

Relationship between Managerial Overconfidence and Firm Value

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This study aims to examine the relationship between managerial overconfidence and firm value. The study was conducted on manufacturing firms listed on the Indonesia Stock Exchange from 2014 to 2016, with a total of 381 firm-year observations from 136 different firms. Managerial overconfidence in this study is measured through two proxies, namely over-investment and capital expenditure, while the firm value is measured using the Tobin's Q ratio. The analytical method used is the OLS regression analysis using SPSS version 20. The results of this study indicate that managerial overconfidence, both measured through proxy investment and capital expenditure, has a positive relationship to firm value. This research shows that managerial overconfidence does not always have a negative connotation and needs to be taken into consideration in managing a firm.

Key words: *Managerial overconfidence, overinvestment, capital expenditure, firm value.*

Introduction

The main long term objective of a firm established is to increase the prosperity of the owner or shareholder by maximising the value of the firm. By doing so, the firm value becomes a reflection of the success of the firm's performance that will have an impact on investor perceptions of the firm (Harymawan et al., 2019). Investors will conduct several analyses and considerations to decide which firm's shares are considered the most enticing to buy. The analysis is often based on two approaches, namely, technical analysis and fundamental analysis (Sutrisno, 2012). The focus in this research is the fundamental analysis which focuses on the consideration of the issuing firm performance that can be assessed through the study of financial ratios that help measure the success of the firm as well as evaluating the merits of economic decisions taken, including investment decisions, funding, and dividend

policies (Irawati et al., 2019; Iswajuni et al., 2018). As these decisions determine the prosperity of shareholders, the accuracy of managers in making decisions is a major consideration for investors as a belief that the funds invested will be managed appropriately (Zulaikah et al., 2019; Nowland, 2012).

Managers often face uncertainties in practice that lead to complicated estimates. Thus, it is probable that managers make mistakes, both underestimate and overestimate. Weinstein (1980) found that managers as decision-makers tend to get out of rationality and often display cognitive biases, one of which is overconfidence bias. Overconfidence begins with psychological literature related to the "better than average" effect, where a person tends to overestimate the knowledge, abilities, and accuracy of the information he has (Bhandari & Deaves, 2006). Overconfidence can describe two phenomena in the decision making process; (1) a tendency to express excessive belief in individual capacities and (2) overestimation of the accuracy of knowledge that causes managers to be overly optimistic about favorable outcomes (Bazerman & Moore, 2009). Different levels of overconfidence at different levels of management. The higher one's position in management, the higher the level of overconfidence in decision making (Paluch, 2011). The existence of overconfidence bias will have an impact on managerial actions and strategic policies taken, especially in terms of investment, mergers, and acquisitions, firm expansion, to funding decisions (Hirshleifer et al., 2012; Malmendier & Tate, 2005).

The impact of the overconfidence bias on managerial actions can be seen from two different perspectives. Graham et al. (2010) and Hirshleifer et al. (2012) found that managerial overconfidence has a positive impact as overconfident managers are considered more effective in exploiting growth opportunities and translating them into firm value. This increased firm value is because overconfident managers tend to dare to take risks and invest more in research and development activities that produce innovation (Munizu & Hamid, 2018). In contrast, Fallah et al. (2010) precisely show a negative impact because managers who overconfident exaggerate their knowledge and skills, underestimate risk, and consider themselves able to control every event and problem when, in fact, not the case. This excessive optimism encourages managers to overestimate the benefits to be gained from an investment project and underestimate the risk of the project. Thus, overconfident managers continue to take on projects that generate negative NPVs (Zhang & Yang, 2018). Kim et al. (2016) also show that overconfident managers tend to be more aggressive in investing and often misinterpret negative NPV as a process of value creation and ignore negative feedback because they have high confidence that the project possesses a promising future.

Prior studies that examine the relationship between managerial overconfidence and firm value are still minimal, but include Dashtbayaz and Mohammadi (2016), who state that managerial overconfidence has a negative relationship on firm value. Hirshleifer et al. (2012)

say that managerial overconfidence has a positive relationship on growth opportunities that are translated into firm value. Therefore, this study aims to analyze the relationship between managerial overconfidence and firm value. This study uses all manufacturing firms listed on the Indonesia Stock Exchange from 2014 to 2016, with a total final sample is 381 firm-year observations. The manufacturing industry was chosen because it is one of the leading business areas that dominate the structure of the Indonesian economy according to the Central Statistics Agency information in the Indonesian economic report published by Bank Indonesia (2018). Based on that report, the manufacturing industry has a significant contribution to Indonesia's Gross Domestic Product, amounting to 21.08% in the year 2014; 20.99% in 2015; and 20.52% in 2016, which makes the manufacturing sector have the potential to grow and make more investments. The analytical method used is the OLS regression analysis using SPSS version 20 application.

The results of this study indicate that managerial overconfidence, as measured by overinvestment measures and capital expenditure, has a positive relationship to firm value. This relationship suggests that overconfident managers are more willing to take risks and are considered more effective in exploiting growth opportunities and translating them into firm value. This research contributes to the literature by illustrating that managerial overconfidence can be one indicator in assessing the value of a firm. In this study, managerial overconfidence can be considered in managing a firm, because it can increase the value of the firm from the perspectives of investors. This consideration is because in assessing the performance of firm management, investors also see the existence of managerial overconfidence, not only from aspects that can be measured using a monetary parameter.

The research will be explained in the following structure: Section 2 contains research on developing research hypotheses; Section 3 includes explanations for variables and samples as well as research models; Section 4 contains empirical analysis and the results of hypothesis testing; and Section 5 provides conclusions or conclusions from the study, including suggestions for further research.

Literature Review

Theoretical Framework

Signalling theory discusses firms giving signals to users of financial statements. The signal provided can contain information about what management has done in the framework of realising the prosperity of the shareholder (Akerlof, 1970). Next, Spence (1973) describes the signal given by the owner of the information provided an essential piece of information for the recipient. Then, the recipient will adjust his behaviour based on his understanding of the signal.

The primary assumption of this theory is to provide space for shareholders to find out information of to what extent the accuracy of decisions taken by management is related to firm value. When management acts opportunistically, management faced with conditions of uncertainty can be overconfident in making decisions, for example, in terms of investment, resulting in over-investment that is motivated by certain motives such as incentives (Malmendier & Tate, 2005). Instead, management can choose to avoid risk (risk-averse) by only taking low-risk investments because of the uncertainty of cash flow and personal factors such as effort, expertise, and knowledge to increase shareholder value (Baird et al., 2008; Lumbanraja et al., 2018; Sari et al., 2018). This behaviour is done to ensure their position in the firm. The two conditions above are based on the manager's decision, which is not appropriate and will become an unfavourable signal for investors in the capital market because it does not bring maximum utility, as well as affect investors' valuation of the firm, which then impacts on firm value.

In a standard economic or financial perspective, humans are assumed to always act rationally, including managers in carrying out economic activities, one of which is decision making. But from a psychological point of view, this is not the case. Humans, as economic agents, tend to show behaviours that are not entirely rational and display cognitive biases. Therefore, behavioural finance is present and tries to learn how humans behave in a financial determination (Nofsinger, 2001), assuming that humans are "normal" and under the influence of sentiment and bias. Some literature from behavioural finance considers bias as a systematic deviation from norms, or tendencies toward certain dispositions or conclusions (Sahi & Arora, 2012; Wolman, 1973). Shefrin (2000) groups these biases into two broad groups, namely frame-dependent bias and heuristic driven bias.

Frame dependent bias is the tendency that a person's response to a situation depends on how the case is framed or presented, not on the facts of the situation. This bias is often attached to investors in making investment decisions. While heuristic driven bias is the tendency for someone to make decisions quickly based on "trial and error" and the experience they have (rule of thumb) to process information which is then used in making decisions (Tversky & Kahneman, 1974). From the two groups of biases, there is a heuristic driven bias that is often experienced by managers as decision-makers, namely the overconfidence bias examined in this study.

Overconfidence begins with the psychological literature "better than average effect" which states that a person tends to judge himself as having knowledge and abilities above the average of others, as well as "illusion of control" where the individual believes that he has control over uncertain events and did not have fully responsible for random or uncontrolled events (Larwood & Whittaker, 1977). This bias encourages overconfidence managers to overexpose themselves to the idiosyncratic risk of the firm and is too optimistic in predicting

future earnings (Hribar & Yang, 2016; Lobao, 2016). This perception of control and optimism within the manager can be motivated by the desire for reputation, power, or personal wealth that depends on the decisions made (Heaton, 2002; Herlambang & Nasih, 2019).

Roll (1986) researches the relationship between managerial overconfidence to financial issues. The study states that managerial overconfidence encourages managers to make estimates that are too optimistic or too high on investment returns to be obtained in the future, and underestimates the risks of these investments. Managers who are overconfident will choose to acquire another firm after the first acquisition is considered successful, even though the subsequent acquisition is deemed to be risky (Meikle et al., 2016). Other literature also links managerial overconfidence to investment, where firms with overconfident managers have above-average capital expenditure levels and overinvest incorporate assets and innovative activities (Ben-david et al., 2013; Engelen et al., 2015; Hirshleifer et al., 2012; Malmendier & Tate, 2005). The optimal investment decision is crucial as a determinant of firm value (Fama, 1978; Hidayat, 2010). Firm wealth or value can be increased if the decision has maximised NPV after taking into account the time value of money (Husnan & Pudjiastuti, 2002).

Relationship between Managerial Overconfidence Based On Overinvestment to Firm Value

Agency theory provides a concept of how the relationship between agent and principal and how the relationship can lead to agency problems that encourage managers as agents to act on their interests and put aside the interests of shareholders as principals (Jensen, 1986). The primary purpose of the establishment of a firm is to maximise the prosperity of shareholders through the firm value that can be achieved through financial decisions made appropriately, such as investment decisions. However, in practice, the presence of cognitive bias in a manager makes the decision taken to be inappropriate, and this affects the perspective of investors or shareholders towards the firm which then becomes a signal for taking action on the capital market which ultimately affects the firm's value (Elmanizar et al., 2019).

Some previous literature explains that one of the biases that are often experienced by managers as decision-makers is overconfidence bias, which is then known as managerial overconfidence (Heaton, 2002; Malmendier & Tate, 2008). Overconfidence makes managers believe that they have abilities above average so that they tend to overestimate benefits to be gained in the future. Heaton (2002) and Malmendier and Tate (2008) find that managerial overconfidence bias is the cause of investment irregularities and the overestimation of return on investment projects. Thus, investment projects taken tend to exceed the ability or the level of growth of the firm itself. Hirshleifer et al. (2012) and Malmendier and Tate (2005) also

state that overconfident managers often overinvest both investments in firm assets and innovative activities.

In the capital market, the presence of overconfident CEO becomes a signal for investors. It then makes the market react by releasing ownership shares in the firm concerned to anticipate the possibility of adverse actions that could potentially be taken by overconfident CEO in the future (Yilmaz & Mazzeo, 2014). This reaction is in line with Dashtbayaz and Mohammadi (2016) and Shah et al. (2018), who explain that the existence of managerial overconfidence has a negative relationship on firm value. Based on this explanation, the hypothesis proposed in this study are as follows:

H₁: Managerial overconfidence based on overinvestment has positive relationship to firm value.

Relationship between Managerial Overconfidence based on Capital Expenditure to Firm Value

Capital expenditure or investment expenditure for capital goods such as factories, machinery, equipment, and other tangible assets is needed by the firm in carrying out operating activities to keep production cycle running. Thus, these expenditures require planning and control because they involve long-term commitments. The manager, as the decision-maker, must make careful calculations both in the amount and time of the implementation of these expenditures. The use of capital expenditure as an investment decision provides a positive signal for investors because it has the potential to bring increased performance with the increase in the capital it has and is expected to generate profits in the future. However, the existence of managerial overconfidence encourages managers to often make capital expenditures above the average of other similar firms (Ben-David et al., 2013). Thus, capital expenditure can affect the way investors perceive the firm performance. This effect is then reflected through the firm's firm value. Therefore, the hypothesis proposed in this study is:

H₂: Managerial overconfidence based on capital expenditure has positive relationship to firm value.

Research Methodology

Sample and Data Source

Sources of data in this study were obtained through firm financial reports obtained either from the official website of the Indonesia Stock Exchange (IDX) or the official website of each firm. The sample used in this study were all manufacturing firms listed on the Indonesia Stock Exchange (IDX) for the 2014-2016 period, which amounted to 381 firm-year

observations. Manufacturing firms consist of several sectors, namely the elemental and chemical industry sector, various industrial sectors, and the consumer goods industry sector. Samples are selected using a purposive sampling method where sampling is done with specific considerations and limitations. Table 1 shows the sample selection criteria used in this study.

Table 1: Sample Selection Criteria

Description	Year			Total
	2014	2015	2016	
Listed manufacturing firms in IDX for period 2014-2016	143	143	144	430
Firms that their fiscal year end not at December 31	(3)	(3)	(3)	(9)
Missing data	(13)	(13)	(14)	(40)
Final Sample	127	127	127	381

Variable Operationalisation

Dependent Variable

The dependent variable in this study is a firm value (FVALUE). In this study, firm value is measured using Tobin's Q because it can show current market estimates of the return of every Rupiah of incremental investment. If Tobin's Q is above one, this provides information that investing in assets generates profits that give a higher value than the investment expenditure. Tobin's Q value to find out the firm value is calculated using the following formula:

$$FVALUE = \frac{EMV + DEBT}{TA}$$

Where EMV is the market value of equity obtained by multiplying the closing price with the number of ordinary shares outstanding, DEBT is the book value of total debt, and TA is the book value of total assets.

Independent Variable

The independent variable used in this study is managerial overconfidence. In measuring managerial overconfidence, this study uses a proxy that refers to previous research (Dashtbayaz & Mohammadi, 2016; Duellman et al., 2015; Shah et al., 2018), namely overinvestment (OVERINVESTMENT) and capital expenditure (CAPEX). Overinvestment is a condition where the investment expenditure of firms in various projects has exceeded their capacity and finances (Hosmand & Khanaga, 2014). Overinvestment can occur when managers have then used the firm's free cash flow to invest in investment projects that have to sacrifice the firm's profitability or harm the interests of shareholders (Jensen, 1986). Overinvestment is based on the deviation from the expected investment. In measuring

overinvestment, the first step is to estimate the firm's investment model as a function of firm growth measured through sales growth as used (Biddle et al., 2009). Next, to measure whether the firm is overinvesting, which is then used by Duellman (2015) in his research as a proxy for managerial overconfidence as follows:

$$Investment_{i,t+1} = \beta_0 + \beta_1 * Sales\ Growth_{i,t} + \varepsilon_{i,t+1}$$

Where, $Investment_{t+1}$ is obtained from formula as follows:

$$Investment_{t+1} = \frac{Capital\ Expenditure_{t+1} + Research\ \&\ Development\ Expense_{t+1} + (Cash\ from\ acquisition\ of\ PPE - Cash\ received\ from\ sale\ of\ PPE)_{t+1}}{Total\ Asset_t}$$

Next, $Sales\ Growth_t$ is obtained from formula as follows:

$$Sales\ Growth_t = \frac{Net\ Sales_t - Net\ Sales_{t-1}}{Net\ Sales_{t-1}}$$

Then, the regression results between $investment_{t+1}$ and $sales\ growth_t$ will produce residual values. Next, the residual values are sorted and classified in quartiles. Firms classified as overinvesting are those that are in the upper quartile in the industry and the year of observation, which shows the highest positive deviation rate of investment. Furthermore, this variable is used as a dummy variable where OVERINVESTMENT is valued 1 if the firm overinvests (in the upper quartile) and 0 if the other occurs.

The second managerial overconfidence proxy is capital expenditure. Overconfident managers tend to invest more aggressively and have a higher level of investment than other similar firms (Ahmed & Duellman, 2012; Campbell et al., 2011). In this study, capital expenditure is measured using dummy variables such as Dashtbayaz and Mohammadi (2016) and Duellman et al., (2015), where CAPEX will be equal to 1 if the results of the firm's capital expenditure divided by the total assets of the previous year are higher than the median industry in the year of observation, and will equal 0 otherwise.

Control Variable

One of the common problems of endogeneity is an omitted variable. This study uses several control variables that have been proven to affect firm value in previous studies (George et al., 2011; Leite & Carvalhal, 2016; Shah et al., 2018) to overcome the problem. This study uses a firm size (SIZE) control variable (SIZE) measured through the natural logarithm of total assets. Firm age (AGE) is measured using the number of years since the firm was founded. The measured cash flow to asset ratio (CF) is divided by dividing the total cash flow from

operating activities by the total assets of the firm. Asset growth (GROWTH_ASSET) is measured by dividing the difference between last year's total assets, and this year with the prior year's total assets. Financial leverage (LEV) is measured by dividing total debt by total assets. Return on assets (ROA) is measured by dividing income after interest and taxes by total assets.

Methodology

This study uses an ordinary least square (OLS) regression model to analyse the direction of the relationship between managerial overconfidence, which is proxied through overinvestment and capital expenditure with firm value using SPSS version 20. The following is the regression equation in this study:

$$FVALUE_{i,t} = \beta_0 + \beta_1 OVERINVESTMENT + \beta_2 SIZE + \beta_3 AGE + \beta_4 CF + \beta_5 GROWTH_ASSET + \beta_6 LEV + \beta_7 ROA + \varepsilon \quad (1)$$

$$FVALUE_{i,t} = \beta_0 + \beta_1 CAPEX + \beta_2 SIZE + \beta_3 AGE + \beta_4 CF + \beta_5 GROWTH_ASSET + \beta_6 LEV + \beta_7 ROA + \varepsilon \quad (2)$$

Result and Discussion

Descriptive Statistics

Table 2: Statistic Descriptive

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Fvalue	381	0.070	18.640	1.6428	2.065
Overinvestment	381	0	1	0.244	0.430
Capex	381	0	1	0.501	0.501
Size	381	24.414	33.199	28.384	1.551
Age	381	2	99	35.820	13.053
Cf	381	-0.222	0.452	0.063	0.091
Growth_Asset	381	-0.477	2.170	0.907	0.205
Lev	381	0.001	1.571	0.483	0.249
Roa	381	-0.549	0.402	0.037	0.092

Table 2 shows the descriptive statistical results of the variables in this study. The firm value variable (FVALUE) has an average value of 1.643, with a standard deviation of 2.065. Furthermore, the overinvestment variable (OVERINVESTMENT) has an average value of 0.244, which means that 24.4% of the sample has overconfident managerial and a standard deviation of 0.430. The capital expenditure variable has an average value of 0.501, which means 50.1% of the sample has managerial overconfidence and a standard deviation of 0.501.

The average size of the firm examined was 28,384, while the average age of the firm was 35,820. The variable cash flow to assets ratio has an average value of 0.063 and a standard deviation of 0.091. Then, the average growth of the firm's assets amounted to 0.907, financial leverage amounted to 0.483, and ROA of 0.037.

OLS Regression Analysis Result

Table 3: Regression Analysis Result

Variable	<i>FVALUE</i>					
	(1)			(2)		
	Coefficients	t	Sig	Coefficients	t	Sig
(Constant)	-0.746	-2.934	0.004	-0.613	-2.405	0.017
<i>Overinvestment</i>	0.067	2.032	0.043*			
<i>Capex</i>				0.096	3.207	0.001*
<i>Size</i>	0.018	1.997	0.047*	0.012	1.317	0.189
<i>Age</i>	-0.002	-1.398	0.163	-0.001	-1.003	0.317
<i>Cf</i>	0.520	2.620	0.009*	0.495	2.508	0.013*
<i>Growth_Asset</i>	-0.040	-0.559	0.577	-0.086	-1.165	0.245
<i>Lev</i>	0.477	7.379	0.000*	0.477	7.439	0.000*
<i>Roa</i>	0.019	8.531	0.000*	0.019	8.477	0.000*

Overinvestment and Firm Value

The regression analysis results in Table 3 show that the OVERINVESTMENT variable coefficient is 0.067 ($t = 2.032$) and significant at the 10% level. This result indicates that managerial overconfidence, which is proxied by overinvestment, is positively and significantly related to firm value. It means that if managerial overconfidence value increases by one unit, the firm value will also increase by 0.067. These results are consistent with the first hypothesis of the study (H1), which explains that managerial overconfidence based on overinvestment is positively related to firm value.

A positive and significant relationship between managerial overconfidence to firm value can occur due to two possibilities. First, Hirshleifer et al. (2012) explain that firms with overconfident managers are more willing to take risks, including investment risks. These managers are more effective in exploiting growth opportunities because the risks taken generate higher returns, and then change it into firm value. This result is also supported by research and development activities carried out so that the firm has a greater potential to produce innovation. In the end, the firm can generate firm value better than similar firms. Second, in line with agency theory, asymmetric information that occurs in management (agents) and shareholders or firm owners (principals) can encourage managers to act

opportunistically by making a variety of investments, even though the investment is not yet done so that it causes overinvestment. This investment is made against the background of the motive of getting incentives or efforts in showing that management's performance is high. Those numerous investments illustrate high performance, resulting in investors are interested in buying shares of a firm, and this contributes to the increase in the firm value of the firm.

Capital Expenditure Dan Firm Value

The coefficient value of the capital expenditure variable (CAPEX) in Table 3 shows the amount of 0.096 ($t = 3.207$) and is significant at the 10% level. This amount indicates that managerial overconfidence, as proxied by capital expenditure, is positively and significantly related to firm value, which means that if managerial overconfidence value has increased by one unit, the firm value will also increase by 0.096. These results are consistent with the second hypothesis of the study (H2), which explains that managerial overconfidence based on capital expenditure is positively related to firm value.

This result can occur due to differences in information captured by external parties or investors in the capital market. Investors will assume that high capital expenditure is done as an effort to develop or expand the business so that the firm still exists in the face of competition, which will bring long-term benefits for investors, without knowing whether these expenditures have been appropriately done both in amount and time. Information and conditions captured from market participants are believed to be a good signal and are reflected through an increase in share prices that illustrates the value of the related firm (Bendavid et al., 2013).

Coefficient Determinant Test (R^2)

Table 4: Coefficient Determinant Test (R^2)

Model	R	R Square	Adjusted R Square
1	0.599	0.358	0.346
2	0.607	0.369	0.357

Based on the results in Table 4, the Adjusted R Square value for the first regression equation is 0.346 or 34.6% and 0.357 or 35.7% for the second regression equation. Thus, it can be explained that the independent variables, namely managerial overconfidence, as measured by overinvestment and capital expenditure, and control variables, including firm size, firm age, cash flow to asset ratio, growth of firm assets, financial leverage, and return on assets, can explain the dependent variable, namely the firm value, of 34.6% to 35.7%, while other variables excluded by this study defines the remaining between 64.3% and 65.4%.

Conclusion

This study aims to analyse the relationship between managerial overconfidence to firm value in all manufacturing firms listed on the Indonesia Stock Exchange in the 2014-2016 period. Based on the results of OLS regression analysis, it can be concluded that managerial overconfidence, as measured by overinvestment and capital expenditure, has a positive relationship to firm value. That is, firms with managerial overconfidence have a firm value or a higher firm value compared to firms without managerial overconfidence. A positive relationship between managerial overconfidence and firm value can be caused by overconfident managers who are more willing to take risks and are considered more effective in exploiting growth opportunities and change them into firm value.

The results of the study can add to the literature related to managerial overconfidence. Besides, this study also shows that managerial overconfidence can be considered in managing a firm because it can increase the value of the firm in the perspectives of investors. This consideration is because in assessing the performance of firm management, investors also deliberate the existence of managerial overconfidence, not only from aspects that can be measured using monetary parameters. However, this study has limitations, namely, in measuring managerial overconfidence, the determination of firms included in the category of overconfidence is based on top quartile and median classification. Therefore, there is no specific, definite value limit that becomes the standard reference for determining managerial overconfidence. Thus, further research can add other measurements that involve more criteria for managerial overconfidence measurements such as aspects of corporate investment return, execution options, or earnings per share comparison, as in research conducted by Dashtbayaz and Mohammadi (2016) and Kim et al. (2016), as a comparison in measuring managerial overconfidence. Also, further research can also expand research samples from sectors other than manufacturing firms listed on the Indonesia Stock Exchange so that the results obtained can be more generalised.

Acknowledgement

This paper is derived from Ghanny Trianita's Undergraduate Thesis at the Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia. We are also grateful for the comments and insights from Fajar Kristanto Gautama Putra and Melinda Cahyaning Ratri.



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