Gambler's Fallacy as Behavioural Bias Of Young Investor

Dian Wijayanti
dian.wijayanti@machung.ac.id
Universitas Ma Chung Malang

Tarsisius Renald Suganda
renald.suganda@machung.ac.id
Universitas Ma Chung Malang

Feni Sufuiana Thewelis
fenisufuiana@gmail.com
Universitas Ma Chung Malang

ABSTRACT

This research aims to identify the behavioural bias of Gambler's Fallacy of young investors in Malang. This research was done by doing a survey method i.e. doing the dissemination of questionnaires to young investors in Malang. The number of samples gained from questionnaires were 108 respondents. questionnaires were assessed using Likert scale and analysed by using non-parametric test: Chi Square Test and Wilcoxon Signed-Rank Test to answer the hypothesis and research questions. The results showed that behavioural bias of Gambler's Fallacy on young investors in Malang when they trade in uptrend and downtrend stock market with an equal probability. Based on the results, this research concluded that in making trading decisions, young investors in Malang are still very influenced by psychological factors and tend to follow their personal intuition. This shows that weak-form efficiency is inefficient.

INTRODUCTION

Capital markets are identified as efficient markets if they can react quickly and accurately to achieve new equilibrium prices that fully reflect the information available. In fact, an efficient market is difficult to occur. New information that appears always has an impact on the high uncertainty and difficulty in interpreting the information. As a result, investors tend to be irrational in making investment decisions. An investor is named to be rational if he has the ability to manage various incoming information perfectly (Djojopranoto and Mahadwartha, 2016).

The growth of IDX Composite was also accompanied by growth in the number of investors in Indonesia. Based on data from the Indonesian Central Securities Depository (KSEI), as of March 2018 the number of investors in Indonesia was 1.21 million Single Investor Identification (SID), growing 36% from the realization in 2016 of 894,116 SID. The number of young investors in the age range of 18-30 years is the biggest SID contributor, which is 30.3% of the total investors. While investors with an age range of 31-40 are 20.05%, 41-50 years are 22.57%, 51-60 years are 14.45% and over 60 years are 8%. The majority of Indonesian capital market investors come from college students, amounting to 52.8%. While investors with high school students as much as 29% and post graduate students only as much as 6.3% (www.tirto.id).

According to Pradikasari and Isbanah (2018), investors with a young age have a higher level of risk tolerance compared to older investors. The older a person is, the more risk averse and more careful in making investment decisions. Investors under the age of 30 will be more courageous in making investment decisions because of the high level of risk tolerance (Evans, 2004). As a result, investors with a young age have a higher level of confidence (overconfidance) in investment decision making. The higher the level of self-confidence, the more often the person trades, while people with low levels of self-confidence will be more careful (Pradikasari and Isbanah, 2018).

In investment decision making, an investor tends to involve emotions and is often influenced by psychological factors. Emotional involvement and psychological factors often make decision making less rational (Elster, 1998). Rationality from an economic point of view can be assessed through a substantive rationality approach. Psychological factors related to substantive rationality are limited to the formulation of goals, the greater an action provides beneficial results for the achievement of a goal, the more rational the action can be said (Simon, 1978).

Behavioural finance is a concept for understanding investor behaviour patterns in decision making (Puspitaningtyas, 2014). When making investment decisions, investors tend to use intuition and feelings rather than gathering enough information (Djojopranoto and Mahadwartha, 2016). Humans often use heuristic patterns in investment decision making because of the limited time and information available (Onsomu, 2014). The heuristic pattern is used because it can help investors to determine investment decisions in a short time and limited information (Ackert and Deaves, 2010). Investment decision making which is only based on heuristic patterns will eventually lead to bias.

Behavioural bias that can influence an investor's decision making is gambler's fallacy, halo effect and familiarity effect (Djojopranoto and Mahadwartha, 2016). According to Odean (1998), an investor will experience gambler's fallacy when making investment decisions the same as when doing gambling. Gambler's fallacy is a false belief, if something happens more often than usual in some time, it will occur less frequently in the future, or if something happens less frequently than usual in some time, then it will be more frequent happen in the future.

In the capital market there are various things that can cause behavioural bias, one of which is market conditions. There is an investor sentiment relationship that depends on the uptrend and downtrend market conditions. This study wants to examine the behaviour bias that occurs in young investors in Malang during the uptrend and downtrend conditions. Investors often behave irrationally in making investment decisions that cause behavioural bias. This research wants to correlate the existence of gambler's fallacy behaviour bias that occurs when market conditions are uptrend or downtrend.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Substantive Rationality

The rationality of human behaviour can be studied from two points of view, namely psychological and economic perspectives. Rationality based on a psychological point of view is created through a procedural rationality approach, while rationality based on an economic point of view is created through a substantive rationality approach. Substantive rationality is an action that is measured from the point of view of achieving goals by noting the limitations that exist. Psychological factors associated with substantive rationality are limited to the formulation of objectives, the greater an action provides beneficial results for the achievement of a goal, the more rational the action (Simon, 1982).

Behavioural Finance

Behavioural finance is a study of how psychological factors can influence individual decision making (Bondt, et al., 2008). Lintner (1998) argues that behavioural finance is a study that studies human interpretations and actions on information to determine investment decisions. Behavioural finance is formed on assumptions made by economic actors. The involvement of traits, emotions, preferences and things inherent in human beings can influence the investment decision making process (Ricciardi and Simon, 2000).

Pompian (2006) divides behavioural finance into two forms, namely behavioural finance macros and behavioural finance micro. Behavioural finance macros detect and describe anomalies that occur in efficient market hypotheses that might be explained by financial behaviour models. Whereas behavioural finance micro examines the behaviour or bias of individual investors that distinguishes it from rational behaviour in classical economic theory. Esther (1998) suggests that in making investment decisions, an investor tends to involve his emotions. Emotional involvement is what makes investors act less rationally in making investment decisions. Irrational investors are usually only guided by instincts, bandwagon, not accustomed to doing analysis, or even believe in mystical things (Natapura, 2009). Irrational decision-making produces irrational or biased results. Behaviour bias then causes errors when predicting random events. According to Djojopranoto and Mahadwartha (2016), the prediction error can be described in the form of behaviour, one of which is gambler's fallacy.

Gambler's fallacy as Behavioural Bias

Gambler's fallacy is the behaviour of investors who predict future events based on information from the past. Investors believe that if something happens more often than usual in some time, it will occur less frequently in the future, or if something happens less frequently than usual in some time, then it will occur more frequently in the future. Thought to interpret these opportunities allows an investor to act irrationally.

Thus, investors will determine their investment decisions based on observations of events from the past. From the results of research conducted by Hopfensitz (2009), there is a bias in the behaviour of gambler's fallacy in investors in making the decision process. In addition, research conducted by Amin, et al., (2009), also found that the behaviour of gambler's fallacy bias can affect investors' decision-making processes in the Pakistani capital market. Events from the past are often a reference for investors to determine their investment decisions. When an investor gets a return several times in the previous period, the investor tends to reduce the level of investment in the future.

During an uptrend, investors with a gambler's fallacy bias will tend to avoid buying shares that have previously experienced price increases with the assumption that in the future periods there will be a greater price decline. Conversely, when a downtrend occurs, investors with a gambler's fallacy bias will tend to buy shares that previously experienced a price decline assuming that in the future periods there will be a greater price increase (Djojopranoto and Mahadwartha, 2016). Based on theoretical studies and some previous research, the appropriate hypothesis for the behavioural bias of gambler's fallacy is as follows.

Ha: Gambler's fallacy behaviour bias occurs in the Indonesian capital market

RESEARCH METHODS

Samples

The population in this study are all domestic investors in the Indonesian capital market. The sample used is taken from populations that meet the following criteria.
1. Indonesian capital market domestic investors domiciled in Malang.
2. Respondents are young investors with age ranges between 18-30 years.
3. Trade at least three times a week and have been actively trading in the past week.

Make your own decisions without the help of brokers when trading. Respondents are said to make their own decisions when decisions are based on information sought by themselves or information obtained from investor groups, emails or suggestions from brokers on behalf of shares. While respondents are said to take decisions with the help of brokers is when in trading, transactions that occur are executed by the broker directly.

Variable Definition

The data collection technique in this study was a survey using a questionnaire. The instruments in this study use a Likert scale that contains five levels of answer preference with the choice of scale used is Strongly Disagree (STS), Disagree (TS), Doubtful (R), Agree (S) and Strongly Agree (SS). Likert scale is used to measure the responses of respondents to see how strongly the respondents agree and disagree with the questions given so that it makes it easier for the writer to analyse the answers of respondents in quantitative terms (Sekaran and Bougie, 2017).

There are 4 statement items in the questionnaire that researchers used in this study to identify Gamble's Fallacy behaviour bias. The four statements are further divided into two statements regarding the uptrend and downtrend conditions that occur in the capital market. Each condition has two types of statements, the first statement about the condition of an uptrend with a positive sentence (a statement that states that the respondent experiences behavioural bias if he agrees to the statement) and a statement with a negative sentence (sentence statement stating that the respondent did not experience behaviour bias if agreed towards the statement). Second, statements about

downtrend conditions are also grouped into statements with positive and negative sentences. Statements with positive sentences will be given a value of 5 for the Strongly Agree (SS) answer and 1 for the Strongly Disagree answer (STS). While statements with negative sentences will be given 1 for the Strongly Agree (SS) answer and 5 for the Strongly Disagree answer (STS).

Data Analysis Technique

One Sample Test t-Test is used to test whether a certain value used as a comparison is significantly different or not with the average of a sample. The particular value here is generally a parameter value for measuring population (Santoso, 2014). This test is used to test the average value of each statement that is able to provide the intended outcome. If the data are not normally distributed, the One Sample t-Test parametric statistical test is replaced with a non-parametric statistical test, the Chi Square Test. This Chi Square Test has the same usefulness and basis for decision making as the One Sample t-Test, if the Asymp value. Sig. less than 0.05, the statement in the questionnaire can provide the intended outcome.

Paired Sample t-Test

Paired Sample Test t-Test is used to test two pairs of samples whether they have a significantly different average or not. Paired sample is a sample with the same subject but undergoes two different treatments or measurements. This test is used to compare statements with positive sentences and statements with negative sentences to see the consistency of respondents in filling out questionnaires with different sentences. If the Sig. less than 0.05 means that there are significant differences between statements with positive and negative sentences. This means that the respondent did not answer the statement consistently. Conversely, if the value of Sig. greater than 0.05 means there is no significant difference between statements with positive and negative sentences. This means that the respondent has consistently answered the statement. In addition, this test is also used to compare statements with uptrend and downtrend conditions. If the Sig. less than 0.05 means that there are significant differences in the uptrend and downtrend conditions which indicate that the behaviour bias occurs is greater in one of the conditions namely uptrend or downtrend. Conversely, if the value of Sig. greater than 0.05 means that there are no significant differences in the uptrend and downtrend conditions which indicate that the behaviour bias occurs equally at the uptrend and downtrend conditions. If the data is not normally distributed, the Paired Sample t-Test parametric statistical test is replaced by a non-parametric statistical test, the Wilcoxon Rank Sum Test. Wilcoxon Rank Sum Test This test has the same usefulness and basis for decision making as the Paired Sample t-Test, if the Asymp value. Sig. (2-tailed) is less than 0.05, it means that there is a significant difference and if the Asymp value. Sig. (2-tailed) greater than 0.05 means that there are significant differences.

RESULT

Before distributing the questionnaire, a pilot test is carried out to ensure that the questionnaire is valid and reliable. Distributing questionnaires to conduct a pilot test is done online by distributing questionnaire links to alumni and students of Ma Chung University who already have a stock account. The distribution was carried out in January 2019 with 40 incoming data. The process of collection, collection and pilot testing is completed on January 27, 2019.

Description of Respondent Demographics
After the pilot test is conducted as an initial test of the questionnaire, then the valid and reliable questionnaire is distributed to young investors in the city of Malang, both online and physical. Questionnaires were distributed for 34 days, starting from February 1, 2019 to March 6, 2019. Questionnaires were distributed as many as 250 questionnaires and 201 respondents obtained (80.4%), while questionnaires filled in online were 67 respondents. Respondent data collected was then selected based on research inclusion criteria and data that can be used as many as 85 (42.28%) data from physical questionnaires and 23 (34.32%) data from online questionnaires, so that the data used in this study were 108 respondents.

Table 1. Description of Respondent Demographics

Gender	Quantity	Percentage	Experiences	Quantity	Percentage
			<1	34	58,62%
			1—3	16	27,59%
Male	58	53,70%			
			3—5	5	8,62%
			>5	3	5,17%
			<1	35	70%
			1—3	12	24%
Female	50	46,30			
			3—5	3	6%
			>5	0	0%
Total	108	100%	Total	108	100%

Resource: data processed

Based on table 1 the number of male respondents in this study is greater when compared to the number of female respondents. The number of male respondents is 58 people (53.70%), while the number of female respondents is 50 people (46.30%). Bogan et al., (2013) found an association between gender diversity and investment decision behaviour which states that the presence of male investors in an investment group increases the likelihood of choosing investments with higher risk. Tauni et al., (2017) in their research also found that male investors would trade more often than female investors.

Uji Chi Square Test
Chi Square Test is used to replace the One Sample t-Test with the aim to test whether each statement in the questionnaire can provide the intended outcome. Chi Square Test results are as follows.

Table 2. *Chi Square Test*

Variable	N	Chi-Square Value	Asymp sig.
GF *Uptrend* Positive	108	62,296	0,000
GF *Uptrend* Negative	108	57,926	0,000
GF *Downtrend* Positive	108	102,185	0,000
GF *Downtrend* Negative	108	78,296	0,000

Resource: data processed

This Chi Square test confirms the qualitative analysis that has been done before. Based on table 2 above, the value of Asymp sig. (2-tailed) of all statement items in the questionnaire is less than 0.05. These results indicate that of the 12 items of statement answered by respondents have been able to provide the outcome that should be. From these results it has also answered the research hypothesis that respondents experienced a bias of Gambler's Fallacy behaviour in the uptrend and also downtrend conditions.

DISCUSSION

In testing hypothesis 1, the Asymp value. Sig. the Gambler's Fallacy variable in the Chi Square Test is 0,000. The probability value is smaller than 0.05, so it can be said that Ha is accepted and H0 is rejected, which means that the Gambler's Fallacy behaviour bias occurs on the respondent. This is also supported by the analysis of the frequency of respondents' answers which tend to choose to agree on a positive statement and disagree on a negative statement. Consistency of respondents in answering statements with different sentences is reinforced by the existence of the Wilcoxon Rank Sum Test. Asymp Value Sig. (2-tailed) from the Wilcoxon Rank Sum Test Model 1 test is 0.204 for uptrend conditions and 0.768 for downtrend conditions. The probability value is greater than 0.05, so it can be said that there is no difference between positive and negative statements or in other words the respondents in this study have answered the statement consistently.

Table 3. *Wilcoxon Rank Sum Test* Model 1

Variable	N	Z	Asymp sig. (2- tailed)
GF *Uptrend* Positive dan Negative	108	-1,271	0,204
GF *Downtrend* Positive dan Negative	108	-0,295	0,768

Gambler's Fallacy's behaviour bias influences respondents' decision making in investing in uptrend and downtrend conditions. This can be seen from the Asymp value. Sig. (2-tailed) from the Wilcoxon Rank Sum Test Model 2 test is 0.819. The probability value is greater than 0.05, so it can be said that there is no difference between the uptrend or downtrend conditions or in other words the Gambler's Fallacy behaviour bias occurs in two conditions namely uptrend and downtrend. The results of this study differ from studies conducted by Djojopranoto and Mahadwartha (2016) who found that Gambler's Fallacy behaviour bias only occurs in an uptrend.

Table 4. *Wilcoxon Rank Sum Test* Model 2

Variable	Z	Asymp sig. (2- tailed)
GF *Uptrend* dan *Downtrend*	-0,299	0,819

Behavioural bias occurs in two conditions because during an uptrend, investors are more confident in trading because share prices will tend to rise gradually. In addition, according to Djojopranoto and Mahadwartha (2016), Gambler's Fallacy behaviour bias occurs during an uptrend because investors tend to avoid risk based on profits that have been obtained several times before. As a result, investors will be more careful and reduce their investment with the belief that if in some previous periods have experienced profits, then the possibility to get losses in the future will be greater. Conversely, during a downtrend, stock prices will decline dramatically, and investors will suffer losses. Gambler's Fallacy behaviour bias occurs during downtrend conditions because investors will be more risk-seekers with the belief that if some previous periods have suffered losses, the probability of getting profits in the future will be greater. This is what makes investors less rational in making investment decisions that cause Gambler's Fallacy. Besides that, younger investors are also more willing to take risks compared to older ages. This is what makes the results of this study different from the results obtained by Djojopranoto and Mahadwartha (2016).

CONCLUSION

This research is a behavioural finance research that aims to identify Gambler's Fallacy behaviour bias on young investors in Malang. The data used are primary data taken directly from respondents by distributing questionnaires in physical and online form. Based on the results of tests conducted, it was found that the bias behaviour of Gambler's Fallacy occurs in young investors in Malang in the uptrend and downtrend conditions with equal probability. The results of this study indicate that in making trading decisions, young investors in Malang are still strongly influenced by psychological factors and tend to follow personal intuition. This indicates that young investors in Malang are irrational investors.

This research is in line with the concept of behavioural finance which states that in investment decision making, individuals are often influenced by psychological factors (Bondt, et al., 2008). Elster (1998) suggests that in making investment decisions, an investor tends to involve his emotions. Emotional involvement is what makes investors act less rationally which in turn will lead to behaviour bias in investors. The results of this study provide implications that indicate the existence of Gambler's Fallacy's behavioural bias towards young investors in Malang. This shows that young investors in Malang are irrational investors because in investment decision making, investors are still strongly influenced by psychological factors and are also more inclined to follow personal intuition. This irrationality can be used by more rational investors to get returns. Rational investors can get abnormal returns by trading on stocks that have a different probability of rising or decreasing than before.

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