

## **Overconfidence, Attitude Toward Risk, and Financial Literacy: A Case in Indonesia Stock Exchange**

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— *Review of* —  
**Integrative  
Business &  
Economics**  
— *Research* —

### **ABSTRACT**

Overconfidence is a condition where a person overestimates of the completeness of his knowledge or the precision of the private information he has or the truth of the interpretation he does. In behavioral finance, overconfidence is assumed to be one of the reasons why there have been a number of anomalies in the capital market. At first, overconfidence was seen as something bad, but recent studies have shown that overconfidence is beneficial. Overconfidence makes stock trading more active and stock market value more reflects the performance of the issuing company. This study aims to investigate the factors that influence overconfidence. The three factors investigated are; investor attitude to risk, investor knowledge of company performance, and investor knowledge of macroeconomic conditions. The last two factors reflect the financial literacy of investors. By using 133 stock investors who are trading in the Capital Market Gallery of the Indonesian Islamic University of Yogyakarta as a respondent, this study found that investor attitudes towards risk have a positive effect on overconfidence. Meanwhile, investor knowledge about company performance and macroeconomic conditions have no effect on the attitude of overconfidence. This research is expected to contribute to the study of behavioral finance in emerging capital markets, especially studies related to the behavior of overconfidence.

Keywords: Overconfidence, Attitude toward Risk, Financial Literacy

### **1. INTRODUCTION**

The basic assumption in conventional financial theory is that investors are rational, meaning they will make decisions based on the information they have in a rational way. However, in practice, it is found that investors also use their emotions and psychology in deciding their investments so that they emerge unpredictable or irrational behavior. The financial theory that addresses such behavior is called behavioral finance. This theory tries to combine conventional financial theory with the psychological theory to explain why investors behave irrationally.

In the theory of behavioral finance, it is explained that there are at least 8 (eight) possible reasons why an investor behaves irrationally. The eight causes are anchoring, mental accounting, confirmation and hindsight bias, gambler's fallacy, herd behavior, overreaction, prospect theory, and overconfidence. This irrational behavior is prone to be used by other

investors to make trading manipulation as found by Riyanto and Arifin (2018). In this study, we focused on the problem of overconfidence.

Overconfidence is a condition where the person overestimates the completeness of his knowledge or the precision of the private information he does. Overconfidence is often detrimental. The distinction between the two is often difficult to assess; confidence suggests a realistic trust in one's abilities, while overconfidence implies an overly optimistic assessment of one's knowledge.

Overconfidence is considered to be detrimental to investors in the long run. Odean (1998) found that investors with overconfidence tend to increase transaction volume and market depth, but the expected utility decreases. Overconfidence investors tend to react to information that is still somewhat vague but less reacting to information that is valid.

Based on extensive psychological evidence, Daniel, Hirshleifer, and Subrahmanyam (2001) have a premise that some investors are overconfident about their abilities, and hence overestimate the quality of signal information they have generated about security values. The exploited individuals' pricing for the errors of introduced individuals, but do not eliminate all mispricing causes of risk aversion.

Overconfidence behavior is found in many capital markets. Grinblatt and Keloharju (2009) found that there was overconfidence in developed country capital markets while Boussaidi (2013) found that there was overconfidence in emerging capital markets. What's interesting is that a number of studies have found that overconfidence is beneficial. Wang (2001) found that underconfidence cannot survive, but moderate overconfidence or optimism can survive and dominate events, particularly when the fundamental risk is large. Meanwhile, Gervais, Heaton, and Odean (2001) found that overconfident managers are also more attractive to firms than their rational counterparts because of their confidence in their efforts to learn about projects.

If overconfidence has a good side, it becomes important to know what factors influence overconfidence so that the behavior of this overconfidence can be maintained. In fact, if overconfidence is a detrimental behavior, identification of factors that affect overconfidence is also important so that overconfidence can be reduced. Based on these arguments, this study tries to identify factors that influence overconfidence. There are three factors that we examine, namely; investor attitude to risk, investor literacy on company performance, and investor literacy on macroeconomic conditions.

## **2. LITERATURE REVIEW**

### ***Overconfidence***

According to Skala (2008), the term "overconfidence" has been widely used in psychology starting from the 1960s. Overconfidence in psychology is most closely related to the calibration and probability judgment research and the term itself is frequently equaled with one of the forms of miscalibration. The most important extensions to this definition scope, usually applied by economists, are studies of overconfidence in the context of positive illusions, i.e. the better-than-average effect and unrealistic optimism. Meanwhile, still

according to Skala (2008), economists started implementing psychological findings into economic models starting in the 1970s, but the most rapid development of that trend began in the 1990s. Since then, overconfidence has also become a field of interest for economists, mainly related to the behavior on financial markets.

Skala (2008) defined Overconfidence as an overestimation of one's knowledge or precision of private information, or the interpretation thereof. Alternatively, an underestimation of a variance of signals or volatility of asset values is also considered. Russo and Schoemaker, (2016), said that overconfidence is the belief that we have more knowledge or skill than we actually possess in a particular domain or task. It is one of the most pervasive and seductive illusions.

According to Moore and Healy, (2008), overconfidence commonly appears in three distinct forms. First, Misestimation. This form of overconfidence occurs when people incorrectly estimate quantities, usually in predictable ways. Secondly, Misplacement. This form of overconfidence relates to relative comparisons. It reflects that people usually place themselves too highly when comparing themselves to others. Thirdly, Misprediction. This is the belief that we are able to predict or estimate quantities more accurately than is actually the case.

Russo and Schoemaker (2016) identified 4(four) causes of overconfidence. *First*, Cognitive. Cognitive difficulties fall into two broad categories. The first is failures of imagination, especially not recognizing the myriad paths to different futures. The second is selective attention when one aspect of the issue, for example, one option, argument or attribute, drives the prediction. Such a biased focus is often accompanied by a selective search for information that supports rather than challenges the dominant belief (a form of confirmation bias).

*Secondly*, Motivational. Believing that we are more knowledgeable or capable than we really are can satisfy several goals. In groups, conveying (over)confidence can enhance our relative status by making 'the individual appear competent to others'. Turning from the social to the individual, overconfidence may help to maintain a positive attitude. It is often said that 'you can if you think you can' and that you can't if you think you can'.

*Thirdly*, Physiological. Alcohol, drugs, and mood are physiological phenomena that can affect many kinds of judgments, including confidence. There are many other physiological effects associated with mood, such as euphoria due to past successes. A mood has a much larger influence on our judgments than most people realize, precisely because its effect on our thoughts and actions is often unrecognized. *Fourthly*, Environmental. The external environment may reward overconfidence. In a business meeting, the manager who begins with 'I'm not sure; there are many complexities here' may get less attention than the colleague who says, 'I'm certain what to do and here's how we can do it'.

Overconfidence is considered to be detrimental to investors in the long run. Odean (1998) found that investors with overconfidence tend to increase transaction volume and market depth, but the expected utility decreases. Meanwhile, Jlassi, Naoui, and Mansour, (2014), find that overconfidence is the incentive that is triggered and prolonged the global market crisis in the US market and other continents. They also found that overconfidence still exists during the recession period, but at different levels.

However, a number of studies have found that overconfidence is beneficial. Wang (2001) found that underconfidence cannot survive, but moderate overconfidence or optimism can survive and dominate events, particularly when the fundamental risk is large. Meanwhile, Gervais, Heaton, and Odean (2001) found that overconfident managers are also more attractive to firms than their rational counterparts because of their confidence in their efforts to learn about projects. Culakova, Kotrus, Uhlirova, and Jirasek, (2017) also found that overconfident CEOs are more willing to support a higher number of innovations.

### ***Overconfidence and Attitude toward Risk***

Logically, attitude toward risk influences the attitude of overconfidence. Risk seekers should have a tendency to overconfidence compared to risk-averse investors. Nasic and Weber (2010) found that overconfidence, or more precisely, miscalibration, had an impact on risk behavior. The more investors overconfidence, the more they dare to take risks. Indeed, risk-taking is not only influenced by overconfidence but also by perceived return, risk attitude, and risk perception. So, in the model Nasic and Weber (2010), risk attitude and overconfidence are factors that influence risk-taking. The findings of Nasic and Weber (2010) are in line with the findings of Campbell, Goodie, and Foster (2004) who found that participants are increasingly willing to accept risk with increasing confidence.

Does the risk attitude correlate with overconfidence? Logically, as outlined above, risk attitude correlates with overconfidence. When referring to the overconfidence category of Russo and Schoemaker (2016), the risk attitude is categorized as cognitive error associated with confirmation bias. People who are risk seekers tend to make quick decisions without needing a lot of confirmation. Based on these arguments, the authors propose the hypothesis:

H1: Attitude toward risk has a positive effect on overconfidence

### ***Overconfidence and Financial Literacy***

Someone who has a better literacy about something will definitely be more confident to decide something about it. In the context of investment in the capital market, investors who understand more about the company's fundamental factors and also the economic conditions, they will be more confident when deciding to buy or sell a stock. However, the level of financial literacy does not lead investors to become overconfidence.

Kramer (2016) found that overconfidence in financial literacy made an investor reluctant to seek financial advice. However, objective measures of financial literacy are not related to reluctance or the desire to seek financial advice. The Porto and Xiao (2016) study is also in line with Kramer (2016). They define financial literacy overconfidence as the gap between consumers' subjective and objective financial knowledge. Overconfidence investors tend not to seek financial advice professionals when it comes to investing in the capital market but tend to seek advice when it comes to debt and tax planning.

By using Kramer's (2016) findings that investor overconfidence on financial literacy has a negative effect on the search for financial advice and objective measures of financial literacy does not affect financial advice searches, it can be concluded that the objective

measures of financial literacy do not encourage investors to become overconfidence. Financial literacy will only make investors confidence, it will not make investors overconfidence. Based on these arguments, the authors propose a hypothesis

H2: Financial literacy has a negative effect on overconfidence

### 3. RESEARCH METHOD

This study uses a sample of stock investors who transact through the Capital Market Gallery of the Islamic University of Indonesia in Yogyakarta. There were 133 stock investors who were respondents in this study. The majority of respondents are stock investors who are still students at the Faculty of Economics, Islamic University of Indonesia.

There are three variables used in this study, namely; overconfidence, attitude toward risk, and financial literacy. Overconfidence is measured by how confident investors are in the following four things, namely; confidence in the adequacy of knowledge held about shares, confidence in the ability to analyze stocks, confidence in the success of stock investments, and confidence in the accuracy in choosing shares.

Attitude to risk is measured by how dare investors take risks. The indicators used are four, namely; the courage to choose a risky investment, the courage to use debt in funding investments, the attitude towards the trade-off between returns and risks, and attitude towards the relationship between risk and loss.

Financial literacy is grouped into two variables. First, literacy on the performance of the company issuing shares. This includes the knowledge of investors about the company's performance and whether they use that knowledge as a basis for analysis to decide on buying or selling shares. Such knowledge includes profits, assets, financial statements, and dividends. Second, literacy towards macroeconomic conditions. This includes investors' knowledge of macroeconomics and whether they use that knowledge as a basis for analysis for stock investment. Macroeconomic knowledge includes interest rates, inflation rates, and currency exchange rates.

The scores of the above variables are obtained from the respondents' answers to the questionnaire whose answers use a Likert scale starting from a score of 1 to 5. The variable value of each respondent is the total score divided by the total questions.

To test our hypothesis, we use the ordinary least square regression equation as follows:

$$\text{OVERC}_i = \alpha + \beta_1 \text{ATTD}_i + \beta_2 \text{FIRM}_i + \beta_3 \text{MACRO}_i$$

where,  $\text{OVERC}_i$  = overconfidence behavior of investor  $i$

$\text{ATTD}_i$  = attitude toward risk of investor  $i$

$\text{FIRM}_i$  = firm financial literacy of investor  $i$

$\text{MACRO}_i$  = macro economic literacy of investor  $i$

#### 4. RESULT AND DISCUSSION

This study uses four variables and table 1 below is descriptive statistics of these variables.

Table 1: Descriptive Statistics of Research Variables

	N	Minimum	Maximum	Mean	Std. Deviation
OVERC	133	1.00	5.00	3.8383	.62704
ATTD	133	3.74	4.40	3.9491	.10802
FIRM	133	4.00	4.31	4.1230	.07161
MACRO	133	3.89	4.13	3.9889	.05518
Valid N (listwise)	133				

The descriptive statistics above are taken from scores of variables whose measurements use a Likert scale with a minimum score of 1 and a maximum 5. Thus, the midpoint of the score is 2.5. The average overconfidence score is 3.8383, this is quite far above the midpoint. If we use the definition that investors who overconfidence are if the score is 4 and above, then the percentage of investors who behave overconfidence is 51.2%. Thus, the majority of investors behave overconfidence.

The average score of attitude toward risk is 3.9491, higher than the average score of overconfidence. But the attitude-toward-risk score range is relatively small, which is between 3.74 to 4.40. The minimum score of this variable is also well above the midpoint, 2.5, so it can be concluded that all respondents in this study had a risk seeker attitude.

Investor's literacy about finance turned out to be quite high. For literacy related to company performance, the average score is 4.123 and the minimum score is 4.00. Meanwhile, their literacy towards macroeconomic conditions is also high, even though the score is still below their literacy score on company performance. The literacy of respondents towards macroeconomic conditions has an average score of 3.9889 and a minimum score is 3.89.

To test the effect of attitude toward risk and financial literacy on the behavior of overconfidence, we use 6 regression equation models. The results can be seen in Table 2 below.

Table 2: Hypothesis Test Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MACRO	2.38	-	-	-	0.778	0.99
	(0.016)	-	-	-	(0.503)	(0.400)
FIRM	-	1.283	-	-1.088	-	-1.23
	-	(0.092)	-	(0.304)	-	(0.253)
ATTD	-	-	1.665	2.184	1.438	1.964
	-	-	(0.001)	(0.002)	(0.016)	(0.01)

Dep.Var: OVERC

Notes: p-value in parentheses

From table 2 above, it appears that if analyzed individually, attitude toward risk (ATTD), literacy on company performance (FIRM), and literacy on macroeconomic conditions (MACRO) have a positive effect on overconfidence (see model 1, 2, and 3). However, when the financial literacy effect is combined with the effect of attitude toward risk, the financial literacy effect on overconfidence disappears. In model 4, corporate performance literacy and attitude toward risk are combined, and corporate performance literacy influence is hindered by the effect of attitude toward risk. In model 5, the literacy of macroeconomic conditions is combined with attitude toward risk, and the influence of literacy on macroeconomic conditions is also hindered. In model 6, two financial literacy is combined with attitude toward risk, and the results are consistent, namely, financial literacy is hindered by the influence of attitude-toward-risk.

In practice, we cannot separate the influence of financial literacy and attitude toward risk towards the behavior of overconfidence. So for testing hypotheses, model 6 is the most appropriate model. Thus, the first hypothesis in this study which states that attitude toward risk influences the attitude of overconfidence is proven. Meanwhile, the second hypothesis which states that financial literacy has an effect on the attitude of overconfidence is not proven.

The findings in this study that attitudes toward risk influence the behavior of overconfidence are in line with the findings of Nasic and Weber (2010) and Campbell, Goodie, and Foster (2004) which state that overconfidence behavior correlates with attitude toward risk. They found that overconfidence affects their courage in taking risks. This research adds to evidence that attitude toward risk and behavior overconfidence are mutually influential.

Regarding the lack of evidence of the effect of financial literacy on overconfidence, this means that our argument that financial literacy only increases confidence and does not create overconfidence is not supported by empirical facts. However, the findings of this study do not conflict with the findings of Kramer (2016) and Porto and Xiao (2016) because they did not find any effect on objective measures of financial literacy on the search for financial advice, where financial advice correlated with overconfidence.

## 5. CONCLUSION

The behavior of overconfidence of investors in the capital market can be useful because this can make the market more liquid with increasing trading volume. Previous research also found that overconfidence investors could survive and succeed in the capital market rather than investors who under-confidence. For this reason, there needs to be a study that identifies factors that influence overconfidence. This study found that overconfidence behavior was influenced by investor attitudes toward risk. The more investors dare to face risks, the higher the probability of overconfidence. But this study also found that financial literacy does not affect overconfidence behavior because the effect of financial literacy is hindered by the influence of attitude toward risk. The results of this study are important because we get a new explanation of why many investors in the capital market behave overconfidence. Overconfidence behavior appears on the capital market because the majority of investors in the capital market are risk seekers. A large number of investors who are risk seekers in the capital market is reasonable because stock investment is included in the high risk investment category.

## ACKNOWLEDGEMENT

The authors would like to thank the Graduate Program of the Faculty of Economics Universitas Islam Indonesia, which has funded this research. The authors are also grateful to colleagues in the Department of Management and the Magister Management Program of the Universitas Islam Indonesia, who has given much input in the process of preparation of this research.

## REFERENCES

- [1] Boussaidi, Ramzi, (2013), Overconfidence Bias and Overreaction to Private Information Signals: The case of Tunisia, *Procedia - Social and Behavioral Sciences* 81, 241 – 245.
- [2] Campbell, W.K., A.S. Goodie, and J.D. Foster (2004), Narcissism, Confidence, and Risk Attitude, *Journal of Behavioral Decision Making J. Behav. Dec. Making*, 17: 297–311.
- [3] Culakova, T., P. Kotrus, A. Uhlirva., M. Jirasek, (2017), The Overconfidence Bias and CEO: A Literature Overview, *Business Trends*, 7(2), 3-9.
- [4] Daniel, D. K., D. Hirshleifer, and A. Subrahmanyam, (2001), Overconfidence, Arbitrage, and Equilibrium Asset Pricing, *The Journal of Finance*, 56 (3), 921-965.
- [5] Gervais, S., J.B. Heaton, and T. Odean, (2001), Overconfidence, Compensation Contracts, and Capital Budgeting, *The Journal of Finance* , 66 (5), 1735-1777 .
- [6] Grinblatt, M and M. Keloharju, (2009), Sensation Seeking, Overconfidence, and Trading Activity, *The Journal of Finance*, 64 (2), 549-578.
- [7] Jlassi, M., K. Naoui, and W. Mansour, (2014), Overconfidence behavior and dynamic market volatility: evidence from international data, *Procedia Economics and Finance* 13, 128 – 142 .

- [8] Kramer, M. Marc, (2016), Financial literacy, confidence and financial advice seeking, *Journal of Economic Behavior & Organization*, 131, 198–217.
- [9] Moore, D. A., and P.J. Healy, (2008), The Trouble with Overconfidence, *Psychological Review*, 115(2), 502-517.
- [10] Nosis, A. and M. Weber, (2010), How Riskily Do I Invest? The Role of Risk Attitudes, Risk Perceptions, and Overconfidence, *Decision Analysis*, Vol. 7, No. 3, September 2010, 282–301
- [11] Odean, Terrance (1998), Volume, Volatility, Price, and Profit When All Traders are Above Average, *The Journal of Finance*, LIII (6), 1887-1934.
- [12] Porto, N and J.J. Xiao, (2016), *Financial literacy overconfidence and financial advice seeking*, Research Gate, <https://www.researchgate.net/publication/323856184>.
- [13] Riyanto, Agus and Z. Arifin (2018), Pump-Dump Manipulation Analysis: The Influence of Market Capitalization and Its Impact on Stock Price Volatility at Indonesia Stock Exchange, *Review of Integrative Business and Economics Research*, Vol. 7, Supplementary Issue 3, 129-142.
- [14] Russo, J.E., and P. Schoemaker, (2016), *Overconfidence*, Palgrave Macmillan, DOI: 10.1057/9781137294678.0505.
- [15] Skala, Dorota, (2008), Overconfidence in Psychology and Finance - An Interdisciplinary Literature Review, *Financial Market and Institution*, September 2008, 33 -50
- [16] Wang, F. Albert, (2001), Overconfidence, Investor Sentiment, and Evolution, *Journal of Financial Intermediation*, 10, 138–170.