

**SRIWIJAYA INTERNATIONAL JOURNAL OF DYNAMIC  
ECONOMICS AND BUSINESS**

<http://ejournal.unsri.ac.id/index.php/sijdeb>

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**Behaviour of Follower Investor in the Formation of  
Stock's Price on Market Crash**

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**Abstract**

This study is aimed to get empirical evidence about the indications of behavior of follower investor in the formation of stock's prices in the Indonesian Stock Exchange (BEI) when the event market crash occurred. As well as aiming to analyze whether the behavior of follower investor can be called irrational behavior by looking at the difference in behavior of follower investor on each sector in IDX. This study uses secondary data in the form of stock's closing price and Indonesia Composite Index (IHSG) companies listed on the BEI Stock Exchange during 2010-2013 by accessing the website [www.idx.co.id](http://www.idx.co.id), [www.finance.yahoo.com](http://www.finance.yahoo.com), and [www.ksei.co.id](http://www.ksei.co.id). Total populations are 507 companies, while the total samples are 350 companies. The analysis technique used is Cross-sectional Absolute Deviation (CSAD) to detect the behavior of follower investor in the formation of stock price and One Way ANOVA test with Post Hoc Test and Least Significant Difference (LSD) to analyze the irrationality in follower investor's behavior. The analysis showed that there were indications follower investor's behavior in the stock's price formation and proved that behavior of follower investor is an irrational behavior.

**Keywords:** Behavior of follower investor, stock's price, market crash

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## **INTRODUCTION**

Traditional financial theory (traditional finance) such as the Efficient Market Hypothesis (Fama, 1970) is built on the basis of various assumptions. One of the assumption stated that the market does always think rationally in making decisions (Suryawijaya, 2003). But in fact, the assumption of rationality investor is difficult to fulfil referred to the Widodoatmodjo (2010) who found that in the Indonesian capital market, the whole investors are more likely to behave irrational than rational. The power of social influence or people around are more often used as a reference for investors, If the attitude of an investor is positive (investor is making decision to invest) but his friends do not support his position, the intention of the investor can changes drastically into contradictory decision (Adhikara, 2008). This means that the interest of investors to invest more likely adopts imitative behavior's (Adhikara, 2008).

Signal theory states that investors will adjust their behavior according to the understanding of the signal delivered by the owner of the information (Spence, 1973). The owners of information in this case are company, therefore, the signal received from the company by an investor referred to as the direct signal. Whereas, if the investor receives a signal from what was presented by friends, foreigners, and market trends, the signal captured by that investor is not a signal directly from the company (Aprillianto et al., 2014). Investors who receive indirect signals from the company called as follower investor (Aprillianto et al., 2014).

Investors in Indonesia tend to be found as a follower. They are exist as a follower of other investors follower of foreign investors, and the trend follower (Aprillianto et al., 2014). Follower investor knows only positive and negative signal of what stated by friends, foreign investors, and market trends. Investor who behaves as a follower of other investor, follower of foreign investors, or trend follower, are investors who follow transactions of friend, a foreign party or trend movement. The assumption is their friend as the direct recipient of the signal conveyed by company, while investors who followed their friend is the signal receiver stated by their friend (Aprillianto et al., 2014). Investors simply as a follower of what they make as reference, without knowing the clarity level of risk and return they will receive. Irrational behavior like follower investor happens not only because they make decisions that deviate from the assumption of rationality, it is also influenced by subjectivity, emotion and other psychological factors (Kowonda and Rowland, 2012).

Market crash is one of the cases which can prove that emotions can influence the irrational behavior of investors (Suryawijaya, 2003), such as crash phenomenon in the US capital that called Black Thursday on 11th September 1986. Black Thursday is motivated precisely by discussion in Europe about the possibility in the rising of inflation in the United States, resulting in the US government bond prices declined during the NYSE open on the next morning. At that time panic selling occurs and once the stock price falls, resulting in derivative securities which experienced the devastation within two days. Indo Alpha ([www.indoalpha.com](http://www.indoalpha.com)) as the organizer of a free Indonesia capital market

research, indicates that the data IHSG Indonesia for 10 years back, which was in 2004-2013 experienced 10 times Market Crash, except in 2009 which did not happen. Statistics Market Crash IHSG can be seen in Figure 1.

Figure 1. Market Crash Statistics IHSG

	2004	2005	2006	2007	2008	2010	2011	2011	2012	2013
IHSG (Peak)	5815	1192	1553	2401	2830	2971	4193	4193	4224	5200
IHSG (Bottom)	668	994	1234	1908	111	2514	3269	3654	3654	3967
Correction	-18%	-21%	-21%	-21%	-61%	-15%	-22%	-13%	-22%	-24%
Peak Date	21-Agt-04	03-Agt-04	11-May-6	24-Jul-07	09-Jan-08	30-Apr-10	05-Jan-11	1-Aug-11	3-May-12	22-May-13
Bottom Date	17-May-04	29-Aug-05	14-Jun-06	16-Aug-07	28-Oct-08	25-May-10	24-Jan-11	4-Oct-11	04-Jun-12	27-Aug-13
Days	26	26	34	23	293	25	19	64	32	87
Recovery Date	15-Sep-04	04-Jan-06	11-Oct-06	2-Oct-07	01-Apr-09	14-Jul-10	20-Apr-11	03-Apr-12	14-Sep-12	???
Days-	121	128	119	47	155	50	86	182	102	???

Source : [www.indoalpha.com](http://www.indoalpha.com)

Market Crash occurs due to different causes, both from the doer and type of assets. Indo Alpha investigates that according to the research conducted on the incidence of market crash, only 20% were caused by external shock such as natural disaster, eg the tragedy of WTC terrorist attacks in 2011. However, the cause of market crash that never changes is, as a result of human nature or uncontrolled behavior of investors ([www.indoalpha.com](http://www.indoalpha.com)).

Investor's uncontrolled actions that cause any changes in the market (bullish or bearish) are motivated by psychological factors, such as, greed, fear and madness Shiller (1990). When the market is bullish, the stock has always been over-valued because it is dominated by the majority of investors who become greedy. The nature of greed appears and prompting investors using their profits to buy at high prices in the hope of selling at higher prices again. After getting the price down, investors who still own shares, began to fear in which causing investors to release the stock, fearing they will bear greater losses. These two characteristics of investors that explains the behavior of individuals who are likely to move or act according to what the majority do (Shiller, 1990).

The idea of this study comes from investments phenomenon which occur based on the results of free capital market research and the results of the study which indicate the behavior of market is irrational. Previously, in early 1960 normal investors usually described as a rational investor. However, this time investors are normally affected by cognitive biases and emotions. Rational Investors only concerned about the risk and expected return of the portfolio, while normal investors concerned more than that (Statman, 2005). Therefore, any decision made by investors in the stock market, will affect the stock prices.

Based on the background, the questions of this study are do the stock price formed when the market crash is the result of the behavior of follower investor

and do the behavior of follower investor can be called as rational or irrational behavior. This study was conducted in answering the research questions to find indications on behavior of follower investor in the formation of the stock price when market crash and to determine rational or irrational behavior of follower investor.

## **LITERATURE REVIEW**

This study uses Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) which explained that the intention of the investor to execute the decision depends on two aspects, namely the attitude and subjective norm (Septyanto and Adhikara, 2014). The cause of change in stock's price is a reflection of all the information both financial information and non-financial. This theory underlying that investors behave on the intention of which is based on personal factors and social influences. Determinant which is associated with the personal factor is the attitude toward the individual behavior. This attitude is the evaluation on beliefs or positive or negative effects on the individual who has to perform a particular behavior desired. The second determinant of intention relating to social influence is subjective norm that is some one's perceptions toward social pressure that will affect a person's decision.

Behavioral finance is the concept that understands and predicts the implications of the financial market which is systematically from psychological decision processes (Olsen, 1998). A concept of behavioral finance said that the investment decisions made by investors are more likely influenced by the element of subjectivity, emotion, and various other psychological factors that are contrary to the assumption of rationality in the Theory of Efficient Market Hypothesis (Suryawijaya, 2003).

Concept of Behavioral finance considers various types of investors in viewing the risks associated with investment decision. The first group is a group of adventurers who generally do not care about the risks and tend to love it (risk takers). So they tend to disregard the advice of financial advisors because of different views on the risks. The second group is a group of celebrities that consist of people who always want to appear, stand, and become the center of attention. They often do not care about cost-benefit calculation of the investment, as long as their decision to buy or sell securities is seen and heard by many people, the third group is a group of individualists who tend to work alone and do not care about other people's investment decisions. This group tends to avoid high risk and not objected with moderate risk. The fourth group is the group of guardians which consist of investors who are more experienced and knowledgeable. This group tends to be cautious in making investment decisions and is more risk averse. The fifth group is the group of straight arrows. These groups sometimes are risk averse and sometimes risk takers. On the other occasion can also be individualists, and at other times more revealing the nature follow the crowd (follow the herd) (Suryawijaya, 2003).

Based on the fifth of the investor group, behavior of follower investor is classified in the group of straight arrows who exhibits properties of follow the crowd (follow the herd) or proxied by herding behavior. Herding behavior in the

financial markets is identified as a behavioral tendency of investors to follow the actions of other investors (Luong and Ha, 2011).

Herding is a psychological condition, which happened when investors ignore their personal beliefs and follow the beliefs of others without thinking (Devenow and Welch, 1996). Herding behavior as herd behavior, which is the tendency of individuals to mimic the actions (rational or irrational) of a larger group, with some reasons. The first reason is because of social pressure to be accepted in the group and the second reason is that people believe that a large group is impossibly wrong (Phung, 2014).

Behavior of follower investor proxied by using herding behavior detection describes dysfunctional economy as an animal spirits bias to explain the behavior of human's psychology, such as instincts and emotions which influence human behavior. Such as the instability due to speculation and instability due to the characteristics of human nature which still largely have the basic instincts of animal. The term herding is taken out from the concept of animal spirits which is a set of animals towards the same direction (straight arrows) (Keynes, 1935).

Follower investor is "a signal receiver that is not directly from the company". There are three types of follower investors, they are follower of other investors, follower of foreign investors, and the trend follower (Aprillianto et al., 2014), in which described respectively as follows: 1) Follower of other investors are those that receive the signals delivered by other investor. Assumed that this other investor is the direct recipient of the signal delivered by company; 2) Follower of foreign investors are investors who follow the movement of foreign transactions. Assumed that foreign investors are the recipient of the signal delivered by the company; 3) Trend Follower are investors who are trying to read the increasing or decreasing trend of increase of an issuer. Assumed that there is one issuer announced the expansion of a company, and then the market responded positively to the continuous price increases, and then the trend follower will follow the market to also buy shares of the issuer.

According Suryawijaya (2003), many investors cancel the intention to sell securities when the current price is lower than the purchasing price, to avoid the pain and regret of having made a bad investment, not because investors believe the market price of the securities will improve and generate profits, However, investors were "fear of regretting", so investors tend to follow the direction of flow (follow the crowd), with the consideration that the investor is not alone doing bad investment if the investment decisions made are a failure. Furthermore, irrational behavior is also found by Aprillianto et al. (2014) where beginners tend to do a follower investor behavior that made the decision to follow friends, foreigners, or trends. In that study, follower is likely to have the opportunity to gain return level and minimize the risk because the investor has a clear reference which is by catching indirect signal of the company through friends, foreigners, or trends that directly receive the signals delivered by the company. Recent research reveals that investors behave irrationally in bullish market conditions, but in a bearish market condition there is also found potential that investors can behave irrationally (Widoatmodjo, 2010).

In financial markets, follower means that investors buy or sell securities regardless of the underlying fundamentals of their decisions, because some signals launched follower behavior. Follower behavior is in contrary to rational asset pricing that highlights the importance of fundamental analysis on the stock's price. This irrational behavior makes the investor's benefit to become uncertain (Saastamoinen, 2008).

Akerlof and Shiller (2009) replace the bias of investor behavior with rationality hypothesis to explain the trading volume. Where the dysfunctional economy and financial market happen due to the failure of investors to expect a future income rationally and behavior of stock return. The model of rational expectation shows that the informed investors can increase their profits by providing inaccurate information to mobilize followers with the aim of moving the stock price (Van, 2003).

H<sub>1</sub>: There are indications of behavior of follower investor on the stock's price when the market crashes

Rational investors are investors who tend to think to maximize the wealth of the investments made. Thus, in this case the investor will seek as much information as possible, such as information on the company's financial statements, the company's performance, risk, economic conditions, inflation, interest rate, and others described in the Theory of Efficient Market Hypothesis. While irrational investors acts with consideration of non-economic aspects, especially the psychological aspects such as emotions, subjectivity, and various other psychological factors that are described in the concept of behavioral finance (Suryawijaya, 2003). The views of investors on the fundamental risk will affect the stock's price (Selva, 1995).

Rational investors will minimize the risk of stock selection by comparing the prospects in industrial sector. And irrational investors are supposed to have the technical type and do not like the form of a review of financial information, while subjective norms are very dominant in giving investors confidence to adhere to the views of other people (Septyanto and Adhikara, 2014).

H<sub>2</sub>: There is no difference in behavior of follower investor between raw materials producing industrial sectors, the manufacturing sector and the service sector.

## **METHODS**

The period of data observation in this study is four years, from 2010-2013 because Statistics Market Crash on Indonesia Composite Index (Indeks Harga Saham Gabungan), during the years 2004-2013 there is market crash phenomenon occurred in the Indonesian capital market, with the exception on the year 2009 market crash phenomenon does not occur. Therefore, to avoid the year 2009 and the reason of freshness of the data, so this study used the years after 2009, namely 2010-2013. This study uses secondary data in the form of closing price of stocks and Indonesia Composite Index of companies

listed on the Stock Exchange during 2010-2013 by accessing the site [www.idx.co.id](http://www.idx.co.id), [www.finance.yahoo.com](http://www.finance.yahoo.com), and [www.ksei.co.id](http://www.ksei.co.id).

The population of this study is all listed companies on BEI from 2010-2013. Thus, total sample obtained in this study were 350 companies registered which is consisting of: Raw Materials Industry Producing Sector with a total of 37 companies categorized into Primary sector (1); Manufacturing Industry Sector with a total of 109 company registered are categorized into the second sector (2); and Services Sector with a total of 204 companies registered that are categorized into the third sector (3).

Behavior of follower investor (PFI) is a kind of behavior of following decision based on indirect signal received from the company through friends, foreigners, or the trend as a direct signal receiver from the company (Aprillianto et al., 2014). The method used to detect the behavior of follower investor is a method of herding behavior by Chang et al. (2000). The method of approach of Chang et al. (2000) has the power to detect herding since it uses return equity behavior with methods of non-linear regression as the basis of the measurement of equityreturn by using Cross-sectional Absolute Deviation or (CSAD) with average of market return, as following.

$$CSAD_t = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}| \dots\dots\dots (1)$$

Remarks formula:

$R_i, t$ = returns of individual stock in period t

$R_m, t$ = reciprocal market in period t

N = the number of companies in the sample

The non-linier condition of this method describes the condition where investors follow the consensus of market behavior and ignore their personal opinions (follower investor), so that a linear relationship is no longer valid. To determine whether there is herding behavior, regression analysis was then performed as follows:

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R_{m,t}^2 + \epsilon_t \dots\dots\dots (2)$$

Remarks formula:

$\alpha$ = variable intercept

$\gamma_1$ = Linear coefficient CSAD and reciprocity between the market portfolio

$\gamma_2$ = non-linear coefficient CSAD and reciprocity between the market portfolio

$R_{m,t}$  = returns portfolio market in period  $t$

$\varepsilon_t$  = standard error

Value  $R_{m,t}$  is necessary to compare the linear coefficient. If relative to the period of large price movement investors do herding on the basis of the average market consensus, then the non-linear relationship between CSAD and the average market return will be formed. Relationship of non-linear can be seen from the coefficient value  $\gamma_2$  that is negative and statistically significant. If the non-linear coefficient ( $\gamma_2$ ) are not significantly negative, CSAD will not experience a decrease when the moving average of the price rise, these results is consistent with predictions of rational asset pricing model (Chang et al., 2000).

Data were analyzed using One Way ANOVA test to see the difference of behavior in follower investor among industrial sectors producing raw materials, the manufacturing sector and the service sector in the Indonesia Stock Exchange which are processed with statistical package for science (SPSS) programme. One Way ANOVA testing in this study is used to see the difference in behavior of follower investor between industrial sectors producing raw materials, the manufacturing sector and the service sector.

Testing with Post Hoc Test / Post were conducted by Least Significant Difference (LSD) which is a method used to determine the variables with significant differences and have fulfilled the homogeneity of variance assumptions.

## **FINDINGS**

The method used to detect behavior of follower investor is a method of Herding Behavior by Chang et al. (2000), using the return equity behavior with a non-linear regression method as the basis of equity return measurement by using Cross-sectional Absolute Deviation or (CSAD) with average market returns. According to the calculation result of CSAD,  $R_{m,t}$ ,  $R^2_{m,t}$ , and  $\gamma_2$  are shown in the appendix in which there are around 247 companies have a value of  $\gamma_2$  negative and as many as 103 companies have  $\gamma_2$  positive.

Companies that have  $\gamma_2$  negative indicates that on the period of large price movement, investors do the follower on the basis of the average market consensus. Negative value of  $\gamma_2$  is obtained from the value of CSAD that would tend to decline as a result of the increase in  $R_{m,t}$ , which is the pressure on individuals to "suppress" their opinion and following the market's consensus (Chang et al., 2000).

Descriptive statistical tests were conducted to see which sector has the highest and lowest behavior of follower investor. The descriptive statistical test's results are shown in Table 1.



Table 1. Descriptive Statistics Results of *Follower Investor's* Behavior

Sector name	N	Minimum	Maximum	mean	Std.deviation
Raw MaterialsProducing Sector	25	-0.3934	-0.0329	- 0.2504	.0886
Manufacturing Sector	81	-0.4455	-0.0062	- 0.2458	.1252
Service sector	141	-0.5036	-0.0025	- 0.2363	.1219

Source: Data processed in 2016

Based on Table 1 the highest and lowest level of value of follower investor's behavior exist in the third sector that is the service sector, which is -0.0025 for the highest follower investor's behavior and -0.5036 for the lowest follower investor's behavior. While in the views of the average value, then the highest level of follower investor's behavior occurred in the second sectors namely the manufacturing sector with 21.52% and the lowest level of follower investor's behavior occurred in major sectors, which is the raw materials producing industrial sectors with amount 8.86%.

Different tests were simultaneously carried out by One Way ANOVA test (shown in Appendix One Way ANOVA test). Based on the value of Sig. with amount  $0.780 > 0.05$ , then  $H_0$  is accepted, which means there is no behavioral difference between follower investor on raw materials producing industrial sectors, manufacturing sector and service sector.

The second hypothesis testing was conducted to see PFI differences among the three sectors, namely, the raw materials producing industrial sector, manufacturing sector and service sector premises using One Way ANOVA with LSD(least significant difference).The data used in testing One Way ANOVA has been normally distributed which can be seen from Asymp. Sig. (2- tailed) $>$  significant level ( $\alpha = 0.05$ ) (Appendix). Partial test was conducted with Post Hoc Test with LSD that were shown in Table 2.

Table 2. LSD Post Hoc Test Results

<i>Post Hoc LSD</i>			
Comparison		Sig.	mean Difference
Raw Materials Producing Sector	Manufacturing Sector	0.867	-0.0046243
Manufacturing Sector	Service sector	0.572	-0.0094945
Service Sector	Raw Materials Producing Sector	0.589	-0.0141188

Source: Data processed in 2016

The Results of Post Hoc Test with LSD showed that there is no difference of follower investor's behavior between main sectors, namely the raw material producing sector with the second sector namely the manufacturing sector with

a small difference of average with the amount -0.0046243 small and is not statistically significant ( $p = 0.867$  far above 0.05). The difference of investor follower's behaviour between the main sector, which is the raw material producing sector with the third sector that is the service sector with a small difference of average in the amount -0,0141188 and was not statistically significant ( $p = 0.589$  is much above 0.05). The difference of investor follower's behavior between the second sector, which is the manufacturing sector with the third sector which is the services sector with a small difference of average in the amount of 0.0094945 and is not statistically significant ( $p = 0.572$  is much above 0.05).

Based on the data analysis, as many as 247 companies that have a value of  $\gamma_2$  negative, indicating the stock price on the Stock Exchange was formed due to the behavior of follower investor. So the first hypothesis in this study is accepted, that there are indications of follower investor's behavior in the formation of stock price during the market crash. Companies that have positive value of  $\gamma_2$  showed that there is no decline of CSAD when the moving average of price rose. These results showed that the behavior of investors is in accordance with the predictions of rational asset pricing model which indicates the group of investors in  $\gamma_2$  positive always think rational in decision-making process, and are able to find an answer based on a rational analysis on the information obtained.

Behavior of follower investor happens very high in Indonesia Capital Market when market crash, from 350 observations there are 247 observations with the indications of follower. Follower investor belong to the group straight arrows. These groups sometimes are risk averse and sometimes risk takers. On the other occasion can also be individualists, and at other times more revealing the nature of follow the crowd (follow the herd) (Suryawijaya, 2003).

Behavior of follower investor is a psychological state, when the investor does not involve each personal's faith and follow the beliefs of others without weigh other things. As to the instability due to speculation and instability due to the characteristics of human nature which are mostly still have the basic instincts of an animal. Behavior of follower investor during the market crash conditions in the Indonesian capital market can possibly disrupt the volatility of the stock due to the formation of the stock price change fast or slow.

The results of the research showed that behavior of follower investor is irrational behavior because investors act with the consideration of non-economic aspects, especially the psychological aspects such as emotions, subjectivity, and various other psychological factors that are described in the concept of behavioral finance. Moreover, the irrational investors do not do the fundamental analysis by considering the prospects of industrial sector. It also has been proved that when the market crash, investor who acts as follower investor is the irrational investors, without considering the prospects of the three industrial sectors in BEI.

## **CONCLUSION**

Based on data analysis and discussion of the study, the first conclusion is that, there are indications of follower investor's behavior in the formation of stock's price during a market crash. It means that behavior of follower investor happens very high in Indonesia Capital Market when the market crash. Secondly, it is evident that the behavior of follower investor when the market crash is an irrational behavior. In addition, irrational investors does not do fundamental analysis by considering prospects of industrial sector in decision making.

The limitations in this study, is that this study only look at the indication of the follower investor's behavior in the formation of stock prices, without seeking the impacts of the formation of the stock's price due to the behavior of irrational investors. Thus, the next research could examine whether the behavior of follower investor can influence the situation of the capital market and the results obtained by investors. The second limitation is that this study only observed stock's price when the market crash, then further research can expand the observation indication of by comparing the behavior of follower investor when the market is bearish and bullish.

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