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Herding Behavior Model in Investment Decision on Emerging Markets: Experimental in Indonesia

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Abstract

This research aims to examine the model of investor herding behavior in making investment decisions in the Indonesian capital market, which is influenced by social and information impacting on the value of the Book Value Per Share (BVPS). The latest stock market conditions show that most investors make the same error pattern in making investment decisions that result in losses. The experiment involves two independent variables, namely, information about BVPS and social influence. This study used a 2x2 factorial design laboratory experimental method. Data collection was carried out through treatment of a sample of 100 individual investors listed on the Indonesia Stock Exchange. Univariate Two-Way Analysis of Variance (ANOVA) statistical tool was used to test the independent variable on the dependent variable. Research results showed that the social influence originating from expert investors is more influential than the Book Value Per Share (BVPS) information on the behavior of herding investors in making investment decisions. These findings suggest that investors know their psychological factors, thereby increasing self-control and investment analysis skills. Further research can use psychological bias and other indicators of accounting relevant information such as Earning Per Share (EPS) to test herding behavior in investment decision making in the capital market.

Keywords: Herding, Investment Decision, Social Effect, BVPS, Experimental

JEL Classification Code: G41, M41, C91

1. Introduction

There is a surprising fact that making the same mistake in investment decision has been the general pattern of investor behavior in the capital market. It was explained by Haritha and Uchil (2016) that this mistake is usually caused by investors' persistence to stereotyping (imitating)

other investors without caution, which later provokes those investors to lose money. Stereotyping becomes an option because investors lack self-confidence in their capability in investment analysis. The mistake leads to unreasonable behavior in the capital market. This situation was described by Chaudhry and Sam (2018) through a finding that unreasonable behavior among investors indicates that there is an anomaly in the capital market because investors stereotype the action of the established investors without checking the accuracy of information that underlies that action. Such unreasonable behavior is called herding behavior, which can change stock return volatility (Kameda & Hastie, 2015). Herding behavior is often found among investors in emerging markets and mostly occurred during market stress situation. In regard to Emerging Market Index released by Morgan Stanley (MSCI), it was reported that Indonesia was classified into Emerging Market category because the Gross National Income (GNI) was at a medium level. Precisely, in 2018, the GNI of Indonesia was USD3,840, and in 2019, this figure increased to USD4,050. It must be noted that the dominant investor behavior in the Indonesia capital market, especially in investment decision-making, is herding behavior. This position is consistent with Indars (2019) who

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found that herding investors tend to suppress their ideas and follow market consensus.

Luu (2020) found that herding has more of an impact on investor psychology in emerging markets. Arisanti and Asri (2018) stated herding behavior in Indonesia capital market was dominated by investors from six sectors, namely, agriculture, infrastructure, transportation, finance, mining, and property. Different opinion was given by Agarwal, Chiu, Liu, and Rhee (2010) which said that herding behavior symptom was not found in Indonesia capital market because there was no extreme movement of stock price or no prolongation of market stress situation. Furthermore, Ghozali and Sitingjak (2012) found that herding behavior of investors was affected by the type of information they receive, which can be either financial information or non-financial information.

One of several types of financial information that affect investment decision-making in the stock market is accounting information that has relevant value (Murdayanti, 2020) such as Book Value Per Share (BVPS) because it has a relevant value on stock price (Clarkson, Hanna, Richardson, & Thompson, 2011). Within the context of the current research, non-financial information is represented by social effect. Every investor has an intensive relationship with one another and this leads investors to choose herding behavior over other behavior in investment decision-making (Borgers, Derwall, Koedijk, & Horst, 2015). Herding behavior and social influence have developed fast in economic and financial contexts. Interdisciplinary approach to this development has involved ideas from social and behavioral sciences (including economic, sociology, psychology, biology, and neurology). This approach found that herding behavior and social influence have connected to one another through reason and emotion. Herding behavior is triggered by the social influence in a process where other persons around the investors, usually skillful investors, are used as reference in the investment decision. In making an investment decision, investors not only consider investment prospect, return rate, or risk level, but also the psychological factor (Nair, Balasubramanian, & Yermal, 2017; Fransiska, Sumani, Willy, & Pangestu, 2018; Satish & Padmasree, 2018). Behavioral Finance Theory explained that investor behavior in investment decision-making is affected by an irrational factor (psychology) and rational factor (Areqat, Abu-Rumman, Al-Alani, & Alhorani, 2019).

The contribution made by the current research is to propose herding behavior model in investment decision-making, and this model combines irrational factor (social influence) and rational factor (BVPS) in the framework of an experimental study. Such model is a development of a previous model proposed by Statman (2014) that contains rational and irrational strategies made by investors for their

investment decision-making. By considering all explanations previously given as background, the research problem is formulated as follows: Does herding behavior among investors at the Indonesia Stock Exchange differ between making investment decision based on social influence and based on information about Book Value Per Share (BVPS)?

2. Literature Review and Hypotheses

Investment is a sacrifice intentionally made by investor in the present days, by counting the risk involved, in order to obtain better returns in the future. Referring to Agyemang and Ansong (2016), investment is associated with return and risk, and both have unidirectional relationship. High return is only attained with high risk. Low return is only resulting with low risk (Martin, 2014). Investors must take into consideration all investment aspects in order to obtain the best return, and those aspects may include financial or non-financial information, and psychological factor, which all are needed in making optimum investment decision (Mutswenje et al., 2014; Hoang, 2020).

The current research analyzes investment in capital markets using the perspectives of psychology and finance, and therefore, the theoretical base of this research is behavioral finance. According to Muradoglu and Harvey (2017), behavioral finance is a scientific discipline involving interaction of various others scientific disciplines (interdisciplinary) such as sociology, finance, economic, accounting, investment, and psychology (Ackert, 2014). Behavioral Finance Theory explains that the behavior of normal investors is comprised of rational behavior (financially related) and irrational behavior (psychologically related) in investment decision-making. Rational investors evaluate all financial information to be used as guidance in making optimum investment decision (Areqat, 2019). Investors with irrational behavior are known for their inclination to make investment decisions based on psychological factors (Sedaghati, 2016). Besides Behavioral Finance Theory, there is also Herding Theory that is used in this research as one of two supplementary theories. This theory is an economic theory, which explains that investors reduce the risk of investment by stereotyping (imitating) the behavior of their group or other investors whom they trust. This activity is called herding, which is however often done without thinking wisely or conducting mature planning (Alquraan, Alqisie, & Shorafa, 2016). Next, Efficient Market Hypothesis (EMH) Theory is the second supporting theory. It assumes that investors always act rationally and capital market is always efficient. Additional investors assess stock price based on net present value of future cash flows, therefore, the price of stocks traded on capital market will entirely reflect all available information.

2.1. Social Influence on Herding Behavior in Investment Decision

Human is a social creature that is hardly separated from the effect of other human, and therefore, the behavior of one human is always affected by another human. In a social life, when it is time to make decision, individuals tend to adopt the behavior of other individuals. According to Aronson (2013) if certain individuals adopts behavior of other individuals, then the adoption of this behavior is caused by social influence. Furthermore, social influence was defined by Aronson (2013) as a domain in social psychology that explains how an individual is affected by the pressure of other individuals or group of individuals that later changes the attitude, perception, and behavior of that individual. Social influence is a process when certain individuals must change their thoughts, feeling, attitude, and behavior as the consequence of having interaction with other individuals or group of individuals who are considered as having a strong social effect or are skillful in investment. It was said by Baron, Branscombe, and Byrne (2012) that every member of a community has a social effect, and therefore, at least socially, they have the opportunity to influence the opinion of other members. This social influence is comprised of several powers, namely, reward power, coercive power, legitimate power, referent power, and expert power.

The current research is focused on social influence that is based on expert power. Individuals are considered as having expert power only when they have knowledge, skill, and information needed by others to solve the problem. Social influence based on expert power can influence potential investors to change their behavior in making investment decisions. Those potential investors mostly do not have the needed information and lack of capability in investment analysis, thus, they seek help from other investors whom are considered as having relevant information and skills in investment (Chen & Ma, 2017).

Social influence can be measured by differing positive social influence from negative social influence. Both positive and negative social influences are indicators that measure social influence. This position was affirmed by Borgers et al. (2015) through a finding that both positive and negative social influenced herding behavior of investors in their investment decision. Herding behavior emerges due to social influence, and later this social influence produces a sentiment among investors, which may lead to excessive irrational behavior (psychological factor). This statement is consistent with behavioral finance concept in psychological theory, which explains that certain individuals suffer the so-called biased trust (biased psychology), which in this matter affects the way of thinking of investors in making decision in an uncertain environment that is always active, dynamic,

and complex, like capital market (Ackert, 2014). Regarding the above explanations, the first hypothesis is proposed as follows:

H1: Investors who receive positive social influence tend to choose buy option in their investment decision compared to investors who receive negative social influence.

2.2. Information about BVPS on Herding Behavior in Investment Decision

One of several factors that generally influence investors' decision in the capital market is accounting information that has value, relevance, which can be used to predict the market value of equity. According to Shafi (2014), value relevance can be understood using fundamental analysis on accounting information. Book Value Per Share (BVPS) has a relevant or linear relationship with the market price of the stock because BVPS shows how much money the investors would accept if the assets are sold on their book value. Besides showing the money of asset sale, BVPS is also used to evaluate stock price (Reinhart, 2019). The stock is considered undervalued if BVPS is higher than the market price of the stock. In contrast, stock price is considered overvalued if BVPS is smaller than the market price of the stock. Indicators of BVPS become the base of consideration for investors who choose herding behavior in their investment decision.

In respect to the Efficient Market Hypothesis (EMH) Theory, rational investors are those who conduct fundamental analysis based on accounting information. The periodically-published financial statement must contain BVPS. If capital market does not suffer market stress, then investors tend to buy stock after the financial statement predicts BVPS increase (Murdayanti, 2020). In regard of all explanations given in this section, the second hypothesis is proposed as follows:

H2: Investors who obtain information about BVPS increase tend to choose buy option in their investment decision compared to investors who obtain information about BVPS decrease.

2.3. Social Influence and Information about BVPS on Herding Behavior in Investment Decision

As already explained in the previous section, human is a social creature, and this nature makes human hardly separated from the effect of other human, either in daily life or particularly in making decision in the capital market. It has been described by Borgers et al. (2015) that social influence has significant impact on the making of financial decision in various contexts. One of these

contexts is that social influence of individual investor can affect market share participation. Herding behavior of investors and social influence of individual investor are the usual events in economical and financial contexts. Herding behavior in economic activity and in financial decision-making is a manifestation of social learning, but this behavior is moderated by emotion and psychology of investors (Fransiska et al., 2018). A survey was conducted using an interdisciplinary approach that takes various ideas from social and behavioral sciences (economic, sociology, psychology, biology and neurology). This survey proved that herding behavior and social effect are two factors connected to one another through reason and emotion. Investment decision made by investors in the capital market is greatly influenced by many information, including financial information, such as Book Value Per Share (BVPS), and non-financial information, such as social influence from individual investor. This position corresponds with Behavioral Finance Theory, which explains that investor decision is affected by psychological and financial factors (Areqat et al., 2019). By virtue of the explanations provided in this section, the third hypothesis is proposed as follows:

H3: Investors who obtain information about BVPS increase and receive positive social influence tend to choose buy option in their investment decision compared to investors who obtain information about BVPS decrease and receive negative social influence.

This research proposes a herding behavior model in investment decision-making by taking reference from Behavioral Finance Theory. It was said in this theory that information about BVPS is one of several types of information used by investors as a basis for conducting fundamental analysis. It was also said that social influence can lead investors to irrational behavior in their investment decision. Based on theoretical elaboration above, this research constructs an empirical model as follows:

3. Method

The method of this research is randomized experiment. According to Fafchamps and Mo (2018), randomized experiment is done by choosing participants randomly from a population. The intention of this experiment is to find out the causal relationship between social influence and information about BVPS on herding behavior in the investment decision. Data were collected by giving treatment or manipulation, which is in the form of a simulation, to 100 investors who have been chosen as participants to the research. Participants were divided into four groups, and each group consisted of 25 participants. The simulation was done at a workshop organized by the RHB Security Company in Jakarta. Data collected from experiment were analyzed using statistical tests of Univariate Two-Way Analysis of Variance (ANOVA). This analysis technique was also implemented in a hypothesis test to determine the significance level of each effect relationship and the average difference across treatment groups. The experiment involves two independent variables (factors), namely, information about BVPS and social influence. Each variable (factor) has two indicators (levels). Factor of information about BVPS has two levels, namely, BVPS increase and BVPS decrease. Factor of social influence has two levels, namely, positive social influence and negative social influence. Regarding this description, the research design is 2x2 factorial experiment with intention to examine the effect of two factors, either partially or simultaneously, on herding behavior in the investment decision.

4. Result

4.1. Participant Profile

The participants in this experiment are 100 individual investors who are listed on the Indonesia Stock Exchange (ISE). The participants are divided into four groups, with each group comprising of 25 persons. Participants' profiles are described in Table 1.

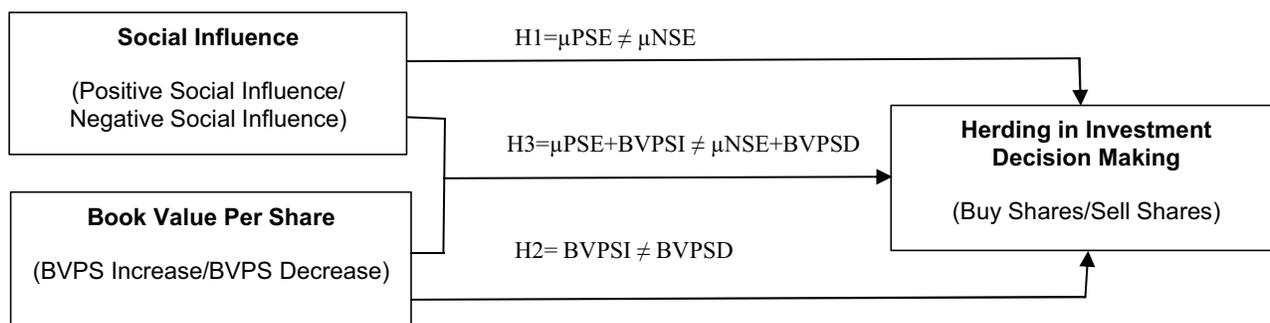


Figure 1: Empirical Model of Research

Table 1: Participant Profile

Group	Gender		Age		Last Education		Investing Experience	
	Male	Female	< 30 Years Old	> 30 Years Old	College	Non College	< 1 Years	> 1 Years
1	15	10	20	5	24	1	8	17
2	12	13	18	7	20	5	2	23
3	14	11	19	6	19	6	19	6
4	17	8	21	4	22	3	15	10
Total	58	42	78	22	85	15	44	56

As described in Table 1, the participants are mostly male. This situation can be explained by the fact that males has more inclination than females to think about future welfare, and this inclination is manifested by making investment in stocks. Moreover, the participants are mostly in the productive age, below 30 years old. Productive participants are daring to use their income for investment other than for fulfilling livelihood necessities. Most participants have a college degree, and this degree signifies that they have the skill to analyze investment. Later, this skill is proven to be useful for them and making them investor for more than a year.

4.2. Result of Manipulation Checking

Manipulation checking is carried out in the experiment by intention to ensure whether the subject (participant) has understood simulation scenario and then can make investment decisions after obtaining information about BVPS and receiving social influence from the investor environment. Manipulation checking is conducted manually by counting the score of answers to manipulation questions. If participants can properly answer minimally three of five questions, then those participants are considered passing through a manipulation test.

4.3. Result of Univariate Two Ways Analysis of Variance (ANOVA)

Regarding to the results of Levene's Test of Equality of Error Variances above, it can be said that Anova assumption test requires the data to be homogenous. Result of F-test gives F-value of $1.336 > 0.05$, which signifies that Anova model has homogenous variance. All these results have fulfilled Anova assumptions, and therefore, analysis can be continued to the next phase, which is, hypothesis test.

The results of hypothesis test in Table 3 show two information. The first is information about main effect relevant to Hypothesis 1 and 2. The second is information about interaction effect relevant to Hypothesis 3. Results of test on Hypothesis 1 (H1) and 2 (H2) show that social influence and information about BVPS have significant effect on herding behavior in investment decision-making.

Table 2: Levene's Test of Equality of Error Variances

Dependent Variable: Decision Level			
F	df1	df2	Sig.
1.336	3	96	.267

Table 3: Test of Between Subjects Effects

Type of Social Influence	Information about BVPS	Mean	Sig
Positive Social Influence	Increase	84.8000	
	Decrease	71.2000	
Negative Social Influence	Increase	34.4000	
	Decrease	19.2000	
Social Influence			.000
Information about BVPS			.000
Social Influence * Information about BVPS			.740

a. R Squared = 854 (Adjusted R Squared = 850)

The significance level of these results is $0.000 < 0.005$. Based on this result, both H1 and H2 are accepted. On average, herding behavior of investors in investment decision-making is different from one another. Herding behavior of investors who acquire information about BVPS is different from herding behavior of investors who receive social influence from the fellow investors. This result is consistent with Borgers et al. (2015) and Behavioral Finance Theory. These two bases explain that the behavior of normal investors always involves psychological factor that convinces them to follow the decision of other investors, and this behavior is called herding. It can also be said that herding behavior emerges only through the effect of other investors either through direct or indirect interactions.

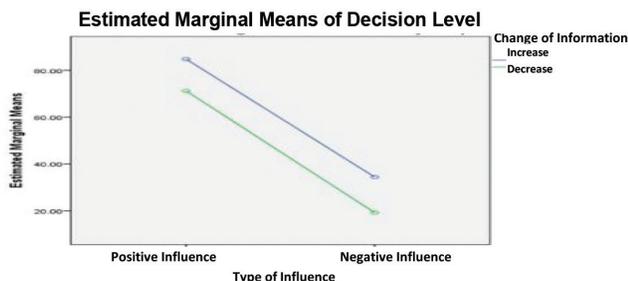


Figure 2: Estimated Marginal Mean

Conforming to the result of test on Hypothesis 3, it was found that the interaction between social influence and information about BVPS is not significant. This result is confirmed in Table 3 through significance level of $0.740 > 0.05$. It can be said that the contribution of social influence on investors' herding behavior is not determined by information about BVPS. This position is not in line with Areiqat et al. (2019), but in agreement with Behavioral Finance Theory, which explains that individual investors are mostly affected by psychological factor rather than rational factor when they make investment decisions. The result of Anova test in interaction relationship test is shown on Figure 2.

Based on the illustration in Figure 2, two lines in the graphic are parallel to each other and never crossing one another. It signifies that the mean of investors herding behavior, when they receive positive social influence and obtain information about BVPS increase, is higher than the mean of investors herding behavior when they receive negative social influence and obtain information about BVPS decrease.

5. Discussion and Conclusion

This research carries out an investment analysis using Behavioral Finance Theory approach. This theory states that investors' behavior in their investment decision-making is more dominantly affected by irrational factors rather than rational factor. Irrational factor (psychology) refers to biased psychology, which is often found in herding behavior of investors in an emerging market like Indonesia. This research has proved that most Indonesia investors tend to choose herding behavior in their investment decision-making after they receive positive social influence and obtain information about BVPS increase, which is in contrast to the investors who receive negative social influence and obtain information about BVPS decrease. This result indicates that, when investors must make investment decisions, they often ignore their own capability and rely greatly on other investors who are considered as skillful in investment analysis. Principally, investors have more inclinations to follow the decision of

other investors. This behavior is chosen because investors are lacking the skill in investment analysis and they have incomplete information. In the other hand, market actors require fast decision-making to avoid losing opportunity to collect profits. This situation compels the hesitant investors to build interaction with other investors who are more sophisticated to obtain the needed information. Social influence on the hesitant investors emanates from this interaction.

It is hoped that the results of this research will be useful to the investors, making them realize that psychological factor plays more a dominant role in affecting investment decision-making. Investors should improve their capacity and capability to conduct fundamental analysis based on accounting information. It is suggested that future research should investigate other variables to enhance the coverage of the current research. For instance, research may focus on a topic called behavioral accounting because there is a wide opportunity to elaborate psychological factors that constitute the topic, such as anchoring bias, conservatism, representativeness, availability, and overconfidence.

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