

DOES ECO-EFFICIENCY REDUCE THE COST OF EQUITY CAPITAL ?

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Abstract – The purpose of this study is to examine the impact of eco-efficiency on the cost of equity capital on manufacturing companies listed on the Indonesia Stock Exchange period from 2013 to 2017. Eco-efficiency is proxied by a dummy variable with a maximum value of 1 representing the company implementing ISO 14001 and with a minimum value of 0 representing a company that does not implement ISO 14001. Cost of equity capital is proxied with price earnings growth ratio. This study uses secondary data with purposive sampling techniques. The samples used in this study were 55 companies with a total observation of 275 data. The research data were analyzed by panel data regression analysis using Eviews 9. Our results show that eco-efficiency implementations have a negative effect on the cost of equity capital.

Keywords: Cost of equity capital, eco-efficiency, ISO 14001, legitimacy theory.

I. INTRODUCTION

Business developments carried out by companies, especially manufacturing, play an important role in the Indonesian economy. The company contributes a large income to the state as well as being one of the causes of damage to the environment, because the company's operations that manage natural resources to produce goods have a direct impact on the natural and social environment. Environmental pollution that occurs around the company has a negative impact and is felt by the surrounding community along with the development of the current industrial sector. Industrial behavior often ignores the impact on the environment, such as water, soil, air pollution, and the existence of social inequalities in the environment [12].

Investors are starting to consider investing in companies that are environmentally and socially responsible. The emergence of awareness of specific companies in manufacturing companies to seek various efforts in overcoming and finding the right solutions to environmental problems. The community expects that the company provides prevention efforts and the best solutions so as not to cause prolonged resistance [21].

Some previous research on the effect of eco-efficiency that can reduce the cost of equity capital has been done by several researchers. [4] suggest reducing water and energy consumption and the amount of waste during the production process will reduce the costs incurred by the company and improve the company's environmental performance. [19] revealed that increasing the effectiveness of business processes will simultaneously reduce environmental impacts that will increase the value of companies in America. According to [1] conducting research in the UK found that companies that implement eco-efficiency have a higher level of benefits than their competitors who do not use it. Research [2] find empirical evidence that eco-efficiency can reduce the cost of equity capital means that companies that implement eco-efficiency has a cost of equity capital is lower than companies that do not apply.

This research is a replication of the research conducted by [2] using samples listed on the Indonesia Stock Exchange in 2010-2012. Changing the measurement of cost of equity capital in the [2] study, the Ohlson (1995) model with the Price Earning Growth (PEG) ratio. The company used as a sample is a manufacturing company from 2013 to 2017. In 2013 to 2017 Indonesia experienced a monetary crisis because of the decision of the United States to stop Quantitative Easing (QE) which made financial markets, especially in the capital and foreign exchange markets throughout the world is turbulent. Manufacturing companies show a low level of social responsibility and maintenance of environmental sustainability. The Gross Domestic Product (GDP) data also shows that the manufacturing sector is the largest contributor, around 25.55% during 2013 to 2017 [3].

II. BASIC THEORY AND DEVELOPMENT OF HYPOTHESIS

A. Legitimacy theory

Legitimacy theory was first put forward by [6]. Legitimacy is a boundary that focuses on social norms and values and reactions that arise because of limitations that encourage how the organization analyzes organizational behavior that occurs within the company by paying attention

to the environment. Companies must pass the test of legitimacy and relevance by showing that the community does need the services of a company and certain groups that benefit from the rewards they receive get approval from the public. Legitimacy theory emphasizes that companies in carrying out their activities need to consider the alignment of social norms and values so that they can be recognized and accepted in their environment, this is important to maintain the existence of a company [17].

B. The concept of eco-efficiency

The company's products eco process results manufacturing is designed, produced, distributed, utilized and then disposed of as waste that can minimize the impact of damage to the environment and health and by consuming natural resources to a minimum. In a system like this, a company performance that is "eco-efficiency" can be obtained, eco can be interpreted as ecological resources and economic resources. Efficiency means that you have to use these two resources optimally. It could also be interpreted se ecologically safe and economically efficient manner [5]. The application of eco-efficiency refers to companies in order to be able to increase the level of their environmental performance or at least equivalent to economic performance so that on the other hand it can reduce environmental impacts and excessive consumption of resources.

C. Cost of equity capital

According to Modigliani & Miller (1958) from research [2] the cost of equity capital is the cost incurred to finance source of financing. Cost of equity capital arises when companies make retained earnings or issue new shares and sell them to investors who intend to invest their capital (Brigham & Weston, 1994). Some of the benefits of cost of equity capital is to maximize the value of the company, and help in making decisions to estimate the budgeting of capital costs. Source of cost of equity capital based on sources of long-term funds, namely long-term debt, preferred shares, ordinary shares, retained earnings.

D. Development of Hypotheses

1. Eco-efficiency abd cost of equity capital

One of the advantages of implementing eco-efficiency is that companies that implement it will have lower cost of equity capital [10]. That means, if companies are implementing eco-efficiency requires a low cost e na kar investors will have more confidence to companies that implement eco-efficiency, investors are confident that the company will have a lower cost and good for the sustainability of the company

The results of several previous studies, namely [2] show that investors consider companies with eco-efficiency expected to have a low environmental risk so that investors are more trusted in investing their capital. This makes the company's cost of equity capital lower than the company without eco-efficiency. In addition, the results of this study

indicate that investors in Indonesia are able to respond easily to certification of Managing Environment ISO 14001. The results of this study are consistent with the findings of [13] which states that investors respond to company announcements regarding environmental awards and certifications.

H1: the implementation of eco-efficiency has a negative effect on the cost of equity capital

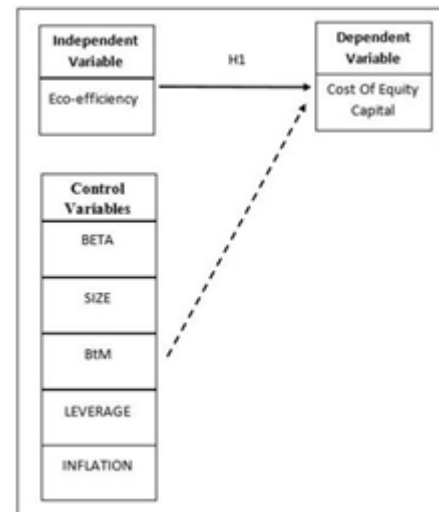


Fig. 1. Research Model

III. RESEARCH METHODS

A. Population and sample

The data used in this study is secondary data that can be accessed through the official website of the Indonesia Stock Exchange. The population in this test is a manufacturing company listed on the Indonesia Stock Exchange. The sampling technique used is purposive sampling technique with predetermined criteria, namely 1) manufacturing companies listed on the Indonesia Stock Exchange during the period 2013 to 2017; 2) The manufacturing company publishes financial statements during the observation period in completely; 3) Data related to research variables must be available in full on the financial statements of manufacturing companies; 4) The company does not issue financial statements with foreign currency values; 5) Company data is has positive equity values.

B. Operational Variables and Measurement Definition

1. Cost of equity capital

The dependent variable in this study is the cost of equity capital. The cost of equity capital proxy in this study refers to the book [15] as measured by the PEG ratio known as the price earning to growth ratio. The formula used to calculate the cost of equity capital is as follows:

$$\text{PEG RATIO} = \frac{\text{PER}}{\text{Growth Rate of Earning Share}} \quad (1)$$

2. Eco-efficiency

The independent variable in this study is eco-efficiency. Consistent with the research of [16], [19], [1], and [2] eco-efficiency is measured by a dummy variable with a maximum value of 1 representing a company that applies ISO 14001 and a minimum value of 0 representing a company that does not implement ISO 14001.

3. Data Processing and Analysis Techniques

Data was processed using statistical tools, namely Eviews 9. Data analysis was performed by descriptive statistical analysis and multiple linear regression analysis. The general forms of multiple regression are as follows:

$$COC_{it} = \alpha + \beta ECO_{it} + \beta BETA_{it} + \beta SIZE_{it} + \beta BTM_{it} + \beta LEV_{it} + \beta INF_{it} + \varepsilon \quad (2)$$

IV. RESULT AND DISCUSSION

A. Characteristics of sample

Based on the stages of sampling in table 1, the number of manufacturing sector companies as the research population listed on the Indonesia Stock Exchange obtained during the 2013 observation year until 2017 is as many as 170 companies. The final number of samples is 275.

TABLE I. WITHDRAWAL OF RESEARCH SAMPLES

| Criteria of samples | Total |
|--|------------|
| Manufacturing companies list on the IDX | 170 |
| Companies that move to non-manufacturing sectors | (2) |
| Companies listing after 2013-2017 | (27) |
| Delisting company during 2013-2017 | (8) |
| Companies that use foreign currencies | (29) |
| Companies that do not display financial statements in complete | (16) |
| Financial report data is not available in full according to the variables needed | (26) |
| Companies that have negative equity values | (7) |
| Total companies selected as sample per year | 55 |
| Total observation for the period 2013-2017 | 275 |

Source: Secondary data processing

B. Descriptive Statistics

TABLE II. STATISTIC DESCRIPTIVE

| | N | Min | Max | Mean | Std Dev |
|--------------------|-----|------|------|------|---------|
| COC | 275 | 0.00 | 3.00 | 0.83 | 0.42 |
| ECO | 275 | 0.00 | 1.00 | 0.39 | 0.49 |
| BETA | 275 | 0.76 | 1.28 | 0.97 | 0.10 |
| SIZE | 275 | 2.25 | 2.38 | 2.31 | 0.03 |
| BTM | 275 | 0.16 | 3.69 | 0.94 | 0.56 |
| LEV | 275 | 0.43 | 0.97 | 0.79 | 0.11 |
| INF | 275 | 0.41 | 0.53 | 0.47 | 0.05 |
| Valid N (listwise) | 275 | | | | |

Source: Processing data with Eviews 9

Table II shows the mean, minimum value, maximum value, and standard deviation of 275 observational data for each variable that is cost of equity capital, eco-efficiency, BETA shares, company size, equity market size, leverage, and inflation.

C. Classical Assumptions

Classical assumptions is done to see the relationship between companies that have effect from implementing eco-efficiency.

1. Multicollinearity Test

The correlation coefficient between variables has a value below 0.8. This indicates that the data in this study did not occur multicollinearity.

TABLE III. MULTICOLLINEARITY TEST

| | ECO | BETA | SIZE | BTM | LEV | INF |
|------|-------|-------|-------|-------|-------|-------|
| ECO | 1.00 | 0.23 | 0.39 | -0.31 | -0.12 | -0.05 |
| BETA | 0.23 | 1.00 | 0.35 | -0.30 | 0.00 | 0.04 |
| SIZE | 0.39 | 0.35 | 1.00 | -0.62 | 0.22 | -0.06 |
| BTM | -0.31 | -0.30 | -0.62 | 1.00 | -0.13 | 0.02 |
| LEV | -0.12 | 0.00 | 0.22 | -0.13 | 1.00 | 0.02 |
| INF | -0.05 | 0.04 | -0.06 | 0.02 | 0.02 | 1.00 |

Source: Processing data with Eviews 9

2. Heterocedasticity Test

The output of the heterocedasticity test uses the Breusch-Pagan-Godfrey technique shows that the probability value is $0.2081 > 0.05$, it can be concluded that the data does not heteroscedasticity problems.

TABLE IV. HETEROCEDASTICITY TEST

| Variable | Prob. Value | Conclusion |
|----------|-------------|-------------------------------|
| ECO | 0.2081 | There is no heterocedasticity |

Source: Processing data with Eviews 9

D. Hypotheses Testing

Hypothesis testing uses panel data regression analysis which is processed using Eviews 9. These results can be seen in table 7 below.

TABLE V. RESULT OF HYPOTHESIS TESTING

| VARIABLE | COEFFICIENT | T-STATISTICS |
|----------|-------------|--------------|
| C | 18.4065 | 1.1824 |
| ECO | -0.2797 | -2.0484 |
| BETA | 0.3095 | 0.8458 |
| SIZE | -7.9048 | -1.1801 |
| BTM | 0.0058 | 0.0859 |
| LEV | 0.3349 | 0.5732 |
| INF | 0.0552 | 0.1256 |

Source: Processing data with Eviews 9

Based on the results of testing the hypothesis in table VII above, the regression models in this study are:

$$COC_{it} = 18.4065 - 0.2797ECO_{it} + 0.3095BETA_{it} - 7.9048SIZE_{it} + 0.0058BTM_{it} + 0.3349LEV_{it} + 0.0552INF_{it} + \varepsilon \quad (3)$$

The implementation of eco-efficiency has a negative effect on the cost of equity capital

Based on the results of H1 testing in table 7 shows that eco-efficiency as measured by ISO 14001 has a negative effect on the cost of equity capital which is measured by the price earnings growth ratio. These results indicate that the **first hypothesis (H1) is supported**. This is evidenced by the significance value which indicates a value of 0,04 which means that this value is smaller than the 5% significance level. If the value of eco-efficiency is higher, it will cause the value of the cost of equity capital to be lower or in other words the company is able to minimize the costs that will be incurred to meet the needs needed by the company.

The company ensures to protect the environment and surrounding communities by applying eco-efficiency. The application of good eco-efficiency has a lack of risk because the legitimacy gap between companies can reduce the cost of equity capital [20]. This is related to the limits that encourage companies to be able to emphasize costs in their companies in carrying out their operational activities to consider the alignment of social norms and values so that they can be recognized and accepted in their environment [6].

The results of this study are in line with the results of the study of [10], [7], [1], [19] and [2] which found that companies that implement eco-efficiency can reduce the value of cost of equity capital. This shows that when a company that applies eco-efficiency is measured by ISO 14001, the value of the company's cost of equity capital will be lower.

Companies that implement eco-efficiency will minimize the impact of damage to the environment and health and consume resources efficiently. This makes the company able to reduce the company's production costs which will reduce the costs needed by the company for corporate funding. The lower the company's funding costs, the lower the cost of equity capital. The lower the value of cost of equity capital

means that the company is able to manage the costs needed in corporate funding.

TABLE VI. SUMMARY RESULTS OF HYPOTHESIS TESTING

| Hypothesis | Sig. | Coefficient | Result |
|--|--------|-------------|-----------|
| The implementation of eco-efficiency has a negative effect on cost of equity capital | 0,04** | -0,27 | Supported |
| ***Significance at level 1%, **Significance at level 5%, *Significance at level 10% | | | |

V.
Con
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V. CONCLUSION

Based on the description that has been described in previous section, it can be concluded that the results in this research are eco-efficiency air negative influence on the cost of equity capital. This means that companies that implement eco-efficiency with ISO 14001 are able to minimize the costs to be spent to meet the funding needs needed by the company. The more funds that can be minimized, the lower the cost of equity capital.

The limitations of this study are: (1) This study is only limited to companies in the manufacturing sector listed on the Stock Exchange (2) The period of this study was only five years, namely 2013 to 2017 (3) Measurements for the dependent variable cost of equity capital using PEG Ratio (4) Measurement of independent variables namely eco-efficiency as measured by ISO 14001 certificate (5) This study only examines the effects of eco-efficiency on the cost of equity capital.

Further research is expected to expand the sample and increase the longer time span. Other independent variables such as the level of disclosure of social responsibility, intellectual capital and voluntary action are can be used in the model.

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