IMPACT OF PAST RETURN, TURNOVER, VOLATILITY, BID-ASK SPREAD ON DISPOSITION EFFECT (EVIDENCE ON SMALL CAPITAL STOCK LISTED IN INDONESIAN STOCK EXCHANGE IN 2016-2020)

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ABSTRACT

Stock return is something that moves very randomly and is influenced by many things, so it is complicated to predict. However, on the other hand, investors make stock return assessments to predict the future as the basis for asset valuation. This shows the contradiction caused by the stock return itself. Significant rise and fall of the stock prices, illustrates inefficient market conditions. Behavioral biases occur when investors make investment decisions that are inconsistent or not optimal even though they have been able to process correctly all the information available in the market so that they have the correct probability level about future rates of return. The inclination of individuals to act will then trigger a bias to develop a disposition effect, riding losers too long and winners too short, given the current research gap. As a result of this contradiction, this study aims to look at what factors affect investors behavior in a disposition effect.

This research consists of empirical studies done on small - cap stocks listed on the IDX between 2016 and 2020. This study"s research design is a causal design, which recognizes the relationship between other variables or the influence of one variable on other variables. Logit regression will be the research type used in this study. Logit regression is used to analyze separately the sell versus hold decision and the sell versus buy.This research method is quantitative, with a focus on quantity and the usage of secondary data for research.

Past Return has a positive and significant effect on Disposition Effect in small stocks. Turnover variable has a positive and significant effect on Disposition Effect in small stocks, because the increased gains and loss coefficients for high turnover stocks are generally double the size of the winner and losser coefficients for stocks with low relative turnover. Volatility has no effect on the disposition effect variable. This is caused by the volatility in small caps are not showing the high of volatility level, the data showed that the volatility in small caps tend to be stable. The bid-ask spread variable has no effect on the Disposition Effect variable because the bid-ask spread in small caps showed that the bid ask spread are all in negative value and no data showed the high difference in between.

Keywords: Disposition Effect, Past Return, Turnover, Volatility, Bid-Ask Spread, Behavioral Finance

RESEARCH BACKGROUND

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Stock return is something that moves very randomly and is influenced by many things, so it is complicated to predict. However, on the other hand, investors make stock return assessments to predict the future as the basis for asset valuation. This shows the contradiction caused by the stock return itself. Analyzing stock market movements and price behavior is incredibly difficult due to the market's noisy, nonparametric, nonstationary, nonlinear, dynamic, and chaotic character. (Shah et al., 2019). The feelings of market players played a significant role in stock performance. Investors are emotional beings; they actually remember the price they paid for a stock, which influences their choices on when and at what price to sell it. Investors also have a tendency to become caught up in the current market mood, whether it is greed, panic, fear, or ignorance. Because this public information is available to all market participants and there is no way to predict when and how more relevant information will arise, as well as how the players will respond to this new piece of information, the investor cannot truly evaluate the price's future trend.

Disposition effect is important because the level of disposition effect can determine the market efficiency. One of the best widely researched behavioral finance studies in trading behavior is the disposition effect. According to the individual-level academic study, depending on the demand-supply balance, the affect-driven disposition impact would strengthen or attenuate trends in stock prices. However, if a significant number of people are prone to make the same decisions, this trend can have a huge impact on stock market. Because a systematic disposition behavior that occur in large scale, it can affect the trading a volume and creating a huge difference between market prices and fundamental values. By understanding the disposition effect, the valuable information can be useful for any kind of traders to develop the trading strategy.

The behavior as explained by the prospect theory called as disposition effect as introduced by (Shefrin & Statman, 1985), this behavior explained behavior when investors' tend to sell winners too quickly and ride losers too long. Investors might having gains or losses in their trades relatively to original purchase stock prices. The term "winner" is classify a winning stock as one whose current market price lies above the original purchase price. On the other hand, the term "losers" is a losing stock whose current market price lies below the original purchase price.

The disposition effect creates an artificial headwind: when good news is announced, the price of an asset does not immediately rise to its value because of premature selling or lack of buying. Similarly, when bad news is announced, the price falls less because investors are reluctant to sell. According to (Goetzmann & Massa, 2008), when investors are less willing to sell their 'loser' and show a bolder disposition effect, they end up with a slightly balanced portfolio of losers. However, losing assets can show similar characteristics in certain periods, the disposition effect may thus cause a lack of diversification, particularly in the portfolios of private investors.

Aside from this phenomena, when there is a phenomenon of change from future expectations, there is a lot of confusion. Behavioral biases occur when investors make investment decisions that are inconsistent or not optimal even though they have been able to process correctly all the information available in the market so that they have the correct probability level about future rates of return. The inclination of individuals to act will then trigger a bias to develop a disposition effect, riding losers too long and winners too short, given the current research gap. As a result of this contradiction, this study aims to look at what factors affect investors' behavior in a disposition effect.

Based on the research gap above, many of previous studies has been done but only a few of them examine the relation between past return, turnover, volatility and bid-ask spread on the disposition effect in small capital stocks in emerging market, in this case is

Indonesia. Therefore, this paper intended to acknowledge the disposition effect using logistic regression.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT
The relation between Past Return and Disposition Effect

The variable past return week 1 to week 4 is used to predict short-term momentum because it is able to predict future price movements. Stocks with large past returns in the 1st week to 4th week have a tendency to generate capital gain overhangs or in other words short-term momentum has a correlation with capital gain overhangs (Grinblatt and Han, 2005). Because investors with disposition securities have the influence to sell shares with unrealized capital gains and keep shares with unrealized capital losses. According to (Grinblatt & Han, 2005) the disposition effect driven by prospect theory. The prospect theory defines the behavior of of investors provokes them to sell stocks that have risen in price while holding stocks that have declined in value. It means that investors are willing to sacrifice their money. When investors must make the choice whether to realize losses quickly or to hold losses with the probability of either gaining a breakeven or experiencing an additional loss. In this case, the investors are in the domain of losses, so they are willing to take more risks, and thus the losses are not realized immediately. Another theory, the mental accounting, argues that disposition effect will create a spread between the fundamental value of a stock and its equilibrium price, as well as price underreaction to information caused by the past return. The convergence spread arising from the random evolution of the fundamental values will cause an update of the reference price and produce a predicted equilibrium price leading to momentum.

H1: *Past return* **has a positive impact to** *disposition effect*.

The relation between Turnover and Disposition Effect

Through turnover, it can be seen how much and how quickly the shares change hands in a certain time unit. Investors tend to increase the trading volume when the stock price increases and reduce the trading volume when the stock price decreases. Their studies (An & Argyle, 2014) showed the disposition effect is more severe among stocks with higher turnover and short average holding period; the increased gains and loss coefficients for high turnover stocks are generally double the size of the winner and losser coefficients for stocks with low relative turnover. (Smidth, 1996) contrasted the turnover rate of stocks with growing prices (winning) against stocks with decreasing prices (loser), concluding that the winner stocks have a high turnover rate. When a stock has shown a high volume turnover of shares that are seen to be actively traded, it affects the behavior of investors to make the right positioning in realizing their profits and holding back their losses as an anticipation of regret, according to the regret theory.
H2: *Turnover* **has a positive impact to** *disposition effect*.

The relation between Volatility and Disposition Effect

The movement of stock prices that rise or fall too fast within a short period of time also increases the risk faced by investors. A high of volatility level shows an inefficient market condition and indicates the occurrence of bias. As volatility increases, the sell boundary is reached more often, as indicated by using the shorter average period from buy to sell. Stocks with a high volatility rate are the determining elements that give rise to the disposition effect in stock trading (Kumar, 2009). According to research, the higher the amount of volatility in the stock market, the larger the disposition affect behavior in the stock market. (Candraningrat et al., 2018). This phenomenon can be explained by the

regret theory that can explain why investors delay selling stocks that have fallen in value and rush the sell of stocks that have increased in value (Shefrin & Statman, 1985). Regret theory may be defined as the implication of investors delaying selling stocks that have declined in value in order to avoid confirming their mistakes and regret the emotion. They sell stocks that have risen in value so that they will not be guilty if they do not sell them before the price has fallen.
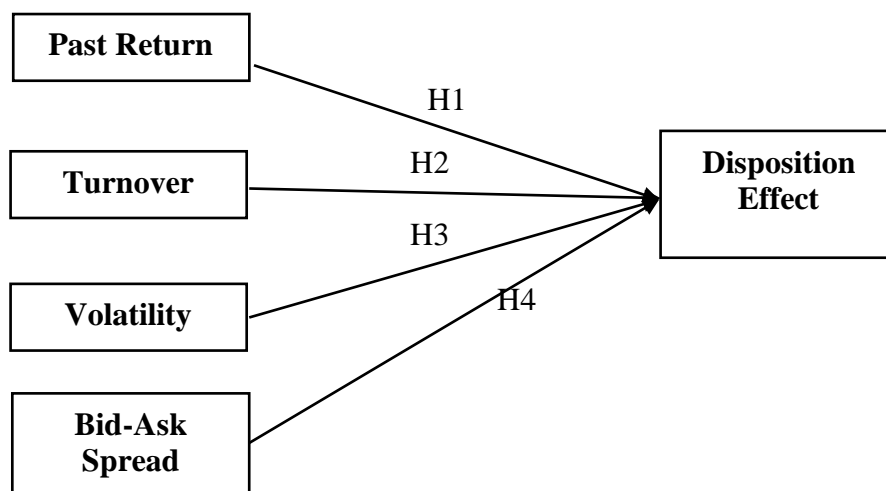
H3: *Volatility* **has a positive impact to** *disposition effect***.**

The relation between Bid-Ask Spread and Disposition Effect

The bid-ask spread movement can be considered to represent investor activities related to incoming information, causing the market to become volatile and creating possibilities for the disposition effect. According to prospect theory, investors in the capital market are risk averse while doing transactions. This sort of investor takes profits too soon and holds losses too long. This may be seen in the fluctuations in the bid-ask spread. If there is a high bid-ask spread in the stock market, it reduces stock liquidity while increasing transaction risk. With this condition, investors will be limited in its ability to conduct disposition effect. (Sembiring & Arfianto, 2016a). This phenomenon can be explained by the prospect theory that argues if the person's risk attitude is determined by the nature of the possibilities presented. When faced with a favorable prospect, a person will be risk averse. When confronted with an unfavorable prospect, on the other hand, that person will be a risk taker. This theory was later applied to investment decision making. Changes in risk attitude occur as a result of investors' desire to avoid losses, which is known as loss aversion.

H4: *Bid-Ask Spread* **has a positive impact to** *disposition effect***.**

THEORETICAL FRAMEWORK

RESEARCH METHOD
Population and Sample

This study's population consists of small cap stocks that were listed on IDX between 2016 and 2020. Purposive sampling methods will be applied in this research,

which means that the samples will be chosen depending on the criteria that will be included in the research. The sample criteria that will be used are as follows:
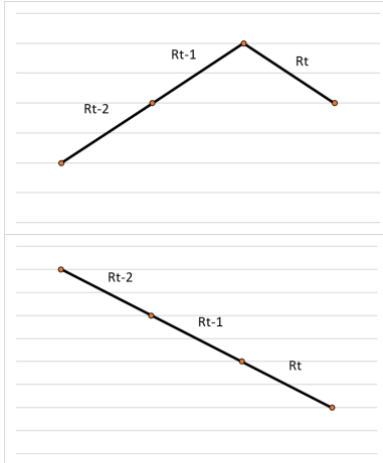
  a. Small cap stocks listed in IDX in 2016 – 2020 periods.
  b. Small cap stocks that are actively traded in 2016 – 2020 periods.
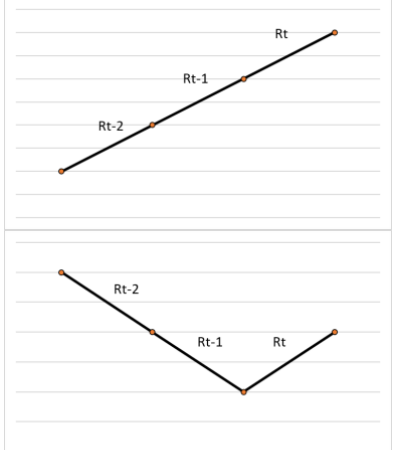 c. Smal cap stocks that have historical data that match the observed variables.

List of Sample

No.	Entity	Code
1	PT. MegaPower Makmur Tbk	MPOW
2	PT. Fortune Indonesia Tbk	FORU
3	PT. Kedaung Indah Can Tbk	KICI
4	PT. Era Mandiri Cemerlang Tbk.	IKAN
5	PT. Sentra Food Indonesia Tbk	FOOD
6	PT. Tirta Mahakam Resources Tbk	TIRT
7	PT. Protech Mitra Perkasa Tbk	OASA
8	Lionmesh Prima Tbk	LMSH
9	PT. Limas Indonesia Makmur Tbk.	LMAS
10	PT. Guna Timur Raya Tbk	TRUK
11	PT. Eka Sari Lorena Transport Tbk	LRNA
12	PT. ICTSI Jasa Prima Tbk	KARW
13	PT. Citatah Tbk	CTTH
14	PT. Ricky Putra Globalindo Tbk.	RICY
15	PT. Sinergi Inti Plastindo Tbk.	ESIP
16	PT. Pelangi Indah Canindo Tbk	PICO
17	PT. Lancartama Sejati Tbk.	TAMA
18	PT. Dewata Freight International Tbk.	DEAL
19	PT. Sidomulyo Selaras Tbk.	SDMU
20	PT. Armada Berjaya Trans Tbk	JAYA
21	PT. Andalan Sakti Primaindo Tbk	ASPI
22	PT. Metro Realty Tbk	MTSM
23	PT. Tanah Laut Tbk.	INDX
24	PT. Darmi Bersaudara Tbk	KAYU
25	PT. Bekasi Asri Pemula Tbk	BAPA
26	PT. Century Textile Industry Seri A Tbk	CNTX

According to the title of the research chosen by the author, which is "Impact of Past Return, Turnover, Volatility On Disposition Effect (Case Studies on Small Capital Stock Listed in Indonesian Stock Exchange in 2016-2020)", Then there will be 4 types of variables examined, which are past return, turnover, volatility as independent variables and disposition effect as dependent variables. The following are the variables used in this study, there is:

Scale	Variable	Variable concept	Indicators
Ratio	a. Past Return (X1)	Ratio to make a decision whether hold or sell stocks	

Scale	Variable	Variable concept	Indicators
		based on the previous price.	$$R = \frac{P_t - P_{t-1}}{P_{t-1}}$$ Where as: R = Past Return Pt = Stock Prices Period 1 Pt-1= Stock Prices Period t-1 (Maharani & Arfianto, 2016a)
Ratio	b. Turnover (X2)	Weekly market turnover or the number of shares traded in a week.	$$Wtrading = \frac{Traded\ Stocks}{Total\ Outstanding\ Stocks}$$ (Candraningrat et al., 2018)
Ratio	c. Volatility (X3)	Ratio that measures the trading frequency and how many times a stock changes owners	$$\sigma_t = \log[\max_{\{s \in Day_t\}P_{s,t}} - \min_{\{s \in Day_t\}P_{s,t}}]$$ Where as: Max = the highest price of the day Min = the lowest price of the day (Goetzmann & Massa, 2008)
	d. Bid-Ask Spread	The bid-ask spread is a cost incurred in buying and selling a stock.	$$BA = \frac{bid_{i,t} - ask_{i,t}}{\frac{1}{2}(bid_{i,t} + ask_{i,t})}$$
Ratio	Dependent variables are: a. Disposition Effect (Y1)	The investor's natural tendency to sell winning investments too soon and hold losing investments too long.	$$R = \frac{P_t - P_{t-1}}{P_{t-1}}$$ Where as: "1" is disposition effect calculated by 3 days holding period with a trendline down below: "0" is no disposition effect calculated by 3 days holding period with a trendline down below:

Scale	Variable	Variable concept	Indicators

Results
Overall Fit Model

The overall fit of the model is calculated by comparing the values between 2LogL in the initial model or block 0 with -2LogL in the final model or block 1.

Table 1
Overall Fit Model

Iteration History[a,b,c]				
	Iteration	-2 Log likelihood	Coefficients	
			Constant	
Step 0	1 00%	49 4355%	-163%	
	2 00%	46 4087%	-214%	
	3 00%	46 2991%	-227%	
	4 00%	46 2989%	-227%	
	5 00%	46 2989%	-227%	
a. Constant is included in the model.				
b. Initial -2 Log Likelihood: 4629.888				
c. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.				

Iteration History[a,b,c,d]							
Iteration		-2 Log likelihood	Coefficients				
			Constant	Past Return	Turnover	Volatility	Bid-Ask Spread

tep 1	1 00.00%	4684 70.90%	- 167.40%	15 96.80%	0 .00%	1 5.90%	- 41.70%
	2 00.00%	4227 81.90%	- 223.80%	31 51.80%	0 .00%	2 0.20%	1 68.80%
	3 00.00%	4185 96.50%	- 239.70%	40 56.70%	0 .00%	1 5.40%	4 77.60%
	4 00.00%	4185 05.60%	- 240.70%	42 33.70%	0 .00%	1 3.30%	5 77.80%
	5 00.00%	4185 05.50%	- 240.70%	42 39.40%	0 .00%	1 3.20%	5 82.20%
	6 00.00%	4185 05.50%	- 240.70%	42 39.40%	0 .00%	1 3.20%	5 82.20%

a. Method: Enter

b. Constant is included in the model.

c. Initial -2 Log Likelihood: 4629,888

d. Estimation terminated at iteration number 6 because parameter estimates changed by less than ,001.

The initial model, also known as block 0 or the model before the independent variables are entered, is shown in Table 4.2. In the initial model, or block 0, the value of -2LogL is 4629,888. The null hypothesis is thus rejected, implying that only constants match the data. The final model of block 1, essentially the model after the independent variables are entered, is shown in table 4.4. In the final model or block 1, the value of -2LogL is 4185,055. The value of -2LogL decreases by 444,833 from the initial model to the final model, according to the results of the two models. The inclusion of an independent variable to the model can enhance if the -2LogL value is reduced. A reduced value of -2LogL means that the addition of an independent variable to the model can improve the fit of the model and show a good regression model or the hypothesized model fits the data, so the null hypothesis is accepted.

Koefisien Determinasi

Tabel 2
Coefficient Determination ($R2$)

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	4185.055[a]	5.80%	12.50%
a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.			

Table 2 above shows the Nagelkerke $R2$ value of 0.125. This means that the dependent variable of disposition effect is explained by the independent variables past return, turnover, volatility, bid-ask spread of 0.125 or 12.5%. The remaining 87.5% is explained by other variables outside the model.

Hosmer & Lemeshow's Goodness of Test

Table 3
Hosmer and Lemeshow's Goodness of Fit Test

Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	490.671	8	.000

The Hosmer And Lemeshow Goodness Of Fit test has a value of 0,000 with a significance value of 0.05, as shown in table 4.6. The null hypothesis is not accepted since the significance value obtained is smaller than 0.05. This indicates that there is no difference between the observed data and the logistic regression model's estimated data, indicating that the model is not viable and can not explains the data adequately. This happen because the data are in large set, 20.000 data, according to (Paul et al., 2013)

Logistic Regression Analysis
Table 4
Logistic Regression Analysis

Variables in the Equation								
							95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	PR	.422	.024	306.543	1	.000	1.524	1.454	1.598
	TOR	.000	.000	15.016	1	.000	1.000	1.000	1.000
	VOL	.131	.150	.759	1	.384	1.140	.849	1.531
	BAS	5.899	3.101	3.619	1	.057	364.658	.836	159021.823
	Constant	-2.397	.068	1231.391	1	.000	.091		
a. Variable(s) entered on step 1: PR, TOR, VOL, BAS.								

$$ln\ \frac{y}{1-y} = \beta O + 1.528PR + 1.000TO + 1.140VOL + 364.658BAS + \varepsilon$$

The value of the odds ratio can be found in the Exp(B) column of table 4.7. The odds ratio can be interpreted as follows:
1. If the past return improves by one, the likelihood of Disposition Effect increases by 1,524 times.
2. If the turnover improves by one, the likelihood of Disposition Effect increases by 1,000 times.
3. If the volatility improves by one, the likelihood of Disposition Effect increases by 1,140 times.
4. If the Bid-Ask Spread improves by one, the likelihood of Disposition Effect increases by 364,658 times.

Hypothesis Test

Table 5
Hypothesis Test

Hypotheses	Relation	Results	Notes
H1	Past Return has a positive and significant effect on Disposition Effect	Positively Significant	Hypothesis is supported
H2	Turnover has a positive and significant effect on Disposition Effect	Positively Significant	Hypothesis is supported
H3	Volatility has a positive and significant effect on Disposition Effect	No effect	Hypothesis is not supported
H4	Bid-Ask Spread has a positive and significant effect on Disposition Effect.	No effect	Hypothesis is not supported

The Relation between Past Return and Disposition Effect

The results of the logistic regression analysis show that the past return variable showed has a positive regression coefficient of with a significance level 42.394 with a significance level of 0.000, so that the Past Return has a positive and significant effect on Disposition Effect in small stocks. Furthermore, the past return variable has the Exp(B) value in 1,524. This can be interpreted if the past return improves by one, the likelihood of Disposition Effect increases by 1,524 times. This means that the past return does determine whether there is Disposition Effect or not. Because investors with disposition securities have the influence to sell shares with unrealized capital gains and keep shares with unrealized capital losses. This study's findings are consistent with (Jegadeesh et al, 1993) that stated that stocks with low levels over the last 3-12 months learn over the next 3-12 months, while stocks with subsequent high levels in the past continue to do well over the next 3-12 months. This study's findings also confirm the prospect theory and mental accounting. According to (Grinblatt & Han, 2005) the disposition effect driven by prospect theory and mental accounting will create a spread between the fundamental value of a stock and its equilibrium price, as well as price underreaction to information. The convergence spread arising from the random evolution of the fundamental values will cause an update of the reference price and produce a predicted equilibrium price leading to momentum.

The Relation between Turnover and Disposition Effect

The results of the logistic regression analysis show that the turnover variable has a positive regression coefficient level 0.000 with a significance level of 0.000, so that the Turnover has a positive and significant effect on Disposition Effect in small stocks. Furthermore, the Exp(B) value in the Turnover variable is 1,000. This can be interpreted if the turnover improves by one, the likelihood of Disposition Effect increases by 1,000 times. This study's findings are consistent with previous studies (An & Argyle, 2014) that showed the disposition effect is more severe among stocks with higher turnover and short average holding period; the increased gains and loss coefficients for high turnover stocks are generally double the size of the winner and losser coefficients for stocks with low relative turnover.

(Smidth, 1996) contrasted the turnover rate of stocks with growing prices (winning) against stocks with decreasing prices (loser), concluding that the winner stocks have a high turnover rate. This results also confirms (Smidth, 1996) findings that winning stocks have

large stock fluctuations, which has a positive effect on the probability of the disposition effect.

The Relation between Volatility and Disposition Effect

The results of the logistic regression analysis show that the volatility variable has a positive regression coefficient of level 0.312 with a significance level of 0.381 which is greater than 0.05. The Exp(B) values in the logit analysis has a value of 1,140. This can be interpreted if the volatility improves by one, the likelihood of Disposition Effect increases by 1,140 times. However, from the coefficient regression results, it can be concluded that the volatility variable has no effect on the disposition effect variable. This findings are not consistent with previous studies by (Leal, Armada, & Duque, 2010) in Portuguese stock market, showed that investor with less liquidity or in small cap market are prone to disposition effect. This is caused by the volatility in small caps are not showing the high of volatility level, the data showed that the volatility in small caps tend to be stable. In overall data collected, the volatility in the sample from the data taken, it can be seen that the value of volatility in each sample per day tends to be stable from the day-to-day average. The value of volatility does not reflect the huge gap between the highest and lowest prices on a daily basis. In the other words, there is no large fluctuation in the highest and lowest prices in the data. The research findings do not support the regret theory that stated the regret aversion predicts that investors would be reluctant to sell loss stocks in order to prevent feeling regret, but the desire for pride may lead investors to sell winning stocks too quickly. But this finding showed otherwise, because the volatility are more stable and not volatile.

The Relation between Bid-Ask Spread and Disposition Effect

The results of the logistic regression analysis show that the bid-ask spread variable has a positive regression coefficient of 5.822 with a significance level of 0.061 which is greater than 0.05. Although the Exp(B) Bid-Ask Spread values is 364,658, that can be interpreted that if the Bid-Ask Spread improves by one, the likelihood of Disposition Effect increases by 364,658 times. However, from these coefficient and significance results, it can be concluded that the bid-ask spread variable has no effect on the Disposition Effect variable. Then H4 is not supported. The bid-ask spread movement can be considered to represent investor activities related to incoming information, causing the market to become volatile and creating possibilities for the disposition effect. But in this findings, the bid-ask spread in small caps showed that the bid ask spread are all in negative value and no data showed the high fluctuation. According to prospect theory, investors in the capital market are risk averse while doing transactions. This sort of investor takes profits too soon and holds losses too long. This may be seen in the fluctuations in the bid-ask spread. If there is a high bid-ask spread in the stock market, it reduces stock liquidity while increasing transaction risk. But the findings says otherwise, so this result theory is not proving the prospect theory.

PENUTUP
Conclusion

1.   The first hypothesis, Past Return has a positive regression coefficient of with a significance level 42.394 with a significance level of 0.000, so it can be concluded that the Past Return has a positive and significant effect on Disposition Effect in small stocks, because investors with disposition securities have the influence to sell

shares with unrealized capital gains and keep shares with unrealized capital losses. The first hypothesis is **supported.**

2. The second hypothesis, Turnover turnover variable has a positive regression coefficient level 0.000 with a significance level of 0.000, so that the Turnover has a positive and significant effect on Disposition Effect in small stocks, because the increased gains and loss coefficients for high turnover stocks are generally double the size of the winner and losser coefficients for stocks with low relative turnover. The second hypothesis is **supported.**

3. The third hypothesis, Volatility has a positive regression coefficient of level 0.312 with a significance level of 0.381 which is greater than 0.05. It can be concluded that the volatility variable has no effect on the disposition effect variable. This is caused by the volatility in small caps are not showing the high of volatility level, the data showed that the volatility in small caps tend to be stable. The third hypothesis is **not supported.**

4. The fourth hypothesis, the bid-ask spread has a positive regression coefficient of 5.822 with a significance level of 0.061 which is greater than 0.05. From these results, it can be concluded that the bid-ask spread variable has no effect on the Disposition Effect variable because the bid-ask spread in small caps showed that the bid ask spread are all in negative value and no data showed the high difference in between. The fourth hypothesis is **not supported.**

Limitation

1. Among the 4 variables tested, only 2 hypothesis is supported. The other 2 hypothesis is not supported, because the data in small capital stocks showed more stable volatility and the bid-ask spread are not showing a huge difference in between.
2. The R square result in coefficient determination are quite small, which is 0.125.
3. A lot of the secondary data taken are not available or missing, so the amount of outliers in data used in this analysis are quite high. This may caused the regression are not calculated properly.
4. The Hosmer and Lemeshow's Goodness of Test showed 0,000 or insignificant, it can be caused because the data processed has over 20.000 sample data, so the data can't be calculated properly.

Suggestions

1. Financial institutions might use the findings to properly understand the behavior of a small capital stocks investors to the disposition effect. Furthermore, regulatory authorities might use the findings of this study to advise a particular set of financially vulnerable retail investors to make better financial decisions.
2. Further research can use another research model: OLS Regression, Cross-Sectional Regression, etc. And can use another proxies that impact disposition effect as a whole.

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