# How Irrationality Works in Indonesia:
# A Case of Fake Investment

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Keywords: Optimism Bias, Overconfidence, Representativeness Bias, Confirmation Bias, Framing, Herding, Ponzi Scheme, Investment Decision.

Abstract: In the conventional economic perspective, people or investors are assumed to behave rationally when choosing investment alternatives to maximize their profits. Shiller (2000) showed that the Ponzi scheme is a form of irrational exuberance in which people or investors act irrationally. This study was aimed to investigate the impact of psychological biases (optimism bias, overconfidence, representativeness bias, confirmation bias, framing, and herding) to investors' decisions to get involved in a Ponzi scheme. Regression analysis was employed to see the impact of these biases on the investment decisions. Data was collected through questionnaire from 38 investors (victims) who lived in several rural areas in Yogyakarta. The results of this study revealed that optimism bias, overconfidence, representativeness bias, confirmation bias, framing, and herding behavior have significant impact on investment decisions. However this study still has some limitations and needs further research.

## 1 INTRODUCTION

In the conventional economic perspective, people or investors are assumed to behave rationally when choosing investment alternatives to maximize their profits. However, several studies noticed that human decisions often depend on their nature, intuitions, and habits, which formed their behavioral biases, and in the financial context, these biases could lead them to engage in financial frauds (Lewis, 2012, 296). According to Alan Greenspan, former Chairman of the Federal Reserve, someone who get involved in a financial fraud has 'the foolish act.' Greenspan (2009, p. 22) defined *the foolish act* as "an act where someone goes ahead with a socially or physically risky behavior in spite of danger signs, or unresolved questions which should have been a source of concern for the actor."

Reurink (2016, 7) has divided financial fraud into three categories: *financial statement fraud, investment scams (cons/swindles),* and *fraudulent financial mis-selling*. Investment scams are different from financial statement frauds in which scams are built on visible lies and completely fabricated facts. A lot of scholars often use terms such as 'investment frauds,' 'Ponzi scheme,' and 'consumer scams' to depict investment scams. Shiller (2000) showed that

the Ponzi scheme is a form of *irrational exuberance* in which people or investors act irrationally. *A Ponzi scheme* is a fake investment scheme that offers abnormaly high returns to investors providing that these returns are not from actual investments or products sales but by paying out the principal of other investors (Gornall, 2010, 3). Royal Canadian Mounted Police (RCMP) has identified some characteristics of a Ponzi scheme that will differentiate this scheme from a legal investment plan: high-pressure sales tactics, closed-door (secretive) information sessions and/or promotion meetings, emphasis on recruitment rather than the sale of a product or service, very high-yield return within a short period of time, vague or non-specific explanations as to the core nature of the business and exactly how it makes money, and word-of-mouth referrals (www.rcmp-grc.gc.ca/scams-fraudes).

This kind of financial fraud was named after Charles Ponzi for his swindle in 1920 which defrauded investors up to $15 million at that time. During 2008-2013 there are more than 500 types of Ponzi schemes in the U.S. which have collected funds of more than $50 bilion from investors (victims). One of the biggest frauds was done by Bernard L. Madoff Investment Securities (BMIS), which was regulated by the Securities and Exchange

Commission (SEC) as a Registered Investment Adviser (RIA). To keep this scheme working, the schemer (promoter) will always looks for new investors (victims) to ensure a steady cash inflow to fund the schemer's lifestyle and expenses from that scheme.

In 2014, Otoritas Jasa Keuangan (OJK) Indonesia (*Indonesia Financial Services Authority*) has reported huge financial losses of Rp45 trillion due to the fake investments, and these losses are estimated to grow on the following years. Several business formats or companies which have organized Ponzi schemes are Dua Belas Suku, Dream for Freedom, Panen Mas, Raihan Jewellery, Lautan Emas Mulia, Golden Traders Indonesia Syariah, Bina Sinar Sejahtera dan Virgin Gold Mining Corporation. We can also find these kind of scams on the internet which are classified as *High Yield Investment Programs* (HYIPs). HYIPs usually come with the attractive websites that promise very high return to investors who are willing to invest their funds into the HYIP providers. Data from Google Trends (January 2004-January 2017) showed that people are most likely to find HYIP providers in Nigeria, Indonesia, Malaysia, Pakistan, Philippines, South Africa, and Ukraine.

The main purpose of this study was to identify the factors that are influencing investors to get involved in the fake investment in Indonesia. As there are limited studies about behavioral finance in Indonesia, this study was expected to contribute significantly to development within this field.

## 2 LITERATURE REVIEW

There are some psychological factors that predispose a person to invest in this kind of scheme: optimism bias, overconfidence, representatives bias, confirmation bias, framing, and herding.

*Optimism bias* is a person's tendency to overestimate the probability that good things will happen and underestimate the potential for unpleasant events. In the stock market, most investors tend to be overly optimistic about the markets, the economy, and the potential for positive performance of the investments they make (Pompian, 2006, p. 63). Then we propose the first hypothesis ($H_1$) as *optimism bias influences investment decisions.*

People who have *overconfidence* tend to follow their intuition and ignore some potential risks behind the Ponzi schemes. Camerer and Lovallo (1999) found that high risk investment instruments are most likely to be learnt and conducted by overconfidence investors. People who read a lot of books, read numerous investment articles on the internet, and even get a tip from a financial advisor often overestimate their own predictive abilities and the precision of the information they've been given to make an investment decision. They were sure that certain things will happen to them based on their perceived knowledge and abilities (Pompian, 2006, 51). According to Shiller (1998), most active traders believe that they know much more than others do, and they, in turn, become overconfident and will trade their stocks excessively. Pressman (1998) stated that the main factor that drives investors to fall down into financial fraud is overconfidence. He also underlined that success of a Ponzi scheme was contributed to by asymmetric information available to investors when confronted with uncertainty or risky situations. Based on these statements above, we propose the second hyphotesis ($H_2$) as *overconfidence bias influences investment decisions.*

The *representativeness bias* happened to investors (victims) because of analogical reasoning: judging events and processes by their similarity to other events and processes (Baddeley, 2015, 903). Johnson (2002) said that the interpretation of new information may use heuristic rules or stereotyping. Some people who have received the return from an investment scheme will be considered representative of the conditions that will be experienced by all investors. New members of a fake investment tend to believe that this investment deals with 'the law of small numbers,' an assumption that small samples truly represent the whole populations (Pompian, 2006, 63). The we propose the third hypothesis ($H_3$) as *representativeness bias influences the investment decisions.*

Representatives bias then bring up *confirmation bias*, the tendency of a person to seek information to support his opinion or rule out information that does not support his opinion. Several studies proved that people tend to put more emphasis on confirmatory information, that is, positive or supportive data (Pompian, 2006, 189). We propose the fourth hypothesis ($H_4$) as *confirmation bias influences investment decisions.*

*Framing* is a tendency to make decisions based on the information presented. A decision frame will influence someone's conception of the acts, outcomes, and contingencies associated with a particular choice (Pompian, 2006, 237). A Ponzi scheme is often presented in a positive tone, and provide good information to potential investors (victims). Many Ponzi schemes were informed in

visible ways, e.g., through a website or mass media like newspapers. In everyday life, framing bias can influence a loss aversion feeling, and vice versa. Suppose that a person has suffered losses, or felt 'broke', he/she would likely to seek risk with his/her investments, but someone who has already gained are more likely to invest in a sure thing. For our fifth hyphotesis ($H_5$), we propose *framing bias influences the investment decisions*.

Another bias is *herding behavior*: a person who follows others or mimics the behavior of groups in making his decisions rather than decide for him/herself. Hong *et al.* (2008) found that mutual fund managers are more likely to buy stocks that other managers in the same area are buying, which means that social interaction among them would create a powerful word-of-mouth effect while selecting and choosing stocks for their portfolios. The number of people in the neighborhood who have already joined illegal investments will persuade someone to join because he/she would be a part of the 'successful people.' Then the Ponzi schemers will build '*false-trust*' to persuade participants who are more likely to trust them. Fairfax (2001, 70) noted that someone will pay more attention and get attracted to somebody else if both of them are close and have frequent contact with each other, sometimes share values and tastes, and decide to build an *affinity link*. According to Deason *et al.* (2015), common religion is one of the most common reason for people to join in the affinity links. These links will be used by the schemers to persuade others to engage in less-than intelligent ventures with their emphasis on: (1) *reciprocation* (people tend to help others for returning a favor); (2) *commitment and consistency* (people tend to honor their commitments); (3) *social proof* (people tend to follow the lead of others they trust); (4) *authority* (people tend to obey authority figures), and *liking* (people can be persuaded by individuals they like) (Jacobs & Schain, 2011, 42). Previously Granovetter (1985, 491) reminded that "the trust engendered by personal relations presents, by its very existence, enhanced opportunity for malfeasance. " We propose the sixth hypothesis ($H_6$) as *herding bias influences investment decisions.*

# 3 RESEARCH METHODOLOGY

## 3.1 Sampling and Questionnaire

We did a field research on the 42 investors (victims) who lived in some rural areas in Yogyakarta,

Indonesia during September 2016-January 2017. 38 of them agreed to answer every question that we asked to in our questionnaire, and they were also interviewed by us. There are two objectives of asking questions in our study: (1) to indicate their level of agreement with some statements using Likert scale (*strongly agree, agree, neutral/neither agree or disagree, disagree,* and *strongly disagree*), and (2) to indicate their opinion about an investment scam using completely unstructured question (*What is your opinion about the investment scam?*). For operationalization of the independent variables, we have scored answers on the ordinal data with the following criteria: strongly agree = 5, agree = 4, neutral = 3, disagree =2, and strongly disagree = 1.

We developed our questionnaire based on the study of Athur (2014) with some modification. In his study, Athur analyzed behavioural financial factors, both cognitive and emotional factors, and their effects on stock investment decisions by individual investors. Our study emphasized phenomenon on the financial fraud, not stock market, so we need to modify some questions and/or statements in his work so that it would fit into our study.

## 3.2 Data Validity and Reliability

Before we conducted the research, we did a pretest for our questionnaire to selected samples. This pretest was done to ensure the relevance of the items to the study and to test the validity and reliability of the instruments. To ensure the reliability of the instruments, we used the Cronbach alpha measure, and the results are as follows: optimism bias: .678; overconfidence bias: .753; representativeness bias: .621; confirmation bias: .791; framing bias: .724, and herding bias: .778. We can conclude that all instruments meet the recommended values (>.5) (Widodo, 2006).

## 3.3 Regression Equation

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad (1)$$

**Notes**: Y: *the dependent variable*, represents the investor decision to get involve in a fake investment; $\alpha$: *the constant (intercept)*; $\beta_1 X_1 \ldots \ldots X_n$: *the predictors*; $\varepsilon$: *the error term*; $X_1$: *optimism bias*; $X_2$: *overconfidence bias*; $X_3$: *representativeness bias*; $X_4$: *confirmation bias;* $X_5$: *framing bias,* and $X_6$: *herding behavior*.

Regression analysis was done using *Statistical Packages for Social Scientists* (SPSS). The $\beta$ coefficients represent the strength and direction of the relationship between the independent ($X_n$) and

dependent (Y) variables. Assuming that the error term in the linear regression model is independent of x, and is normally distributed, with zero mean and constant variance, by testing the null hypothesis that β = 0, it will be realized that there is a significant relationship between x and y, at a 0.1 significance level.

# 4 DATA ANALYSIS AND FINDINGS

## 4.1 Descriptive Statistics

Our respondents has been grouped into the following categories, age 20-25 years old: 5 respondents (13.2%); 26-30 years old: 8 respondents (21.1%); 31-35 years old: 12 respondents (31.6%); 36-40 years old: 9 respondents (23.7%), and above 40 years old: 4 respondents (10.5%). Respondents of this study accounted of male (M): 29 respondents (76.3%), and female (F): 9 respondents (23.7%). From this study we found their highest degree of education: graduate from High School: 1 respondent (2.6%); Bachelor: 24 respondents (63.2%); Master: 12 respondents (31.6%), and Doctor/PhD: 1 respondent (2.6%).

The respondents were asked to indicate what encouraged them to purchase their investments. From our study we found that the respondents were encouraged by their friends: 36 respondents (95%), and by themselves: 2 respondents (5%). When the respondents were asked what the purpose of their investment was, we found their purpose on investment was to achieve financial freedom: 19 respondents (50%); to receive additional income: 8 respondents (21%); to have growth in income: 8 respondents (21%), and to satisfy their curiosity: 3 respondents (8%). Finally, the respondents were asked to indicate what duration they would like their investment to be, and we found that they would like their investment to be maximum 6 months: 11 respondents (29%); between 6 months to one year: 15 respondents (39%), and more than one year: 12 respondents (32%).

## 4.2 Some Findings

### 4.2.1 Analysis of Investment Decision

In this study, we used the investor annual expected return as a dependent variable. The respondents were asked what their annual expected return from

their investment would be. We classified the expected return based on the work of Athur (2014). From our study, we found that their annual return would be expected to be: between 5% and 10%: 3 respondents (8%); between 11% and 15%: 3 respondents (8%); between 16% and 20%: 15 respondents (39%), and above 20%: 17 respondents (45%).

### 4.2.2 Analysis of Irrational Aspects

Table 1: The Result of Regression Analysis.

| Model | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. |
| (Constant) | 4.339 | .319 | | 13.592 | 000 |
| Optimism bias | .288 | 168 | .297 | .714 | .095 |
| Overconfidence bias | .189 | .088 | .241 | 2.157 | .034 |
| Representativeness bias | .044 | .074 | .078 | .589 | .552 |
| Confirmation bias | .144 | .086 | .218 | 1.677 | .099 |
| Framing bias | .149 | .077 | .198 | 1.939 | .055 |
| Herding bias | .021 | .257 | .006 | .022 | .938 |

*Note: dependent variable: investment decisions*

The following is the regression equation:

$$Y = 4.339 + .288 X_1 + .189 X_2 + .044 X_3 + .144 X_4 + .149 X_5 + .021 X_6 \qquad (2)$$

### 4.2.3 Hypotheses Testing

Table 2: Hypotheses Testing and Their Results.

| No | Null Hypothesis | Statement/Question | Sig. | Result |
|---|---|---|---|---|
| H₁ | Optimism bias influences the investment decisions | *I believe that bad investment will not happen to me* | .095 | *Supported* |
| H₂ | Overconfidence bias influences the investment decisions | *When it comes to trust my judgments, I can usually rely on my intuitive feelings* | .034 | *Supported* |

Table 2: Hypotheses Testing and Their Results. (cont.)

| No | Null Hypothesis | Statement/Question | Sig. | Result |
|----|-----------------|--------------------|------|--------|
| H₃ | Representativeness bias influences the investment decisions | *I believe that past history influences present investment decisions* | .552 | *Supported* |
| H₄ | Confirmation bias influences the investment decisions | *I believe in making my investments because I have informed about all the fundamentals of the company* | .099 | *Supported* |
| H₅ | Framing bias influences the investment decisions | *The previous returns generated by the company made it very attractive to me to invest in it* | .055 | *Supported* |
| H₆ | Herding bias influences the investment decisions | *I follow an investment because of a person that I know or I like has joined this investment* | .983 | *Supported* |

*\*Note: significance level: .1 (10%)*

### 4.2.4 Model Summary

Table 3: Model Summary.

| Model | R | R Square | Adjusted R Square | Std Error of the Estimate |
|-------|------|----------|-------------------|---------------------------|
| 1 | .589 | .345 | .48 | 987.5444 |

*\*Notes: predictors: Constant, Optimism Bias, Overconfidence Bias, Representativeness Bias, Confirmation Bias, Framing Bias, and Herding Bias.*

A multiple regression analysis of the influence of psychological biases in the investor decisions was made to determine the extent to which such biases explained the investment decisions. Output of SPSS shows that the $R^2 = .345$ which means that 34.5% of the variance in investment decisions was explained by the regression model.

## 5 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

This study was aimed to investigate the impact of psychological biases (optimism bias, overconfidence, representativeness bias, confirmation bias, framing, and herding) towards investor's decisions in getting involved in a Ponzi scheme. Regression analysis was employed to see the impact of these biases on the investment decisions. Data was collected through a questionnaire given to 38 investors (victims) who lived in several rural areas in Yogyakarta. The results of this study revealed that optimism bias, overconfidence, representativeness bias, confirmation bias, framing, and herding behavior have significant impact on investment decisions. In other words, people who are getting involved in a kind of investment scam i.e. Ponzi scheme has no doubt acted irrationally, both logically and emotionally.

### 5.2 Suggestions

We are still continuing this study to gain deeper insights on the Ponzi scheme. We realize that our study still has some limitations. *First*, the sample used in our study is too small for generalization of results. For the upcoming research we need to include more respondents and also investigate other psychological biases and their impacts towards investment decisions. *Second*, we do not treat male respondents and female respondents differently. *Third*, we do not specifically describe cultural impacts on the investor decisions. *Fourth*, since the author has limited time and costs to do this study, results of this study tend to look too simplistic, and insufficient to give more insights about investment scams in Indonesia to the readers. However, we hope this study provides a threshold for upcoming researchers to investigate investment scam practices, as well as provide views on psychological and cultural aspects on investor decision making in Indonesia.

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