THE ROLE OF INTERNAL FINANCING IN MEDIATING THE EFFECT OF MANAGERIAL OVERCONFIDENCE AND CORPORATE GOVERNANCE TOWARDS INVESTMENT EFFICIENCY

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Abstract

This study aims to examine empirically the factors that influence investment efficiency in State-Owned Enterprises on the Indonesia Stock Exchange. This study was tested with two independent variables are managerial overconfidence and corporate governance, intervening variable is internal financing. The object of this research is the state-owned company for the period 2011-2018. 10 companies as the sample using purposive sampling technique. The analysis used in this research is panel data regression analysis. The results of this study found that investment efficiency in state-owned enterprises in Indonesia is largely determined by managerial overconfidence bias. Managers who have an overconfidence seek more aggressive and risky ventures so that they invest excessively beyond optimal levels. Managerial overconfidence in a manager can also strengthen the choice of internal financing, especially in state-owned companies. However, investment efficiency in this study is not influenced by corporate governance and internal financing. Corporate governance has also proven to have no role in corporate funding decisions. The role of internal financing as mediation was not found in this study.

Keywords: internal financing, managerial overconfidence, corporate governance, investment efficiency.

Introduction

Investment is important for company survival, market competition and value creation (He et al., 2019). However, investment needs to be formulated carefully because investment is determined by various factors. These factors are: economic factors, monetary factors, capital market factors and company operating factors (Richardson, 2006). Apart from these factors, psychological factors also play an important role in investment policy (Kahneman & Lovallo, 1993; Goel & Thakor, 2000; Shefrin, 2001; Heaton, 2002, Gervais, Heaton and Odean, 2002; Hackbarth, 2003). One of the psychological factors that get the attention of the research is overconfidence. Overconfidence at the practical level is often referred to as optimism bias. Thus the economic factors, Fundamental factors and psychological factors play an important role for the survival of the company, market competition and value creation. This means that fundamental factors, economic factors and psychological factors determine the company's investment.

State-owned enterprises have contributed significantly to the capital market, with market capitalization contributing 25.2% of the total market capitalization on the Indonesia Stock Exchange (IDX). This achievement is certainly very encouraging

considering that the number of BUMNs that list their shares on the IDX is only around 4%, namely 20 (twenty) companies and 6 (six) BUMN subsidiaries of the total Issuers on the IDX, which reaches 538 companies. In addition, there are 4 (four) BUMN issuers included in the 10 (ten) issuers with the largest market capitalization, namely Telkom, BRI, Bank Mandiri, and BNI.

In 2017, the total capital expenditure of BUMN reached Rp. 301 trillion, an increase from the achievement of BUMN capital expenditure in 2016 which reached Rp. 298 trillion. The largest increase in the number of Capex was contributed by BUMN in the construction sector, the electricity sector and the transportation and warehousing sector. Meanwhile, state-owned companies that contributed the most to the increase were PT Perusahaan Listrik Negara (Persero), PT Waskita Karya (Persero) Tbk and PT Jasa Marga (Persero) Tbk. However, based on data in 2017, the target of BUMN Capex Total of 468 trillion has not been achieved (Ministry of BUMN 2018).

The absence of the BUMN capex target is interesting to study. The factors that cause the target not to be achieved can be caused by managerial factors, funding factors and governance factors. Managerial factors that are widely studied by

academics are psychological factors, especially overconfidence. A summary of several studies with contradictory findings can be seen in Table 1

Table 1
Research on Corporate Governance, Managerial Overconfidence, Internal Financing, Investment Efficiency

No.	Research Gap	Findings	Author
1.	There is a contradiction in the findings of the influence of Managerial Overconfidence on Investment Efficiency	Heaton (2002), Malmendier Tate (2005); Xia et al. (2009), He et al. (2019)	
2.	There is a contradiction in the findings of the influence of Managerial Overconfidence on Internal Financing	Chen, Lin (2012)	
3.	There is a contradiction in the findings of the influence of Governance on Internal Financing	Huang et al. (2010), Boubaker, Hamza (2014), Murhadi (2018)	
4.	There is a contradiction in the findings of the effect of Governance on Investment Efficiency	Rihab, Lotfi (2016)	
5.	There is a contradiction in the findings of the influence of Internal Financing on Investment Efficiency	Ting et al. (2016)	
		Al-Najjar, Clark (2007), Arping, Sautner (2010), Yapon (2018)	
		Daud (2011), Grosman (2012)	
		Santi et al. (2014), Qian et al. (2014)	
		Chen et al. (2017)	
		Salin et al. (2018), Azhar et al. (2019)	
		Mohamed et al. (2014), Liu, Mu, Wen (2016), Moez, Amina (2017)	
		Shima, Nakamura (2018), He et al. (2019)	

Source: Research Elaboration Results, 2020

There were many gaps in research findings that occurred in previous studies, perhaps due to differences in models. In this connection, this study proposes a structural model by adding a governance variable as a follow-up to the research suggestions of He et al. (2019) which suggest studying governance in shaping investment efficiency capital. On the basis of these considerations, the authors raised the title: "The Role of Internal Financing in Mediating the Effect of Managerial Overconfidence and Corporate Governance on Investment Efficiency".

Based on the background above, this research aims to Assessing the effect of managerial overconfidence on investment efficiency, managerial overconfidence on Internal Financing, Corporate Governance on Internal Financing, Governance on Investment Efficiency, Internal Financing on Investment Efficiency, Internal Financing as a mediation for the influence of managerial overconfidence on Investment Efficiency, and Internal Financing as a mediation for the influence of Governance on Investment Efficiency.

Theoretical Basis

The theoretical basis is important in research as a basis for testing hypotheses. The elements of theory are a set of concepts, definitions and propositions that are arranged systematically which can then be used to explain or predict existing phenomena (Cooper and Schlinder, 2003). In this study, the variables studied were overconfidence, governance, internal financing, and investment. Based on the variables studied, the theory used is the theory of: overconfidence, governance theory, capital structure theory.

Overconfidence Theory

Based on the psychological literature, overconfidence can be interpreted as the belief that the distribution of a person's prediction probability is higher than it actually is, whereas in various financial literatures, overconfidence is defined as overestimating in assessing a financial asset. The empirical research conducted by Griffin & Varey (1996) states that overconfidence is divided into two types, namely someone who is overconfidence because he is too confident in his knowledge and because he is too confident in his own abilities.

Agency Theory (Agency Theory)

The development of corporate governance departs from the agency theory developed by Jensen and Meckling in 1976. This theory argues that "agency relationship as a contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent". The principal or company owner hands over the management of the company to the management.

Board of Commissioners

According to the Limited Liability Company Law Number 40 of 2007 paragraph 6 in Agoes and Ardana (2014: 108) the board of commissioners is as follows: "The board of commissioners is an organ of the company that is tasked with conducting general and / or specific supervision in accordance with the articles of association and providing advice to the directors".

In this study, the board of commissioners indicators were measured by the number of board meetings. Board meetings are a medium for deliberation on key issues and other important matters among board members in order to make certain important decisions for the progress and growth of each organization (Eluyela et al., 2018). In order

to carry out its duties, the board of commissioners holds regular meetings to evaluate policies taken by the board of directors.

Capital Structure Theory

The capital structure is a mix of long-term debt and equity funding (Brealey et al., 2011: 600). Capital structure is a company way to form the right side of a balance sheet consisting of capital and debt (Zani et.al., 2013). The capital structure consists of short-term funding, long-term funding, and equity.

Theory Modigliani-Miller (MM)

Modigliani and Miller's theory (MM theory) is a theory which holds that capital structure is irrelevant or does not affect firm value.

Investment Efficiency Concept

Efficiency is an action to use resources appropriately so that existing resources are not wasted. Companies usually make efficiency in order to reduce costs and facilitate the process of managing the company in order to easily achieve company goals. A company is said to invest efficiently if it takes projects that have a positive net present value (NPV) in conditions where there is no market friction such as adverse selection or agency costs (Biddle et al., 2009).

Conceptual Frame Work

This study examines managerial overconfidence and corporate governance as independent variables associated with investment efficiency as the dependent variable and internal funding as an intervening variable.

Figure 1 Conceptual Frame Work

Research Hypothesis

Effect of Managerial Overconfidence on Investment Efficiency

Managerial overconfidence is a cognitive bias that drives managers to believe that they are capable of doing better than the average person (Kidd 1970; Larwood Whittaker 1977; Moore 1977; Svenson 1981; Alicke 1985; Camerer Lavallo 1999). Their overestimation and judgment leads managers to seek more aggressive ventures and risk overinvesting beyond optimal levels.

Investment is said to be efficient if it is not in 2 conditions, namely underinvestment and overinvestment. Underinvestment is defined as missing an investment opportunity that would result in a positive NPV in the absence of adverse selection. Accordingly, overinvestment is defined as investing in projects with a negative NPV (Biddle et al., 2009).

Chen et al. (2012) in his research found that underinvestment companies with CEOs who have a high level of managerial optimism can increase the company's investment efficiency by reducing the level of underinvestment, and will increase firm value. However, there is a negative and significant relationship between managerial trust and investment efficiency empirically shown by Heaton (2002); Malmendier Tate (2005); and Xia et al. (2009). Manager's choice for Suboptimal levels of investment may stem from the CEO's overestimation of investment (Heaton, 2002 and Malmendier Tate, 2005). In line with the research conducted by He et al. (2019) found that managerial overconfidence causes overinvestment problems, especially in state-owned companies. Based on this explanation, the hypotheses built in this study are;

H1 : Managerial overconfidence has a negative and significant effect on investment efficiency

Effect of Managerial Overconfidence on Internal Funding

Managerial overconfidence is one of the behavioral biases in which managers act irrationally which tends to reflect excessive self-confidence, because they judge their abilities better than

most people. So they tend to exaggerate their own wisdom (Larwood and Whittaker, 1997; Svenson, 1981; Alicke, 1985). (Heaton 2002) supports this over-optimism and overconfidence. The results show that agents easily become optimistic because they believe they are controlling and highly committed. This “better than average” impact is easily extended to economic decision making (Camerer and Dan, 1999).

Pecking Order Theory argues that companies will prioritize funding sources on the basis of their costs. Graham and Harvey (2001) show that most managers believe that they have the ability to control funding decisions and influence business performance. Manager's personal wealth and human capital are closely related to fluctuations in the company's stock price. From their personal perspective, managers prefer internal funding because it is the lowest cost of capital and limits fluctuations from external borrowing markets and stock markets.

Managerial overconfidence tends to have the illusion of control over technology and the accuracy of their own judgments. When making decisions, overconfident managers tend to overestimate the likelihood of success. They also believe that their company will show good profits and have great potential. In addition, they think that outside investors underestimate their actual value. Due to information asymmetry and transaction costs, managers tend to prefer internal funding and residual cash inside. Similar to Ben-David et al. (2007) found that CEO confidence shows that they are less likely to pay dividends, this supports the view that overconfident managers prefer internal funding by reducing dividends.

Huang et al. (2010) in his research found that agency costs have a positive and significant effect between the overconfidence of top executives on the use of cash flows. However, research conducted by Rihab et al. (2016) found different results, namely managerial overconfidence has a positive and significant effect on the level of debt use.

While the research conducted by Boubaker et al. (2014) stated that in the face of growth opportunities, managerial overconfidence negatively affects the leverage ratio. Supporting these findings Ting et al. (2016) in his research stated that CEO overconfidence has a negative and significant effect on corporate debt financing. Based on this explanation, the hypotheses built in this study are;

H2: Manager overconfidence has a positive and significant effect on internal funding

The Effect of Corporate Governance on Internal Funding

Agency theory developed by Jensen & Meckling (1976) explains the agency relationship between agents and principals. In this case, the agent as the manager of the company must be responsible for the form of its management to the principal. One of his responsibilities is managing the company's funding source decisions. Funding decisions are

important things that need to be considered by managers when managing the company's funding structure that comes from internal funding sources and external funding sources. Pecking Order Theory according to Myers & Majluf (1984) explains the hierarchy of the company's funding sources, namely internal sources of funds, debt and the issuance of shares.

The mechanism of corporate governance is a factor influencing the decision to choose the company's funding source, where management tends to minimize the company's debt level (Yapono, 2018). The number of meetings of the board of commissioners is one that plays a role in the mechanism of corporate governance.

Regular meetings will increase the effectiveness of the board of commissioners in carrying out its supervisory role over the financial reporting process and internal control. The results of research conducted by Juwitasari (2008) which states that regular and well-controlled meetings will assist the board of commissioners in conducting supervision and are better able to offer criticism in relation to the policies carried out by management. Therefore, the performance of the board of commissioners will be better with better coordination and alignment with the interests of shareholders (Lipton and Lorsch, 1992). Research conducted by Fathurrohman (2016) shows that the number of board of commissioners has a negative and significant effect on the capital structure proxied by the debt-to-equity ratio.

Arping et al. (2009) in his research found that improving corporate governance significantly reduces the value of debt as a disciplinary tool. This result contradicts the findings of a study conducted by Daud et al. (2011) who found that good corporate governance practices have a positive and significant effect on external funding.

The research conducted by Al-Najjar et al. (2007) found that governance has a positive and significant effect on ownership cash. Based on this explanation, the hypotheses built in this study are;

H3 : Good Corporate Governance has a positive and significant effect on Internal Funding

The Effect of Corporate Governance on Investment Efficiency

According to Meisser et al. (2006) agency relationships lead to two problems, namely the occurrence of information asymmetry and conflicts of interest. Information asymmetry occurs where management generally has more information about the actual financial position and operating position of the entity than owners. Meanwhile, conflicts of interest occur due to unequal goals, where management does not always act in accordance with the interests of the owner.

Based on the model developed by Jensen and Meckling (1976) information asymmetry creates moral hazard and adverse selection that can affect the efficiency of investments made by the company. In terms of moral hazard, differences in interests among shareholders and the lack of a monitoring process from managers will encourage management to maximize their

interests through investment activities that can harm the interests of shareholders. So this will lead to overinvestment (Hope and Thomas, 2008). Meanwhile, adverse selection occurs when the perception of the owner of the capital on the company's performance is different from the actual situation. Companies that implement good governance

A good investment makes companies able to make appropriate and efficient investments (Houcine, 2013). From several previous studies, such as Houcine (2013), Zheka (2003), and Saleh et al. (2009) found several factors that can influence companies to be able to invest efficiently is corporate governance. Research conducted by Chen et al. (2017) found different results, namely that governance has a negative effect on investment efficiency, and this effect is more pronounced in SOEs than in private companies. While Salin et al. (2018) in his research found that governance has a negative and significant effect on investment efficiency. Research conducted by Qian et al. (2014) show that governance and investment efficiency have a positive effect. Based on this explanation, the hypotheses built in this study are;

H4 : Corporate governance has a positive and significant effect on investment efficiency

The Effect of Internal Funding on Investment Efficiency

The importance of internal financing in corporate investment and financing decision making has been widely studied (Hall, 2002; Hubbard, 1998). The Pecking Order Theory proposed by Myers (1984) shows that internal financing reduces information asymmetry, avoids the risk of adverse selection from external financing and reduces conflicts between corporate stakeholders.

When the company's internal funding is abundant, excess free cash flow is generated, so the company can take advantage of the excess internal funds for investment. However, due to moral hazard, excess free cash flow can also cause overinvestment, in line with the theory of overinvestment free cash flow, when managers, as company agents, have excess cash on hand, they can pursue personal interests and expand the scale of investment using the funds received. This allows managers to increase their income, status and power and build their own 'business empire'. Renneboog et al. (2007) proposed that there are 2 types of errors in the company. The first or type I error is overinvesting when the cash flow is sufficient. Second, or type II error, namely underinvesting with a lack of cash flow. An increase in internal funding will increase the occurrence of Type I errors but reduce Type II errors. A reduction in internal funding will result in a shortage of free cash flow so that cash flow cannot meet the company's investment needs. Even if there is an investment opportunity or project with a positive NPV, the company will make insufficient investment.

He et al. (2019) in his research found that internal funding has a positive impact on investment efficiency. However, in

contrast to the findings of Grosman's (2012) research, it shows that cash flow does not have a significant effect on investment efficiency. Meanwhile, research conducted by Wang et al. (2015) and Jiang (2016); find that free cash flow can affect the efficiency of investment projects. Based on the description and previous research, this study proposes the following hypotheses:
H5: Internal funding has a positive and significant effect on investment efficiency

Internal Funding plays a role as mediating the influence of Managerial Overconfidence Investment Efficiency

Managerial overconfidence not only has an impact on financial decisions but also investment efficiency (Malmendier and Tate, 2005). When managers are very overconfident, they have an optimistic attitude about the company's prospects and see an increase in investment as good news. Therefore, they increase the level of investment by increasing internal funding and have an impact on increasing the company's performance in order to obtain personal benefits. They may mistakenly think that projects with negative NPV are positive NPV. Furthermore, junior managers who wish to quickly build their reputation for attracting investors are more likely than senior managers to improve short-term performance by making the firm invest in inefficient (Baker and Wurgler, 2000).

Overconfident managers also believe that their company's shares are undervalued in the market, and tend to overestimate the likelihood of success so that it is easier to overinvest using the cash flows generated by internal funding futures and alleviate investment shortfalls caused by cash flow shortages. In short, internal funding plays a role transmission between managerial overconfidence and investment efficiency. Research conducted by He et al. (2019) found that increasing internal funding can fund business opportunities thereby expanding investment and alleviating underinvestment, and thereby having an impact on increasing investment efficiency, but can also lead to overinvestment, especially in companies with managerial overconfidence.

Mohamed et al. (2014); Liu, Mu, Wen (2016); and Moez, Amina (2017) in their research found that overconfident managers tend to affect the efficiency of investment projects with internal funding. In addition, Shima et al. (2018) found that managerial overconfidence has a positive and significant effect on increasing investment-cash flow sensitivity.

H6: Internal funding mediates the effect of managerial overconfidence on investment efficiency

The Role of Internal Funding in Mediating the Effect of Corporate Governance on Investment Efficiency

Pecking Order Theory according to Myers & Majluf (1984) explains the hierarchy of the company's funding sources, namely internal sources of funds, debt and the issuance of shares. Funding decisions are important things that need to be considered by managers when managing the company's funding

structure from internal funding sources as well as funding sources external. The importance of internal financing in corporate investment and financing decision making has been widely studied (Hall, 2002; Hubbard, 1998).

According to Meisser et al., (2006) agency relationships lead to two problems, namely the occurrence of information asymmetry and conflicts of interest. Based on the model developed by Jensen and Meckling (1976) information asymmetry creates moral hazard and adverse selection that can affect the efficiency of investments made by the company.

The Pecking Order Theory proposed by Myers (1984) also shows that internal funding can reduce information asymmetry, avoid adverse selection risks from external financing and reduce conflicts between company stakeholders. When the company's internal funding is abundant, excess free cash flow is generated, so the company can take advantage of the excess internal funds for investment. However, due to moral hazard, excess free cash flow can also lead to overinvestment. A reduction in internal funding will result in a shortage of free cash flow so that cash flow cannot meet the company's investment needs. Based on the description and previous research, this study proposes the following hypotheses:

H7: Internal funding acts as a mediation of the influence of corporate governance on investment efficiency

Research Methods

The population in this study were all state-owned companies that went public and were listed on the Indonesia Stock Exchange during the 2014-2018 period. The sampling method used was purposive sampling method. Sources of data in this study are secondary data, namely data obtained from other parties who have collected it first. The data sources used consisted of:

- 1 *Indonesia Stock Exchange (IDX)*, published in 2011 to 2018.
- 2 Annual reports for all companies selected as sample members, from 2011 to 2018.
- 3 Sample company financial reports for the period 2011-2018.
- 4 Based on the time dimension and time sequence, this study is cross-sectional and time series or called panel data (pooled data), because in addition to taking samples of events at a certain time, they also take samples based on time sequences.

Tabel 2
Sample Selection Process

No	Company Name	Stock code
1	PT Adhi Karya Tbk.	ADHI
2	PT Aneka Tambang Tbk	ANTM
3	PT Garuda Indonesia Tbk.	GIAA
4	PT Indofarma Tbk	INAF
5	PT Jasa Marga Tbk.	JSMR
6	PT Kimia Farma Tbk.	KAEF
7	PT Krakatau Steel Tbk.	KRAS
8	PT Perusahaan Gas Negara Tbk.	PGAS
9	PT Tambang Batubara Bukit Asam Tbk.	PTBA
10	PT Pembangunan Perumahan Tbk.	PTPP

Source: Researcher Elaboration, 2020

The data analysis method used to test the model in this study is a quantitative method. In this study, the data were analyzed through computer programs, namely Microsoft Excel and EvIEWS 9 using panel data regression tools. Panel data is a combination of time series and cross section data.

The panel data regression equation model in this study is as follows:

$$Z = b_0 + b_1X_{t-1} + b_2X_{t-1} + b_3X_{t-1} + b_4X_{t-1} + b_5X_{t-1} + b_6X_{t-1} + b_7X_{t-1} + b_8X_{t-1} + e$$

$$Y = b_0 + b_1X_{t-1} + b_2X_{t-1} + b_3X_{t-1} + b_4X_{t-1} + b_5X_{t-1} + b_6X_{t-1} + b_7X_{t-1} + b_8X_{t-1} + b_9Z_{t-1} + e$$

Information :

Y	= Investment Efficiency
a	= Constant
b1-b8	= Regression Coefficient
X1	= Managerial Overconfidence
X2	= Firm Size
X3	= Financial Leverage
X4	= Investment Opportunity Set
X5	= Operating Results
X6	= Profitability
X7	= Cash Holdings
X8	= Corporate Governance
Z	= Internal Financing
e	= Error

Results and Discussion

Estimation Model Determination

Panel data regression can be done in three models, namely common effect, fixed effect and random effect. Each model has its advantages and disadvantages. The choice of model depends on the

assumptions used by the researcher and the fulfillment of statistical data processing requirements that are correct so that it can be justified statistically. Therefore, the first step to take is to test the three available models.

Common Effect Model

CEM is a simple panel data model approach because it only combines time series and cross section data. In this model, neither the time dimension nor the individual is considered, so it is assumed that the data behavior is the same in various time periods. Based on the results of processing Eviews 9 using the common effect model for model I and model II.

Tabel 3

Common Effect Model I

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.597443	0.009692	-61.64123	0.0000
X1	0.015589	0.000522	29.84393	0.0000
X2	0.024411	0.001502	16.25249	0.0000
X3	0.027242	0.002277	11.96436	0.0000
X4	0.024880	0.000162	153.1287	0.0000
X5	0.050292	0.011672	4.308820	0.0001
X6	0.025444	0.005768	4.411001	0.0000
X7	0.027828	0.003788	7.346573	0.0000
X8	-0.000411	0.002014	-0.203990	0.8389
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R-squared	0.997939	Mean dependent var	0.213362	
Adjusted R-squared	0.997707	S.D. dependent var	0.061752	
S.E. of regression	0.002957	Akaike info criterion	-8.703706	
Sum squared resid	0.000621	Schwarz criterion	-8.435728	
Log likelihood	357.1482	Hannan-Quinn criter.	-8.596266	
F-statistic	4298.116	Durbin-Watson stat	1.025887	
Prob(F-statistic)	0.000000			

Source: Processed Results Eviews 9, 2020

The results of the output of Eviews 9 in table 3 show that the managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant because more smaller than the significance level value that is 0.05. Meanwhile, the corporate governance variable is not significant because it is greater than the significance level of 0.05.

Based on the results of the Eviews 9 output in table 4, it shows that the variable managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant because they are smaller than the significance level of 0.05. Meanwhile, the variables of corporate governance and Internal Financing are not significant because they are greater than the significance level of 0.05.

Tabel 4

Common Effect Model II

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.466240	0.024783	-139.8649	0.0000
X1	-0.055716	0.000666	-83.68683	0.0000
X2	0.431551	0.001130	381.8747	0.0000
X3	-0.317102	0.001369	-231.5610	0.0000
X4	0.030839	0.001024	30.11413	0.0000
X5	3.116724	0.004540	686.5170	0.0000
X6	-1.522122	0.002255	-675.0705	0.0000
X7	-0.388024	0.001740	-222.9577	0.0000
X8	-9.60E-05	0.000698	-0.137544	0.8910
Z	-0.033287	0.041099	-0.809925	0.4207
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R-squared	0.999975	Mean dependent var	0.533600	
Adjusted R-squared	0.999971	S.D. dependent var	0.191210	
S.E. of regression	0.001024	Akaike info criterion	-10.81374	
Sum squared resid	7.34E-05	Schwarz criterion	-10.51599	
Log likelihood	442.5498	Hannan-Quinn criter.	-10.69437	
F-statistic	306056.8	Durbin-Watson stat	2.526564	
Prob(F-statistic)	0.000000			

Source: Processed Results Eviews 9,2020

Fixed Effect Model

The fixed effect model approach assumes that each individual is different while the slope between individuals is fixed (the same). Based on the results of processing Eviews 9 using fixed effects models for model I and model II. The results of the output of Eviews 9 in table 5 show that the managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant because they are smaller. from the significance level value that is 0.05. Meanwhile, the

corporate governance variable is not significant because it is greater than the significance level of 0.05.

Tabel 5
Fixed Effect Model I

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	-0.542880	0.019791	-27.43113	0.0000
X1	0.015311	0.000633	24.20423	0.0000
X2	0.021067	0.001768	11.91504	0.0000
X3	0.024381	0.002330	10.46208	0.0000
X4	0.024664	0.000155	158.7433	0.0000
X5	0.055631	0.012704	4.378868	0.0000
X6	0.020615	0.006819	3.023181	0.0036
X7	0.026780	0.003901	6.864486	0.0000
X8	-0.001616	0.002077	-0.777778	0.4397

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.998737	Mean dependent var	0.213362
Adjusted R-squared	0.998390	S.D. dependent var	0.061752
S.E. of regression	0.002478	Akaike info criterion	-8.967914
Sum squared resid	0.000381	Schwarz criterion	-8.431958
Log likelihood	376.7166	Hannan-Quinn criter.	-8.753034
F-statistic	2883.101	Durbin-Watson stat	1.375484
Prob(F-statistic)	0.000000		

Source: Processed Results Eviews 9,2020

Based on the results of the Eviews 9 output in table 6, it shows that the variable managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant because they are smaller than the significance level of 0.05. Meanwhile, the variables of corporate governance and Internal Financing are not significant because they are greater than the significance level of 0.05.

Tabel 6
Fixed Effect Model II

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.456534	0.030539	-113.1828	0.0000
X1	-0.056183	0.000871	-64.53596	0.0000
X2	0.431705	0.001365	316.1838	0.0000
X3	-0.317325	0.001650	-192.3229	0.0000
X4	0.030707	0.001335	22.99764	0.0000
X5	3.118684	0.006189	503.8963	0.0000
X6	-1.524407	0.003110	-490.1768	0.0000
X7	-0.388901	0.002204	-176.4908	0.0000
X8	-1.35E-05	0.000889	-0.015234	0.9879
Z	-0.026148	0.054071	-0.483597	0.6304

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.999976	Mean dependent var	0.533600
Adjusted R-squared	0.999970	S.D. dependent var	0.191210
S.E. of regression	0.001055	Akaike info criterion	-10.66696
Sum squared resid	6.79E-05	Schwarz criterion	-10.10123
Log likelihood	445.6784	Hannan-Quinn criter.	-10.44014
F-statistic	144202.6	Durbin-Watson stat	2.658176
Prob(F-statistic)	0.000000		

Source: Processed Results Eviews 9,2020

Random Effect Model

REM is a model that estimates panel data where the disturbance variables may be interrelated over time and between individuals. Based on the results of processing Eviews 9 using fixed effects models for model I and model II.

Tabel 7
Random Effect Model I

Dependent Variable: Z
Method: Panel EGLS (Cross-section random effects)
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80
Swamy and Arora estimator of component variances

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	-0.597443	0.008121	-73.56449	0.0000
X1	0.015589	0.000438	35.61664	0.0000
X2	0.024411	0.001259	19.39621	0.0000
X3	0.027242	0.001908	14.27862	0.0000
X4	0.024880	0.000136	182.7484	0.0000
X5	0.050292	0.009780	5.142275	0.0000
X6	0.025444	0.004833	5.264221	0.0000
X7	0.027828	0.003174	8.767620	0.0000
	-0.000411	0.001687	-0.243448	0.8084

Effects Specification

S.D.

Rho

Cross-section random	0.000000	0.0000
Idiosyncratic random	0.002478	1.0000

Weighted Statistics			
R-squared	0.997939	Mean dependent var	0.213362
Adjusted R-squared	0.997707	S.D. dependent var	0.061752
S.E. of regression	0.002957	Sum squared resid	0.000621
F-statistic	4298.116	Durbin-Watson stat	1.025887
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.997939	Mean dependent var	0.213362
Sum squared resid	0.000621	Durbin-Watson stat	1.025887

Source: Processed Results Eviews 9,2020

The results of Eviews 9 in table 7 show that the managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant. because it is smaller than the significance level of 0.05. Meanwhile, the corporate governance variable is not significant because it is greater than the significance level of 0.05.

Tabel 8
Random Effect Model II

Dependent Variable: Z
Method: Panel EGLS (Cross-section random effects)
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.466240	0.025530	-135.7716	0.0000
X1	-0.055716	0.000686	-81.23764	0.0000
X2	0.431551	0.001164	370.6987	0.0000
X3	-0.317102	0.001411	-224.7841	0.0000
X4	0.030839	0.001055	29.23280	0.0000
X5	3.116724	0.004677	666.4252	0.0000
X6	-1.522122	0.002323	-655.3138	0.0000
X7	-0.388024	0.001793	-216.4325	0.0000
X8	-9.60E-05	0.000719	-0.133518	0.8942
Z	-0.033287	0.042338	-0.786221	0.4344

Effects Specification			
		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.001055	1.0000

Weighted Statistics			
R-squared	0.999975	Mean dependent var	0.533600
Adjusted R-squared	0.999971	S.D. dependent var	0.191210
S.E. of regression	0.001024	Sum squared resid	7.34E-05
F-statistic	306056.8	Durbin-Watson stat	2.526564
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.999975	Mean dependent var	0.533600
Sum squared resid	7.34E-05	Durbin-Watson stat	2.526564

Source: Processed Results Eviews 9,2020

The results of the Eviews 9 output in table 8 it shows that the variable managerial overconfidence, firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings variables are significant because they are smaller than the significance level of 0.05. Meanwhile, the variables of corporate governance and Internal Financing are not significant because they are greater than the significance level of 0.05.

Model Selection (Estimation Technique) Panel Data Regression

Chow test

The Chow test is a test to determine whether the Common Effect (CE) or Fixed Effect (FE) model is the most appropriate to be used in estimating panel data. The Chow test is carried out with the following hypothesis:

H_0 : Common Effect Model

H_1 : Fixed Effect Model

The decision making rule is if the probability for cross section $F < 0.05$ then H_0 is rejected and H_1 is accepted so that the correct model is the fixed effect model. Conversely, if the probability for cross section $F > 0.05$ then H_0 is accepted and H_1 is rejected so that the right model is a common effect model.

Tabel 9
Chow Test Model I

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.347059	(9,62)	0.0002
Cross-section Chi-square	39.136675	9	0.0000

Source: Processed Results Eviews 9,2020

Models the probability value (Prob) for the cross section F of 0.0002 for a value < 0.05 (defined as the

initial significance level or alpha). So it can be concluded that the fixed effect (FE) is more appropriate to use for model I than the common effect (CE) value. H_0 is rejected and H_1 is accepted.

Tabel 10

Chow Test Model II

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.551410	(9,61)	0.8309
Cross-section Chi-square	6.257230	9	0.7139

Source: Processed Results Eviews 9,2020

Model II the probability value (Prob) for the cross section F of 0.8309 for a value > 0.05 (defined at baseline as a significance level or alpha). So it can be concluded that the common effect (CE) is more appropriate for model II than the fixed effect (FE) value. H_0 is accepted and H_1 is rejected.

Hausman Test

The Hausman test is conducted to compare or choose which model is the best between the fixed effect model (FE) and the random effect model (RE). The Hausman test is carried out with the following hypothesis:

H_0 : Random Effect Model

H_1 : Fixed Effect Model

The Hausman test statistical model follows the Chi-Square statistical distribution with a degree of freedom < 0.05 , then H_0 is rejected and H_1 is accepted so that the correct model is the fixed effect model. Conversely, if the probability for cross section $F > 0.05$ then H_0 is accepted and H_1 is rejected, so the correct model is the random effects model. Based on the results of processing Eviews 9 using the Hausman test for model I and model II.

Tabel 11

Hausman Test Model I

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	38.785654	8	0.0000

Source: Processed Results Eviews 9,2020

Model I, the estimation results of the Hausman test, the random cross section probability value is 0.0000 < 0.05 , it can be concluded that the most appropriate model for model I is by using a fixed effect model.

Tabel 11

Hausman Test Model II

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.962687	9	0.8375

Source: Processed Results Eviews 9,2020

Model II estimation results of the Hausman test, the random cross section probability value is 0.8375 > 0.05 , it can be concluded that the most appropriate model for model II is to use the random effect model.

Lagrange Multiplier (LM) test

The final step in the model selection test is to perform the Lagrange Multiplier test which tests the Common Effect and Random Effect (Ali, 2016). The LM test hypothesis is:

H_0 : Common Effect Model

H_1 : Random Effect Model

The estimation results of the lagrange multiplier (LM) test show that the calculated LM value is 0.0720 > 0.05 , meaning that the calculated LM value $>$ chi-squared table.

Tabel 12

Langrange Test Model II

Lagrange multiplier (LM) test for panel data

Sample: 2011 2018

Total panel observations: 80

Probability in ()

Null (no rand. effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	3.237361 (0.0720)	0.037089 (0.8473)	3.274450 (0.0704)
Honda	-1.799267 (0.9640)	-0.192585 (0.5764)	-1.408452 (0.9205)
King-Wu	-1.799267 (0.9640)	-0.192585 (0.5764)	-1.334542 (0.9090)
SLM	-1.260142 (0.8962)	0.048282 (0.4807)	-- --
GHM	-- --	-- --	0.000000 (0.7500)

Source: Processed Results Eviews 9,2020

Model II the conclusions are consistently obtained from the results *lagrange multiplier* which determines that the appropriate model used for this research is *random effect model* (BRAKE).

Hypothesis test

t Test (Partial Test)

The t statistical test is used to measure how far the influence of each independent variable is in explaining the dependent variable. In this model the t-table value is obtained using the provisions of the α (alpha) value of 0.05 and the degree of freedom value of 70, then the t-table of 1.99. The results of the F test can be seen in the following table:

Tabel 13

Partial Test Results of Model I

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.542880	0.019791	-27.43113	0.0000
X1	0.015311	0.000633	24.20423	0.0000
X2	0.021067	0.001768	11.91504	0.0000
X3	0.024381	0.002330	10.46208	0.0000
X4	0.024664	0.000155	158.7433	0.0000
X5	0.055631	0.012704	4.378868	0.0000
X6	0.020615	0.006819	3.023181	0.0036
X7	0.026780	0.003901	6.864486	0.0000
X8	-0.001616	0.002077	-0.777778	0.4397

Source: Processed Results Eviews 9,2020

Based on the results of the Eviews 9 output in table 13 shows that the values of the independent variable managerial overconfidence and the control variable firm size, financial leverage, investment opportunity set, operating results, profitability and cash holdings> t-table 1.99 then these variables significantly influence. on the Internal Financing variable. The independent variable of corporate governance has a t-value of -0.78 <t-table 1.99, so corporate governance does not have a significant effect on the Internal Financing variable and has an opposite relationship.

Tabel 14

Partial Test Results of Model II

Dependent Variable: Z
Method: Panel Least Squares
Sample: 2011 2018
Periods included: 8
Cross-sections included: 10
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.466240	0.025530	-135.7716	0.0000
X1	-0.055716	0.000686	-81.23764	0.0000
X2	0.431551	0.001164	370.6987	0.0000

X3	-0.317102	0.001411	-224.7841	0.0000
X4	0.030839	0.001055	29.23280	0.0000
X5	3.116724	0.004677	666.4252	0.0000
X6	-1.522122	0.002323	-655.3138	0.0000
X7	-0.388024	0.001793	-216.4325	0.0000
X8	-9.60E-05	0.000719	-0.133518	0.8942

Source: Processed Results Eviews 9,2020

Based on the results of the Eviews 9 output in table 14, it shows that the values of the independent variable managerial overconfidence and the control variables of financial leverage, profitability and cash holdings> t-table 1.99 show that these variables significantly influence investment efficiency but have opposite relationships. For other control variables, namely firm size, investment opportunity set, operating results> t-table 1.99, this means that these variables significantly influence investment efficiency. While the independent variable corporate governance and the Internal Financing mediation variable have a t-value <t-table 1.99, so these variables do not significantly influence the investment efficiency variable and have an opposite relationship.

F Test (Model Feasibility)

According to Ghazali (2006), the F statistical test basically shows whether all the independent variables that are included in the model have a joint influence on the dependent variable. The results of the F test can be seen in the following table:

Table 15

Simultaneous Test Results of Model I

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.998737	Mean dependent var	0.213362
Adjusted R-squared	0.998390	S.D. dependent var	0.061752
S.E. of regression	0.002478	Akaike info criterion	-8.967914
Sum squared resid	0.000381	Schwarz criterion	-8.431958
Log likelihood	376.7166	Hannan-Quinn criter.	-8.753034
F-statistic	2883.101	Durbin-Watson stat	1.375484
Prob(F-statistic)	0.000000		

Source: Processed Results Eviews 9,2020

Based on table 15, it can be seen that the probability F statistics for the fixed effect model on the Internal Financing variable is equal to 0.000000. with an eligibility level of 5% (alpha 0.05) so that with this value it can be seen that the probability value $F < 0.05$. This means that the independent variable *managerial overconfidence* and corporate governance as well as control variables firm size, financial leverage, investment opportunity set, operating results, profitability, cash holdingssimultaneously affect the variablesInternal Financing.

Table 16
Simultaneous Test Results of Model II

Effects Specification			
		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.001055	1.0000
Weighted Statistics			
R-squared	0.999975	Mean dependent var	0.533600
Adjusted R-squared	0.999971	S.D. dependent var	0.191210
S.E. of regression	0.001024	Sum squared resid	7.34E-05
F-statistic	306056.8	Durbin-Watson stat	2.526564
Prob(F-statistic)	0.000000		
Unweighted Statistics			

Source: Processed Results Eviews 9,2020

Based on table 16 it can be seen that the probability F statistic for the random effect model on the investment efficiency variable is equal to 0.000000. with an eligibility level of 5% (alpha 0.05) so that with this value it can be seen that the probability value $F < 0.05$. This means that the independent variable *managerial overconfidence* and corporate governance and control variables firm size, financial leverage, investment opportunity set, operating results, profitability, cash holdings and Internal Financing mediation variable simultaneously affect the investment efficiency variable.

Coefficient of Determination (R^2)

The coefficient of determination test is carried out to assess the influence of the independent variable on the dependent variable. The results of the F test can be seen in the following table:

Table 17
Coefficient of Determination Test of Model I

Effects Specification			
Cross-section fixed			
R-squared	0.998737	Mean dependent var	0.213362
Adjusted R-squared	0.998390	S.D. dependent var	0.061752
S.E. of regression	0.002478	Akaike info criterion	-8.967914
Sum squared resid	0.000381	Schwarz criterion	-8.431958
Log likelihood	376.7166	Hannan-Quinn criter.	-8.753034
F-statistic	2883.101	Durbin-Watson stat	1.375484
Prob(F-statistic)	0.000000		

Source: Processed Results Eviews 9,2020

Determination test results Based on table 17 of the test results using the fixed effect model, the value of R^2 reflects the large proportion of variations in the

dependent variable Y which can be explained using the independent variable X. Equation model I shows a value of R^2 of 0.998737 means that the variable Y (Internal Financing) can be explained by the regression model for 99.87% and the remaining 0.13% is explained by other factors outside the model used.

Table 18
Coefficient of Determination Test of Model II

Effects Specification			
		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.001055	1.0000
Weighted Statistics			
R-squared	0.999975	Mean dependent var	0.533600
Adjusted R-squared	0.999971	S.D. dependent var	0.191210
S.E. of regression	0.001024	Sum squared resid	7.34E-05
F-statistic	306056.8	Durbin-Watson stat	2.526564
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.999975	Mean dependent var	0.533600
Sum squared resid	7.34E-05	Durbin-Watson stat	2.526564

Source: Processed Results Eviews 9,2020

Based on table 18 of the test results using the random effect model, the value of R^2 reflects the large proportion of variations in the dependent variable Y which can be explained using the independent variable X. Equation model II shows a value of R^2 of 0.999975 means that the variable Y (Investment Efficiency) can be explained by the regression model for 99.99% and the remaining 0.01% is explained by other factors outside the model used.

Path Analysis Hypothesis Test

Path analysis is an analysis technique used to study the causal relationship between independent and dependent variables. In this study, the relationship between the independent variables (managerial overconfidence and corporate governance) and the dependent variable (investment efficiency) is mediated by the intervening variable (Internal Financing).

Table 3
Summary of Path Coefficients

Variable	Coeff	St.Error	t-count	Prob.
Managerial Overconfidence - Internal Financing	0.0153	0.00063	24,2	0.00
Good Corporate Governance - Internal Financing	-0.0016	0.00207	-0.777778	0.43
Managerial Overconfidence - Investment Efficiency	-0.0557	0.00068	-81.23764	0.00
Good Corporate	-9.60E-	0.00071	-0.133518	0.89

Governance -				
Investment Efficiency				
Internal Financing -	-0.0332	0.04233	-0.786221	0.43
Investment Efficiency				

Source: Processed Eviews 9

Based on e1, which is the influence of other variables on Internal Financing, it can be calculated as $e1 = \sqrt{1 - 0.99} = 0.1$. The value of e2, which is the influence of other variables on investment efficiency, is calculated as $e2 = \sqrt{1 - 0.99} = 0.1$. Based on the summary table of path coefficients and the calculation of e1 and e2 above, the following structural equations are obtained:

$$\text{Internal Financing} = 0.015X1 + -0.002X8 + 0.1$$

$$\text{Investment Efficiency} = -0.056X1 + -9.60X8 + -0.033Z + 0.1$$

Here is a path diagram of the structural equation above:

Figure 1 Path Diagram

From the summary table of the path coefficient above, it can be seen that managerial overconfidence has a significant negative effect on investment efficiency with a regression coefficient of -0.056 while the indirect effect of managerial overconfidence on investment efficiency through Internal Financing can be calculated as $0.015 \times -0.033 = -0.000495$. And the total effect of managerial overconfidence on investment efficiency is $-0.056 + -0.000495 = -0.056495$.

Corporate governance has a significant negative effect on investment efficiency with a regression coefficient of -9.60. Meanwhile, the indirect effect of corporate governance on investment efficiency through Internal Financing can be calculated as $-0.002 \times -0.033 = 0.000066$. And the total effect of corporate governance on investment efficiency is $-9.60 + 0.000066 = -9.59993$.

Mediation Effect Detection Test

In this study, there is a mediating variable (intervening) which is proxied by Internal Financing.

The sobel test is carried out by testing the strength of the indirect effect of managerial overconfidence and corporate governance on investment efficiency through the mediation variable of Internal Financing. Calculated by multiplying paths:

$$\text{Managerial Overconfidence} \rightarrow \text{Internal Financing} = 0.015 \text{ (a)}$$

$$\text{Internal Financing} \rightarrow \text{Investment Efficiency} = -0.033 \text{ (b)}$$

$$\text{Corporate governance} \rightarrow \text{Internal Financing} = -0.002 \text{ (c)}$$

$$\text{Internal Financing} \rightarrow \text{Investment Efficiency} = -0.033 \text{ (d)}$$

So the coefficient $ab = cd = (c \cdot c')$, where c is the effect of managerial overconfidence and corporate governance on investment efficiency without controlling Internal Financing, while c' is the coefficient of managerial overconfidence and corporate governance influence on investment efficiency after controlling for Internal Financing. Standard error a and b are written with sa and sb, standard error c and d are written with sc and sd. And the standard error for the indirect effect ab is sab, cd is scd which is calculated by the formula:

a Path Calculation 1

$$\text{Sat} = \sqrt{b^2 sa^2 + a^2 sb^2 + sa^2 sb^2}$$

$$\text{Sat} =$$

$$\sqrt{(-0.033)^2 (0.000633)^2 + (0.015)^2 (0.04)^2 + (0.000633)^2 (0.04)^2}$$

$$\text{Sat} = 0.000601$$

b Path Calculation 2

$$\text{Sat} = \sqrt{d^2 sc^2 + c^2 sd^2 + sc^2 sd^2}$$

$$\text{Sat} =$$

$$\sqrt{(-0.033)^2 (0.002)^2 + (0.002)^2 (0.04)^2 + (0.002)^2 (0.04)^2}$$

$$\text{Sat} = 0.000131$$

To test the significance of the indirect effect, we need to calculate the t value of the coefficients ab and cd with the following formula:

a Line 1

$$t = -0.82363 \frac{ab}{sab} \frac{0.015 \times (-0.033)}{0.000601}$$

b Line 2

$$t = 0.503817 \frac{cd}{scd} \frac{(-0.002) \times (-0.033)}{0.000131}$$

From the calculation of the t-statistic value for line 1 and line 2 above, it can be seen that for line 1 the t value of -0.82363 is smaller than the t-table with a significant level at 0.05, namely 1.99, it can be concluded that the mediation coefficient -0.82363 is not significant, which means there is no mediation effect.

For path 2 the t-count value of 0.503817 is smaller than the t table with a significant level of 0.05, namely 1.99, it can be concluded that the mediation coefficient of 0.9898 is not significant, which means there is no mediation effect.

Discussion

Effect of Managerial Overconfidence on Investment Efficiency

Variable *managerial overconfidence* gives a negative coefficient estimation result. The t-test result shows that the variable *managerial overconfidence* has a significant effect on investment efficiency in accordance with the initial hypothesis. Based on the results of the t statistical test in table 14, it can be seen that *managerial overconfidence* has an influence on investment efficiency. This means high or low value *managerial overconfidence* a company is able to influence the value of investment efficiency. The results of this study state that managerial overconfidence has a negative and significant effect on investment efficiency.

The results of this study support the research conducted by Heaton (2002); Malmendier Tate (2005); and Xia et al. (2009) who found the same result that managerial overconfidence has a negative and significant effect on investment efficiency. Managers' choices for suboptimal levels of investment can stem from the CEO's overestimation of investment (Heaton, 2002 and Malmendier Tate, 2005). In line with the research conducted by He et al. (2019) found that managerial overconfidence causes overinvestment problems, especially in state-owned companies.

The results of this study indicate that managerial overconfidence has a negative and significant effect on investment efficiency. So that the first hypothesis proposed in this study is that managerial overconfidence has a negative and significant effect on investment efficiency.

Effect of Managerial Overconfidence on Internal Financing

Variable *managerial overconfidence* provides a positive coefficient estimation result. The t-test result shows that the variable *managerial overconfidence* has a significant effect on investment efficiency in accordance with the initial hypothesis. Based on the results of the t statistical test in table 13 it can be seen that *managerial overconfidence* has an influence on Internal Financing. This means high or low value *managerial overconfidence* a company is able to influence the value of Internal Financing. The results of this study state that managerial overconfidence positive and significant effect on Internal Financing.

The results of this study support the research conducted by Huang et al. (2010) who found that agency costs had a positive and significant effect on the overconfidence of top executives on the use of cash flows. Managers with an optimism bias display a pecking-order preference (Malmendier et al., 2011).

According to the pecking order theory, companies tend to choose internal funding, then debt, and as a last resort to increase new equity (Myers, 1984). Managers with an overconfident bias are described as thinking that internal funding is the lowest cost of capital and can limit fluctuations from external borrowing markets and stock markets. In addition, managers with an overconfidence bias tend to have the illusion of control over technology and the accuracy of their own judgments. When making decisions, they tend to overestimate the likelihood of success that their company will show good profits and have great potential. So that through internal funding, overconfident managers have more control and believe that they can control the company's business performance.

The results of this study state that managerial overconfidence has a positive and significant effect on internal funding. So that the second hypothesis proposed in this study is that managerial overconfidence has a positive and significant effect on internal funding received.

The Effect of Corporate Governance on Internal Financing

The corporate governance variable gives a negative coefficient estimation result. The results of the t-test show that the corporate governance variable has an insignificant effect on Internal Financing. Based on the results of the t statistical test in table 13, it can be seen that corporate governance has no effect on Internal Financing. This means that the high or low value of corporate governance is not able to influence the value of Internal Financing. The results of this study state that corporate governance has a negative and insignificant effect on Internal Financing.

The results of this study support the research conducted by Daud et al. (2011) who found that there was a negative and insignificant relationship between corporate governance and internal funding. Grossman (2012) states that companies that have increased additional debt should be subject to more supervision from banks and implement better governance rules to maximize the use of additional cash flows of investment projects. By not finding the effect of the board of commissioners relationship as measured by the number of board of commissioners meeting indicators on the company's internal funding, it can be indicated that companies will tend to practice better governance when they need to generate external funding.

The results of this study state that corporate governance has a negative and insignificant effect on internal funding. So that the third hypothesis proposed in this study is that corporate governance has a positive and significant effect on internal funding and is rejected.

Effect of Corporate Governance on Investment Efficiency

The corporate governance variable gives a negative coefficient estimation result. The results of the t-test indicate that the corporate governance variable has an insignificant effect on investment efficiency. Based on the results of the t statistical test in table 14, it can be seen that corporate governance has no effect on investment efficiency. This means that the high or low value of corporate governance is not able to affect the value of investment efficiency. The results of this study state that corporate governance has a negative and insignificant effect on investment efficiency.

The results of this study support the research conducted by Chen et al. (2017) found that the number of meetings had a negative and insignificant effect on investment efficiency, and this effect was more pronounced in SOEs than in private companies. With no effect of the relationship of the board of commissioners being found as measured by the indicator of the number of board of commissioners' meetings on the level of efficiency of the company's investment, it can be indicated that the board of commissioners has not played an effective role in carrying out its functions. This is based on the fact that the duties and responsibilities of the board of commissioners are to provide control and advice to the company's management so that they can act in accordance with the existing principles of Good Corporate Governance. However, every company decision is determined by the company's board of directors. So that the board of commissioners does not have a direct influence on the decisions taken by the company, one of which is related to investment decisions, where these investment decisions can affect the level of efficiency of the company's investment.

The results of this study state that corporate governance has a negative and insignificant effect on investment efficiency. So that the fourth hypothesis proposed in this study is that corporate governance has a positive and significant effect on investment efficiency and is rejected.

The Effect of Internal Financing on Investment Efficiency

The Internal Financing variable gives a negative coefficient estimate. The results of the t-test indicate that the Internal Financing variable has no significant effect on investment efficiency. Based on the results of the t statistical test in table 14, it can be seen that Internal Financing has no effect on investment efficiency. This means that the high or low value of the company's Internal Financing is not able to affect the value of investment efficiency. The results of this study state that

Internal Financing has a negative and insignificant effect on investment efficiency.

The results of this study support the research conducted by Grossman (2012) showing that internal funding has no significant effect on investment efficiency. In setting investment policies, there are two types of funding sources that can be used by companies in financing their investment activities, namely internal funding and external funding. Internal funding comes from retained earnings (R/E) while external funding comes from stock issuance, bond issuance, and bank loans (Myers, Brealey & Allen, 2006). However, in this study, internal funding sources realized in the form of retained earnings are not able to optimally fund the company's investment activities, so that the retained earnings generated by the company have a negative and insignificant effect on the level of efficiency of the company's investment.

The results of this study state that internal funding has a negative and insignificant effect on investment efficiency. So that the fifth hypothesis proposed in this study is that internal funding has a positive and significant effect on investment efficiency is rejected.

Role Internal Financing as a mediation for the influence of Managerial Overconfidence on Investment Efficiency

The magnitude of the role of Internal Financing as a mediation for the influence of managerial overconfidence on investment efficiency is calculated by multiplying the indirect coefficient, namely $0.015 \times -0.033 = -0.0000495$. And the total effect of managerial overconfidence on investment efficiency is $-0.056 + -0.000495 = 0.56495$. Based on the results of calculations with the Sobel test conducted in this study shows the standard error value of the indirect effect of 0.000601 for line 1 with a t-count value of -0.82363 smaller than the t-table with a significant level at 0.05, namely 1.99, it can be concluded that the coefficient mediation -0.82363 is not significant, which means that the role of Internal Financing as a mediation for the effect of managerial overconfidence on investment efficiency has a negative and insignificant effect on state-owned companies (BUMN) in the 2011-2018 period. So that the sixth hypothesis (H_6) proposed in this study is rejected.

The role of Internal Financing in mediating the influence of Corporate Governance on Investment Efficiency

The magnitude of the role of Internal Financing as a mediation for the influence of managerial overconfidence on investment efficiency is calculated by multiplying the indirect coefficient, namely $-0.002 \times -0.033 = -0.000066$. And the total effect of managerial overconfidence on investment efficiency is $-9.60 + -0.000066 = -9.59993$. Based on the results of calculations with the single test

carried out in this study, the standard error value of the indirect effect is 0.000131 for line 2 with a t-count value of 0.503817 smaller than the t-table with a significant level of 0.05, namely 1, 99 it can be concluded that the mediation coefficient is 0, So that the seventh hypothesis (H_7) proposed in this study is rejected.

Conclusion

This study is conducted to examine empirically the factors that influence investment efficiency in State-Owned Enterprises (BUMN) on the Indonesia Stock Exchange. This study was tested with two independent variables are managerial overconfidence and corporate governance, intervening variable is internal financing. The results of this study found that investment efficiency in state-owned enterprises (BUMN) in Indonesia is largely determined by managerial overconfidence bias. Managers who have an overconfidence seek more aggressive and risky ventures so that they invest excessively beyond optimal levels. Managerial overconfidence in a manager can also strengthen the choice of internal financing, especially in state-owned companies. However, investment efficiency in this study is not influenced by corporate governance and internal financing. Corporate governance has also proven to have no role in corporate funding decisions. The role of internal financing as mediation was not found in this study. The results of this study are expected to be an illustration for the internal parties of the company, both management and company owners in minimizing the influence of overconfidence bias behavior which is sometimes not realized by company managers in making company decisions related to investment decisions, especially in state-owned companies (BUMN). In addition, good corporate governance practices need to be improved so that asymmetric information and agency problems that become the gap between agents and principals can be reduced reach the optimal level of investment.

The limitations that exist in this study, namely the measurement of managerial overconfidence using income forecast bias are deemed inaccurate because it only looks at the difference between forecast earnings which refers to time series, namely the effect of previous time and real profit, whereas in fact profit can also be influenced by internal factors and factors external. So there is a weakness in measuring overconfidence using secondary data based on forecasts. Apart from that, another limitation lies in the insufficient number of samples of state-owned companies (BUMN), so that it becomes an obstacle in determining the condition of investment efficiency of state-owned companies whether they experience overinvestment or underinvestment.

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