proxy using the percentage of trading volume during the study period. The hypothesis will be by adding a loss aversion variable where the proxy that will be use is the percentage trading volume during the research period. The use of these variables is supported by many studies in several literatures (Genesove & Mayer, 2001; Gomes, 2005; O'Connell & Teo, 2009; Tversky & Kahneman, 1992). While the second empirical model was built with control variables with additional of independent variables that can affect market performance are the value of market capitalization, asset growth rate, company net income and re-enter the loss aversion variable.

Empirical Model

The regression model develops on this research to identify the impact loss aversion on corporate performance (H1) described as below model:

$$ROA_{i,t} = \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 B/M_{i,t} + \beta_3 LA_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$TOBIN'S Q_{i,t} = \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 AG_{i,t} + \beta_3 NI_{i,t} + \beta_4 LA_{i,t} + \varepsilon_{i,t} \quad (2)$$

where, $SIZE_{i,t}$, $M/B_{i,t}$, and $LA_{i,t}$ respectively are company size, market to book ratio and coefficient of loss-aversion variable on company i in period of time t . $LA_{i,t}$ significantly indicating that investors' loss aversion has an effect at the ROA of corporations in Indonesia. The equation model controls many other variables which in previous studies by Bouteska & Regaieg (2020) are $SIZE_{i,t}$, $M/B_{i,t}$ and $LA_{i,t}$ has explained the economic performance of the company. In order to perform the robustness test, the regression is again performed using the Tobin's Q ratio widely as an accepted as an indicator to market performance (Brainard & Tobin, 1968; Gregory, 2021; Odeh et al., 2021; Tobin, 1969; B. Yang & Gan, 2021) and replace the market to book variable with a variable that is asset growth, net income variable and re-enter the market capitalization variable which is denoted by $AG_{i,t}$, $NI_{i,t}$, and $SIZE_{i,t}$.

Measurement of variables

The independent variable of the hypothesis in this study, SIZE is the size of the company as measured by a standardized market cap, calculated by:

$$SIZE = \text{number of outstanding shares} \times \text{stock price}$$

book to market ratio (B/M) which is calculated by the formula:

$$B/M = \frac{\text{price/book}}{\text{stock price}}$$

and LA is the percentage variation of the volume of transactions made by investors, where the formula used is as follows:

$$LA_{i,t} = \frac{\frac{VOL_{i,t}}{Size_{i,t}} - \frac{VOL_{i,t}}{Size_{i,t-1}}}{\frac{VOL_{i,j}}{Size_{i,t-1}}}$$

$LA_{i,t}$ describes as percentage variation of the volume of transactions per quarter made by investors, $VOL_{i,t}$ as the quarterly share volume transaction of corporation, $Size_{i,t}$ for the market capitalization of company i in period of time t and $Size_{i,t-1}$ represent market capitalization of corporation i quarterly prior time t .

TOBIN's Q (T'sQ) robustness test, the formula is:

$$T'sQ = \frac{\text{Total Market Value of Firm book} + \text{Book Value of Debt}}{\text{Total Asset Value of Firm}}$$

The additional independent variable in T'sQ is asset growth which calculated using:

$$AG_{i,t} = \frac{TA_{i,t} - TA_{i,t-1}}{TA_{i,t-1}}$$

where $TA_{i,t}$ indicate as total assets corporate i on period of t , $TA_{i,t-1}$ indicate company i total assets, quarterly prior period of t . And company net income ($NI_{i,t}$) i in period t , is standardized on total assets.

RESEARCH RESULTS

Descriptive Statistics

Table 1 presented a statistical description to all the variables in the two empirical models build on this research. After winsorizing process on transforming the data statistically to limit the extreme values in the research data and to reduce the effect of possible data outliers, it can be seen

that the mean of ROA is 5.33 percent with a standard deviation of 7.16 percent, while the mean for book to market is Rp. 2.8228 million and mean market capitalization is Rp. 28.9017 trillion. And in addition to the loss aversion variable, the change in sales volume mean is 0.29 percent from the standard deviation of 22.51 percent. Meanwhile, the mean of T'sQ ratio shows 1.3287, with net income mean is Rp.1.12 billion and the of asset growth is 11.18 percent with a standard deviation of 26.95%.

Variable	Observation	mean	SD	Minimum	Maximum
	Number				
ROA	7,535	0.0533	0.0716	-0.1247	0.3324
T'sQ	7,535	1.3287	2.1525	0.0482	14.5549
B/M	7,535	2.8228	4.2005	0.1465	28.8350
SIZE	7,535	28.9017	1.8647	24.82932	33.3334
NI	7,535	0.0112	0.0286	-0.1169	0.1035
AG	7,535	0.1118	0.2695	-0.9987	1.3227
LA	7,535	0.0029	0.2251	-0.5924	0.7927

Table 1: Descriptive statistics

The detailed correlations shown in Table 2 show the linear relationships between dependent variables, control variables, and independent variables. This shows that variable loss aversion adversely affects the dependent variables ROA and T'sQ, as well as all independent variables and all other control variables in the research. We can see that T'sQ adverse effect is 8.52 percent, while the adverse effect on ROA is 11.58 percent. The control variables that have a significant positive impact on both the independent variable ROA and T'sQ are the market capitalization variables at 43.05 percent and 46.5 percent. Another variable that has a positive impact on ROA is the 41.84 percent book-to-market variable. While the control variable NI significantly gives positive influence on T'sQ by 42.47 percent and the variable of company asset growth gives influence of 2.58 percent. If it is seen from the correlation table, where the negative results of variable loss aversion have a negative effect on both empirical model ROA and T'sQ, this negative correlation shows that the hypothesis build on this research was proved that loss aversion gives negative effect on the performance of company in Indonesia.

	ROA	B/M	T'sQ	SIZE	NI	AG	LA
ROA	1,000						
B/M	0.4184	1.0000					
T'sQ	0.4954	0.7969	1.0000				
SIZE	0.4305	0.4261	0.4665	1.0000			
NI	0.7954	0.3282	0.4247	0.3746	1.0000		
AG	0.1708	0.0713	0.0258	0.1562	0.1812	1.0000	
LA	-0.1158	-0.0817	-0.0852	-0.0749	-0.1344	-0.0412	1.0000

Table 2: Correlations

Empirical Results

Fixed-effects regression was used to test the hypothesis formulated in this research. More specifically, we used a two-panel fixed effects model to process the data on seeing the impact loss aversion to economic performance of Indonesian companies. The decision on using fixed effects model is justified by the results of the F-statistics test (homogeneity test, i.e. Wald test: P (F-statistics) <0.05) and Hausman test (χ^2 test). Based on the test results, the fixed effects model (with χ^2 significantly at the 1 percent, 5 percent, and 10 percent levels) is the right model that should be use in this research compare to pooled regression model (pooled OLS) or a random effects model. In general, most research with pooled panel data analysis is appropriately use only for a mixture time series and cross-section data meanwhile there are few observation samples not used in this study. To show that some correlations on the empirical model that are formed do not cause problems in the research model, the Wooldridge test is carried out. And, in order to avoid biased on the research results, in the data processing process, violations of the classical assumptions of heteroscedasticity, autocorrelation and checking of cross-sectional dependence / contemporaneous correlation on the regression model, have been overcome with the robust standard error method.

Model 1: $ROA_{i,t} = \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 M/B_{i,t} + \beta_3 LA_{i,t} + \varepsilon_{i,t}$				
Variables	(1)		(2)	
B/M			0.0027	(0.0000)
SIZE			0.0072	(0.0000)
LA	-0.0225	(0.0000)	-0.0175	(0.0000)
Constant	0.0534	(0.0000)	-0.1639	(0.0000)
N	7535		7535	
R-Square	0.0116		0.0576	
F-Value	36.99	(0.0000)	50.34	(0.0000)
Model 2: $T'sQ_{i,t} = \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 AG_{i,t} + \beta_3 NI_{i,t} + \beta_4 LA_{i,t} + \varepsilon_{i,t}$				
Variables				
SIZE			0.7695	(0.0000)
NI			6.6595	(0.0000)
AG			-0.3652	(0.0010)
LA	-0.5963	(0.0000)	-0.3411	(0.0010)
Constant	1.3304	(0.0000)	-20.9460	(0.0000)
N	7535		7535	
R-Square	0.014		0.256	
F-Value	34.2	(0.0000)	221.93	(0.0000)

Table 3: The impact of loss aversion on company performance in Indonesia

Empirical results in Table 3 shown on using two regression steps in both the regression equation model with the dependent variable ROA and T'sQ. The regression covers the entire analysis period (2009Q1 – 2019Q4) for all industrial sectors except the financial sector. Where all the regression results on control variables and loss aversion variables in this study both on ROA and T'sQ showed statistically significant results with the regression results of the two empirical models in this study showing results that support the hypothesis that has been formed. Where, on the first regression process, the result of regressing the dependent variable ROA is displayed only by loss aversion as the independent variable. (F = 36.99, p-value = 0.0000) with coefficient of -0.0225 and coefficient determination R^2 1.16 percent. This means that the independent variable has an effect of 1.16 percent on the dependent variable ROA. Meanwhile, after adding the control variables book to market and market capitalization, the loss aversion variable has a negative effect with a coefficient of -0.0175 and statistically significant (F = 50.34, p-value = 0.0000) with coefficient of determination R^2 increased to 5.75 percent. The results of the second regression process also show other independent variable in the research model, book to market, has a positive

influence with coefficient 0.0027 and market capitalization which also has a positive influence with coefficient 0.0072 and both are statistically significant. So from the results of the first regression with the dependent variable ROA which represents a measure of company performance, either with or without the control variable, it shows that the loss aversion variable shows a negative effect. These results strengthen the hypothetical arguments that have been built at the beginning of this research.

Furthermore, the robustness test using the second regression model with the dependent variable T'sQ was also carried out in two times regression process, where the first step was to regress only with the loss aversion variable and the second regression was performed by adding a control variable, and all regression results showed statistical significance. The results of the first regression showed that it was statistically significant ($F = 34.2$, $p\text{-value} = 0.000$), where the loss aversion variable had a negative effect with a coefficient of -0.5963 and a coefficient of determination R^2 by 1.4 percent, which means that the loss aversion variable has an effect of 1.4 percent on the T'sQ Q ratio variable. Then furthermore, after adding the control variables of market capitalization, net income and the company's asset growth rate, with coefficient -0.3411 the results of the second regression show that loss aversion has a negative effect, with increasing coefficient of determination R^2 to be 25.6 percent and statistically significant ($F = 221.93$, $p\text{-value} = 0.000$). The results of this second regression also show that T'sQ variable given a positive impact from market capitalization control variable with a coefficient of 0.7695 , and also has a positive influence on the net income variable with a coefficient of 6.6595 , while asset growth control variable with coefficient -0.3652 which is all statistically significant. The regression results from this second empirical model, both with and without control variables again proved that the dependent variable of loss aversion has a negative effect on T'sQ which represents generally accepted performance indicator of a financial market, so the results again confirm the established hypothesis, loss aversion negatively impacts the performance of economic performance company in Indonesia.

From the regression results, this study confirms the first research by De Bondt & Thaler (1985), where in his research it is proven that investor pessimism describes loss aversion behavior which has been shown to have a negative impacts economic performance of American's companies. The results of this study supported research from Bouteska & Regaieg (2020) where the results of their research specifically suggest that investors begin to reduce their pessimistic and begin to protect themselves against excessive loss aversion for good performance development of companies in

America. Research results also strengthen research by Khan et al. (2017) which concludes that the negative impact of loss aversion by investors is significantly influence investment decisions made by individual investors. So it can be concluded that from the results presented and by forming two regression models by looking at the company's performance from book value, by ROA or by combining book value with market value, by T'sQ, it verifies that results on both model support the hypothesis as well as several previous research.

CONCLUSION

This study examines the impact of loss aversion on Indonesian companies. And empirical results show that the effect of investor loss aversion is having a negative impact on Indonesia's corporate performance. Findings using the empirical ROA model are supported by the same results as the empirical model formed using the T'sQ variable. Both show that the economic performance of Indonesian companies depends on investor loss aversion. Negative impact on company performance. In this study, researchers were limited to companies that are still active and enrolled in the KOMPAS100. Hence, further research to develop is the impact of loss aversion to companies in Indonesia during the global crisis due to COVID-19 pandemic in 2019, did the uncertain of economic situation significantly increased investor loss aversion losses, and gives negative impact on company performance or even had the same impact when there was no global crisis?

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