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Does the Cost of Capital Affect Environmental Performance?

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Abstract: This study aims to test the influence of environmental performance in Indonesia associated with the cost of capital. This research is motivated by previous findings which stated that the environmental performance received a good response from investors as reflected in increased stock prices (Ba et al., 2013; Middleton, 2015). The development hypothesis of the research is based on the theory of stakeholder, legitimacy and the theory of signal and some previous research such as the studies that have been done (Guenster et al., 2011; Sarumpaet et al., 2017). This type of research is research explanatory, the determination of the sample using the method of purposive sampling with number of samples to qualify as many as 215 observation data derived from the annual financial reports of companies listed on the stock exchange in 2015 until 2017. The results of the statistical analysis show that there are significant negative not significant on the relationship of environmental performance with cost of capital, it can be explained that only a small fraction of investors understand the performance information of the environment, and make it as a basis for making the decision to invest.

Keywords: cost of capital, environmental performance.

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INTRODUCTION

This research is motivated by previous findings which stated that the environmental performance received a good response from investors as reflected in increased stock prices (Ba et al., 2013; Middleton, 2015), and the importance of the issue of the sustainability of the environment (Khoiruman & Haryanto, 2017). Yusoff et al. (2018) said in the context of the natural environment, the organization is not only responsible towards the environment by preserving the environment and/or minimize the environmental impact of their activities, but also report any efforts made towards environmental sustainability. This study will test the performance of the environment in Indonesia is associated with cost of capital. Assessment of environmental performance in

Indonesia is measured from the achievements of the company to follow Performance Rating Program in Environmental Management (PROPER). This Program is one of the efforts made by the Ministry of Environment to the structuring of the company in the management of the environment (Indonesian Ministry of Environment No. 3/2014).

The results of the environmental management showing the performance of the company in the management of the environment. Some studies conclude that the environmental performance is high are associated with higher market value and operating performance (Guenster et al., 2011; Asmeri et al., 2017). Sarumpaet et al. (2017) found the influence of environmental performance on profitability. These results confirm that environmental performance has value relevance, which will affect the future earnings expected from the company (Hassel et al., 2005; Fisher-Vanden & Thorburn, 2011). While Orlitzky et al. (2003) found the relationship not significant between environmental performance and financial performance (Semenova & Hassel, 2016).

Middleton (2015) concludes that environmental performance is responded to by the investors as reflected in the increase in the stock price. However, some studies found inconsistent results (Hassel et al., 2005; Amato & Amato, 2012; Endrikat, 2016). Sarumpaet et al. (2017) did not found significant results on the model of the overall environmental performance on stock prices. However, when the sample is divided into good ratings and bad, found a positive relationship between the PROPER and the company's stock price with a good rating, and is not found in company with a rating of poor.

Cost of capital (COC) is a factor that determines whether companies want to or do not accept the proposed funding from investors. COC is used as a measure for decision makers in investment, namely by comparing the level of profit required by the COC. Furthermore, if the company produces a rate of return that is higher than the COC then returns the remainder will cause an increase in the value of the common stock of the company, and furthermore, increased the wealth of the owners of the shares (Keown et al., 2005). El Ghoul et al. (2011) stating in particular the investment of CSR in environmental policy contribute to lowering the cost of equity. Investment in the strategic environment produces an increase in resource efficiency.

Sarumpaet et al. (2017) declare that environmental performance has a positive effect on stock prices (Lindrianasari, 2007; Iqbal et al., 2013). Stephan (2002) of the company with the environmental performance of the poor are likely to face an increased risk of the cost of expensive. Hassel et al. (2005); Fisher-Vanden & Thorburn (2011) found that corporate environmental performance imposes significant costs on the company and reduce shareholder value. Orlitzky et al. (2003) the results of his research found the relationship not significant between environmental performance with financial performance. Comprehensively in most of the studies show that there is a positive relationship between environmental performance and financial performance, but the relationship was not significant (Dixon-Fowler et al., 2013). Environmental risk management in the improving associated with a lower cost of capital (Sharfman & Fernando, 2008).

This study expands previous research on the relationship between environmental performance and value relevant (Semenova & Hassel, 2016; Sarumpaet et al., 2017) by using a variable cost of capital as the dependent variable. The results of this study are expected to contribute some empirical evidence to explain the theory of stakeholders in the research regarding the accounting environment so that it can spur better research in the future.

METHODS

The type of this research is explanatory which want to determine the effect of environmental performance, against cost of capital. The population of this research is companies that have been listed in the Indonesia stock Exchange (BEI). The research sample was taken by using purposive sampling method. The company's criteria that will be used as a sample are the companies that follow PROPER, publish the annual report and can be accessed via the internet from the years 2015–2017, and obtained 215 observation data.

The cost of capital as the dependent variable is the real cost to be incurred by the company to obtain funds either debt, preferred stock, common stock, and retained earnings to fund an investment in the company (Keown et al., 2005). COC in this study in the proxy with a Price Earnings Growth Ratio (PEG). PEG is a suitable model for use in calculating the cost of capital based on some research (Botosan & Plumlee, 2005; Easton & Monahan, 2005; Mangena et al., 2010). The formula used to calculate the PEG:

$$rPEG = \sqrt{\frac{EPS_2 - EPS_1}{P_0}}$$

Description:

rPEG = Price Earnings Growth ratio (a proxy cost of capital).
EPS_2 = Earnings per Share two years after the publication of the annual report.
EPS_1 = Earnings per Share one year after the publication of the annual report.
P_0 = Stock prices in one year before publication.

Table 1 Sample

Description	2014		2015		2016	
	Frequency	%	Frequency	%	Frequency	%
Agricultures	10	14.71	9	12.00	10	13.51
Mining	5	7.35	7	9.33	6	8.11
Basic Industry and Chemical	20	29.41	22	29.33	29	39.19
Miscellaneous Industry	11	16.18	12	16.00	3	4.05
Consumer Goods Industry	20	19.41	19	25.33	23	31.08
Others	2	2.93	6	8.00	3	4.05
Total	68	100	73	100	74	100

As the independent variable is environmental performance, measurement using the PROPER with a PROPER reason to have the assessment indicators that are measurable and objective of the ministry of the environment, so that researchers more easily determine the measurement. Proper is program assessment of the efforts of the person responsible for the business and/or activity in the control of environmental pollution and/or damage and the management of hazardous waste materials and toxic (Indonesian Ministry of Environment and Forestry, 2018). PROPER assessment consists of 1) document performance summary environmental management; 2) environmental management system; 3) energy efficiency, 3R (Reduce, Reuse, Recycle) of B3 (Hazardous and toxic) Waste; 4) 3R B3 Waste, Non Solid; 5) Water Efficiency Reduction of Emissions; 6) Community Empowerment for Biodiversity (Indonesian Ministry of Environment and Forestry, 2018). Indicators of PROPER assessment consists of five categories, namely: gold with a value of 5, green with a value of 4, blue with a value of 3, red with a value of 2 and black by the value 1. For companies that have many

branches or have a warehouse of more than 1 then the PROPER rank will be assessed on average. The measurement of environmental performance with PROPER has been done (Iqbal et al., 2013; Sarumpaet et al., 2017). In this research to complement the model equations in the hypothesis testing used a variable control which consists of the size of the company representative by total assets (TA), leverage proxies with debt equity ratio (DER) and profitability proxies with return on equity (ROE). The third control variable is considered most suitable in the complete model, so the model equation that will be used to test the hypothesis as follows.

$$COC = \alpha + \beta_1 EP_{it} + \beta_2 TAit + \beta_3 DER_{it} + \beta 4 ROE_{it} + \varepsilon_{it}$$

Description:

COC = Cost of Capital
EP = Environmental Performance
TA = Total Asset
DER = Debt Equity Ratio
ROE = Return on Equity
β = Coefficient
ε = Error term
i = Entity
t = Period

RESULTS AND DISCUSSION

Panel A (Table 2) depicts the results of the test of Chow to choose a model common effect or fixed effect. The probability of the Chi-squa 0.0000 (below the α value of 0.005) indicates that the equation of the refuse determine the zero model (common effect) (Gujarati & Porter, 2009). This suggests us to choose the model of fixed effect. Panel B (Table 2) displays the results of the test of Hausman to choose the model of fixed effect and random effect. Cross-section random 0.0001 (below the α value of 0.005) indicates that the equation of the refuse determine the zero (random effects) (Gujarati & Porter, 2009). This suggests us to choose the model of fixed effect. Panel C (Table 2) describes the results of Lagrange Multiplier test, choose the model of common effect or random effect. The cross-section shows 0.4186 (above the value of α of 0.005). It is seen that determine the zero model (common effect) acceptable (Gujarati & Porter, 2009). This suggests us to choose the model of fixed effect. Because both Panel A and Panel B to accept the model of fixed effects, then the model used is a model of fixed effects.

Table 3 shows the descriptive statistics and multivariate regression using the method of panel data. Panel D is the descriptive statistics. This panel informs you that the Cost of Capital (COC) has an average value 0.343966. The maximum value of COC is 5.202333, and score a minimum 0.000000. Environmental performance (PROPER) has an average 3.024442, the maximum value of PROPER is 5, while the score 2. Profitability (ROE) has an average value 0.141171, the maximum value is 1.676913, and the minimum value is –2.539611. For the variable Total Assets using the Natural Logarithm (LNTA) has an average value 14.85480, the maximum value of 30.24816 and the minimum value of 2.957563. DER has an average value 1.126271, to a maximum of 13.96040, and a minimum of –5.022957.

Panel E (Table 3) is multivariate regression using the method of the panel is not balanced. After considering the analysis of the exact model, we find the adjusted R-square 0.520005. This also shows that the model in this study is real with have 52.0005% ability dependent variable in explaining the independent variable.

Table 2 Chow, Hausman, and Lagrange Multiplier Test

Panel A			
Redundant Fixed Effects Tests Equation: FIXED Test cross–section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross–section F	1.362263	(90, 120)	0.0569
Cross–section Chi–square	151.346516	90	0.0001
Panel B			
Correlated Random Effects–Hausman Test Equation: RANDOM Test cross–section random effects			
Test Summary	Chi–Sq. Statistic	Chi–Sq. d.f.	Prob.
Cross–section random	24.107047	4	0.0001
Panel C			
Lagrange Multiplier Test for Random Effects Null hypotheses: No effects Alternative hypotheses: two–sides (Breusch–Pagan) and one–sided (all others) alternatives			
	Cross–section	Test Hypothesis Time	Both
Breusch–Pagan	0.654172 (0.4186)	0.000344 (0.9852)	0.654517 (0.4185)

We also find that Environmental Performance (PROPER) and Total Assets (LNTA) has a significant influence on the Cost of Capital (COC). This can be shown by the probability value 0.4236 and 0.3747 (more than α of 0.005). The t–statistics informs that both have negative signs. While the Profitability (ROE) and Leverage (DER) has a significant influence negative for the probability value of 0.0001 and 0.0378.

The results of the t–test showed t–value for the PROPER of –0.802, with the prob. value of 0.423 which means that the variables of environmental performance of a negative effect on cost of capital, but not significant. These results give the meaning of the increase in environmental performance can reduce the cost of capital, but the reduction is not significant. It can be explained that environmental performance can affect investor reaction in the decision the interest to invest, however the effect is not too large. It can be understood, the first investors not only focus on the environmental performance but also pay attention to other factors that are more dominant for example the development of businesses that can be seen from the other performance such as financial performance, the second is not all investors understand about the accounting environment so that the environmental information does not become a consideration in taking the decision. The results of this study are in line with previous research (Sarumpaet et al., 2017) declare environmental performance has a positive effect on stock prices (Lindrianasari, 2007; Iqbal et al., 2013). Stephan (2002) of the company with the environmental performance of the poor are likely to face an increased risk of the cost of expensive but not significant.

Table 3 Descriptive Statistics and Multivariate Regression Using Least Square Panel Data

Panel D					
	COC	PROPER	ROE	LNTA	DER
Mean	0.343966	3.024442	0.141171	14.85480	1.126271
Median	0.220481	3.000000	0.113915	14.73582	0.836983
Maximum	5.202333	5.000000	1.676913	30.24816	13.96040
Minimum	0.000000	2.000000	−2.539611	2.957563	−5.022957
Std. Dev.	0.462683	0.425963	0.337256	4.911433	1.719843
Samples	215	215	215	215	215
Panel E					
Variables	Coefficient	Std. Error	t−Statistic	Prob.	
C	1.062076	0.473372	2.243641	0.0267	
PROPER	−0.106584	0.132751	−0.802888	0.4236	
LNTA	−0.010150	0.011392	−0.890998	0.3747	
ROE	−0.958325	0.241929	−3.961190	0.0001	
DER	−0.097390	0.046374	−2.100115	0.0378	
R−squared	0.520005		Adjusted R−squared	0.144009	
F−statistic	1.383008		S.E. of regression	0.428073	
Prob. (F−statistic)	0.046871		Sum squared resid	21.98956	

While the results of the t−test showed t−value for the profitability of −3.961190 with the prob. value of 0.0001 which means that the variable profitability has a negative and significant impact on the cost of capital. Profitability shows that the company has the ability to evolve and survive to continue its efforts, so the higher the profitability the lower the cost of capital incurred in affect the interest of investors to invest. The results of t−test showing t−values for the leverage of −2.100115 with the prob. value of 0.0378, which means that the variable leverage and a significant negative effect on the cost of capital. This shows that the company has the high degree of leverage means very rely on external borrowings to finance its assets. While the company has level of leverage is low more to finance its assets with its own capital. The results of the t−test showed t−value for the size of the company by −0.890998 with the value prob. of 0.3747 which means that the variable firm size effect is negative but not significant impact on the cost of capital. This means that if the larger the size of the company, then the capital cost of the lower. This condition is because not all the large companies increase the cost of equity capital. Even on the contrary, small companies will increase the huge cost incurred by companies to provide information to the public so the impact on rising cost of capital.

In making the decision to invest into the company, the investor preferably should pay attention to the factors of environmental performance, because with good environmental performance as the impact of the existence of the business is believed to give good impact also for the survival of the business in the long term.

CONCLUSION

Environmental performance is measured by PROPER negatively affect the cost of capital. Environmental performance is the result of environmental management by the company as a symbol of awareness of companies on stakeholders and the surrounding community. The results of this study aligned with previous research results (El Ghoul et al., 2011; Petrova et al., 2012; Cuadrado-Ballesteros et al., 2016; Sarumpaet et al., 2017) his research proved the influence of negative environmental disclosures against the cost of capital.

The measurement of COC represented only by the cost of equity capital, instead of using the total COC thoroughly. In the assessment of the environmental performance of researchers not involved in the

assessment, because the data used is the results of the performance assessment obtained based on the regulation of the Ministry of Environment.

With the existing limitations are expected to further research in order to overcome all the limitations that exist so as to enrich the academic world with a variety of variations in both the variable and its measurement. Similarly, the theory used can be expanded or use the different theories so that can add insight in the field of accounting environment and beneficial for the needy.

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