

THE RELATIONSHIP BETWEEN ENVIRONMENTAL PERFORMANCE AND FINANCIAL PERFORMANCE OF INDONESIAN COMPANIES

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Abstract: This study examined the relationship between environmental performance and financial performance amongst Indonesian companies. The environmental performance is measured by corporate environmental ratings provided by Bapedal/ the Ministry of Environment RI, through a program, called PROPER, while the financial performance is measured by return on assets (ROA). Some control variables are also included in this analysis, namely: total sales, industry sector, stock exchange listing, and ISO 14001 certification. The study revealed while financial performance is not significantly associated with environmental performance, company size, stock exchange listing and ISO 14001 are significantly associated with environmental performance. This finding also indicates that the government environmental rating is highly consistent with international environmental certification.

Keywords: environmental performance, financial performance, return on assets, ISO 14001 certification.

Abstrak: Penelitian ini menguji hubungan antara kinerja lingkungan dan kinerja keuangan perusahaan-perusahaan di Indonesia. Kinerja lingkungan diukur menggunakan rating kinerja lingkungan perusahaan atau PROPER yang disediakan oleh Bapedal/Kementerian Lingkungan Hidup RI, sedangkan kinerja keuangan diukur dengan ROA (return on assets). Penelitian ini membuktikan bahwa tidak ada hubungan yang signifikan antara kinerja lingkungan dan kinerja keuangan perusahaan, akan tetapi ukuran perusahaan, listing di BEJ dan ISO 14001 berhubungan secara signifikan terhadap kinerja lingkungan. Penelitian ini juga membuktikan bahwa rating PROPER, yang disediakan oleh pemerintah Indonesia, cukup terpercaya sebagai ukuran kinerja lingkungan perusahaan, karena kesesuaiannya dengan sertifikasi internasional di bidang lingkungan, ISO 14001.

Kata kunci: kinerja lingkungan, kinerja keuangan, return on asset, ISO 14001.

The question of whether or not environmental performance is associated with financial performance has been a long-standing debate among the researchers as well as business society. Is going green *good* for profits? Do reputable companies concern about their environmental reputation and performance? Some may argue that going green costs more as design and systems should be changed to the more environmentally friendly. However, others believe that the capital market and product/service market do appreciate green companies and green products/ services,

and therefore environmental performance should have positive effects on financial performance.

Previous studies on relationship between the two have been conflicting. Some studies showed significant positive relationship, while others found it insignificant. So far, there has not been a study showing significant negative relationship between the environmental performance and financial performance.

Most of these studies come from developed economies such as USA and Europe, where environmental awareness is considered high. However, there has been few studies on environmental performance within developing countries. This may be due to the lack of established measures on environmental performance, and/or the low accuracy and reliability of the measurement itself.

In Indonesia, the first national wide corporate environmental performance evaluation conducted is the PROPER program by Badan Pengelola Dampak Lingkungan (Bapedal). Despite some scepticisms over the monitoring and governance of the program, this government agency claimed itself as committed to provide an accurate and reliable evaluation on the program conducted. To prove this, Bapedal publicly announced the evaluation results in the form of environmental ratings through mass media. The five colour-code rating is used to describe each company from best to worst: gold, green, blue, red and black.

This study is aimed to discover the relationship between corporate environmental performance and financial performance in Indonesia. The 2000 government rating (PROPER) was used to measure the environmental performance as the dependent variable and ROI was chosen as independent variable. Some control variables are also included, namely: total assets, industry sector, ISO 14001 certification, stock exchange listing, and percentage of export were used as control variables of the environmental performance.

HYPOTHESIS

The earliest study on the relationship between environmental or social performance and financial or economic performance was probably the one by Ullmann (1985). He presented a descriptive analysis of prior social-responsibility studies that, in aggregate, report mixed empirical results of pair-wise associations between environmental performance and economic performance and between environmental performance and environmental disclosure, and between environmental disclosure and economic performance.

The most recent study on this issue was done by Al-Tuwaijri et al. (2004). The authors integrated the three variables and found out that "good" environmental performance is significantly associated with "good" economic performance, and also with more extensive quantifiable environmental disclosures of specific pollution measures and occurrences.

In between the two studies, a number of studies have also been conducted to answer the question of whether or not environmental performance and/or environmental disclosures is related to financial performance. The results have been mixed on the question whether the two variables are associated. Among those whose findings showing positive relationship are studies by Bragdon and Marlin (1972), Spicer (1978), Narver (1971), and Porter and Van der Linde (1995). Later researchers found the relationship between environmental performance and financial performance is insignificant (Rockness et al. 1986 and Freedman and Bikki 1992). A

negative relationship between environmental performance and financial performance is probably consistent with traditional economic thought that depicts this relation as a trade-off between firm's profitability and acting on its social responsibility (Freedman and Bikki 1992). However, so far studies on negative relationship between environmental performance and financial performance have not been found.

Most empirical studies on this issue come from developed countries, where environmental awareness among the stakeholders is considered high and the environmental performance measurement has been established for more than a decade. Companies are believed to be left behind if they can not compete with others within societal constraint characterized by ever-increasing environmental accountability.

.A study in Singapore suggested some other reasons such as lack of government pressures and lack of perceived benefits as well as perception that organization does not have any environmental impact (Perry and Sheng 1999). Another study in Malaysia mentioned some factors such as: high environmental costs and lack of stakeholders' appreciation (Thomson and Zakaria 2004). Some other possible explanations are the low level of environmental awareness among the stakeholders and inexistence of environmental performance measures. Even if they exist, other issues on the accuracy and reliability of the measures may arise.

Most of these studies used financial performance as the dependent variable and environmental performance as the independent variable, while including some control variables for the financial performance. However, a study by Freedman and Bikki (1992) used environmental performance as dependent variable and financial performance as independent variables.

In relation to environmental performance, there are also a number of studies relating this to other factors such as environmental disclosures (Ingram and Kathrine 1980), environmental reputation (Hughes et al. 2001 and Toms 2002), and environmental management (Schaltegger and Terje 2001).

MEASURING ENVIRONMENTAL PERFORMANCE

There are a number of different ways of measuring environmental performance used in the literature. Salama (2004) and Toms (2002) employed corporate reputation index of Britain's MAC published in Management Today as a proxy to measure corporate environmental performance. Yet, other researchers used different measures. For example, Ingram and Katherine (1980) and Freedman and Bikki (1992) used the pollution index by Council on Economic Priorities in the USA, Hughes et al. (2001) used environmental disclosure, and Gupta and Goldar (2003) used environmental rating provided by a reputable environmental NGO. Schaltegger and Terje (2001). On the other hand, suggested that research and business practice should focus more on eco-efficiency as the measure of environmental performance. Eco-efficiency is a ratio of value added and environmental impact added (Schaltegger and Roger 2000).

Whatever measure is used to proxy environmental performance, a researcher should be assured that it is valid. According to Verma et al. (2001) measures of corporate environmental performance need to be objective, accurate and reliable in order to meet the objectives of the stakeholders interested in this information. Another important issue for a researcher is the availability of the measures, this is

particularly essential for those conducting the study of emerging markets, because such measures often are not available.

The measurement of corporate environmental performance in Indonesia has been initiated in 1995, when the government of Indonesia, through its Bapedal (Badan Pengendalian Dampak Lingkungan), introduced a program, called PROPER. In this evaluation each company's operating facility is accessed and measured in their compliance to environmental standards. The results are given in five-colour-code ratings; from best to worst: gold, green, blue, red and black (Wheeler 1996). The first result was announced to the public through mass media in 1996. However, the program was postponed following the economic crisis in 1997 and just restarted in 2000 with the result announced in 2002. There are only 87 companies evaluated in the first evaluation in 1995, added up to 252 in 2002. The Bapedal is planning to increase the number of companies to 500 in 2003 evaluation (Media Indonesia 2002).

It is widely known that Indonesia is among the countries that lack of transparency, monitoring and governance, especially those activities of programs conducted by the government agencies. Not surprisingly, the corporate environmental rating (PROPER) issued by the government has brought about the questions of independence and reliability. Voices from environmental NGOs and companies being rated *black* (the worst performer) by PROPER created suspicion on the evaluation conducted (Republika 2004). It would be beneficial to compare this government rating with an international standard of environmental certification, ISO 14001 to find out whether or not consistency exists between them.

MEASURING FINANCIAL PERFORMANCE

There are four categories of firm performance measurement (Pradhono dan Jogi from Helfert): (1) earnings measures (earning per share (EPS), return on investment (ROI), return on net assets (RONA), return on capital employment (ROCE), and return on equity (ROE), (2) cash flow measures (free cash flow, cash flow return on gross investment (ROGI), cash flow return on investment (CFROI), total shareholder return (TSR) and total business return (TBR), (3) value measures (economic value added (EVA), market value added (MVA), cash value added (CVA) and shareholder value (SHV).

Previous studies on environmental performance or reporting have used different measures of financial or economic performance. For example, Bragdon and Marlin (1972) used accounting based measures (earning per share and return on equity), while Spicer (1978) used both accounting-based and market-based measures (profitability and the price-earning ratio). In this study, however, we were unable to use market-based financial performance measures as our data consists of listed and unlisted companies.

Freedman and Bikki (1992) argue that the financial performance of a firm is ultimately reflected in corporate profits. Rate of return on equity and rate of return on assets are the two commonly used measures of long-term profitability. In order to examine the impact of environmental performance on financial performance, this study used Return on Investment (ROI).

Despite some weakness of accounting ratios such as ROI being influenced by the selection of accounting methods, this ratio provides information which enables us to conduct analysis on the association between environmental performance and

financial performance. One advantage of using ROI as compared to Net Profit is that Net profit measures profitability in absolute term and neglects the firm size.

RELATIONSHIP BETWEEN ENVIRONMENTAL PERFORMANCE AND FINANCIAL PERFORMANCE

As mentioned above, there has been a number of research conducted on the relationship between environmental performance and financial performance, using different measures of dependent, independent and control variables. The shift between environmental performance and financial performance as the dependent and independent variables is also not unusual as long as it is supported with reasonable arguments.

The Control variables commonly used in the previous studies are including: firm size, industry sector, firm risk, degree of internationalisation (proxied by level of export or international expatriate), and ownership (Elsayed and David 2004 and Al-Tuwajri et al. 2004)

In this study, however, the dependent variable is the environmental ratings provided by Bapedal in PROPER program, and the dependent variable is firm return on assets (ROA). A series of control variables included in this study are: total assets, industry sector, percentage of export, ISO 14001 certification and stock exchange listing. These variables are used in order to control for the potential influences on environmental performance and financial performance. The use of first three variables are consistent with previous literature, while the use of stock exchange listing is based on the argument that listed companies are concerned more about their environmental reputation. In addition, ISO 14001 certification was used to test whether or not the government environmental rating is consistent with the international standard of environmental certification.

Based on the literature section above, the hypothesis posed in this study is:

Ho: There is no association between environmental performance and financial performance amongst Indonesian companies

The alternative hypothesis would be that there is association between environmental performance and financial performance of Indonesian companies. The sign of this association will determine whether this association is negative or positive.

RESEARCH METHODOLOGY

The dependent variable of this study is environmental performance, while the independent variable is financial performance. In order to control for potential influence of environmental performance to financial performance these variables are also included in the analysis: total assets, industry sector, stock exchange listing, ISO 14001 certification, and percentage of export. The rationale of using those control variables is as explained in the previous section.

The population of this study were taken from these sources:

- a. 252 company facilities in PROPER rating issued by Bapedal in 2000 (based on 1999 evaluation).
- b. 1000 Major Non-Financial Companies in Indonesia 1996-1999 by CISI Raya Utama, Jakarta.
- c. 266 companies listed in ISO 14001 National Database from the official website of Kementerian Lingkungan Hidup Indonesia.

Each data source consists of listed and unlisted companies. After matching those data sources into a common list, 87 companies were obtained as the sample. The descriptive statistics is shown in Table 1.

Table 1. Descriptive statistics

	N	Descriptive Statistics			
		Minimum	Maximum	Mean	Std. Deviation
PROPER Rating	87	1	4	2.37	.794
Return on Assets	86	-1.52	2.20	.1087	.44151
Total Assets	87	85.00	22460.00	1323.7471	2879.27663
Industry sector	87	1	7	3.17	1.767
SX Listing	87	0	1	.26	.444
ISO14001	87	0	1	.29	.455
Valid N (listwise)	86				

Data analysis in this study was started by calculating the values of each variable as mentioned above and put them in the analysis cells. The next step was to determine the model, which is

$$Y = b_0 + b_i X_i + e$$

With

Y = environmental performance/rating

b₀ = constant variable

X₁ = ROA

X₂ = total assets

X₃ = industry sector

X₄ = Stock Exchange Listing

X₅ = percentage of export

e = standard errors

The model was then tested using regression analysis, following a series of test to fulfil its classic assumptions. These are including tests of: *autocorrelation*, *multicollinearity*, and *heteroscedacity*. The regression analysis is used to perform: *normality test*, *goodness of fit test*, *F test* and *t test*.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.513 ^a	.263	.217	.704

a. Predictors: (Constant), ISO14001, Return on Assets, SX Listing, Total Assets, industry sector

RESULTS AND ANALYSIS

The Goodness of Fit test showed the value of adjusted R² = 0.21 which means that the value of the dependent variable can be explained by 21% of the independent variables. This value can be considered sufficient because environmental performance is influenced by many factors beside financial performance and other factors mentioned in this study as the control variables.

The F test, as showed in Table 3, indicates that simultaneously the independent variable and the control variables altogether are very significantly associated with the dependent variable.

Table 4 indicated the significance of the relationship between the dependent variable and each of independent and control variables. As we can see from this table, financial performance, measured by return on assets is not significantly associated with environmental performance. However, some control variables namely: company size (measured by total assets), ISO 14001, and stock exchange listing are significantly associated with environmental performance. Neither the percentage of export nor industry sector is shown to have significant effect on the environmental performance.

Table 3. F test (ANOVA)

ANOVA ^b					
Model	Sum of Squares	df	Mean Square	F	Sig
1 Regression	14.177	5	2.835	5.721	.000 ^a
Residual	39.649	80	.596		
Total	53.826	85			

a. Predictors: (Constant), ISO14001, Return on Assets, SX Listing, Total Assets, industry sector

b. Dependent Variable: Environmental Rating

Table 4. Coefficients

Model	Coefficients ^a				t	Sig
	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta			
1 (Constant)	1.805	.180		10.011	.000	
Return on Assets	.028	.177	.016	.158	.875	
Total Assets	3.267E-05	.000	.200	2.028	.046	
Industry sector	.065	.045	.144	1.459	.148	
SX Listing	.597	.178	.329	3.349	.001	
ISO14001	.454	.173	.261	2.620	.011	

a. Dependent Variable: Environmental Rating

It is not surprising to see that in a developing country, such as Indonesia, environmental performance is not associated with financial performance. More environmentally products or services that usually bring higher price are not in favour of most Indonesian consumers and therefore it is not likely to have effect on better financial performance. Even in the more developed countries, previous studies showed mixed results on this relationship, which could also mean that even in those markets, many people are still in the preference of price over the environment. As the Indonesian exporters do not get incentive for being "greener", this could also explain why the level of export does not have significant effect on environmental performance.

The influence of company size to environmental is quite predictable as it is argue that big companies can afford to invest in more environmentally friendly technology and management. Likewise, the stock exchange listing is predicted to have significant effect on corporate environmental performance, because listed companies would be concerned more about their environmental reputation as compared to unlisted companies. It is interesting to see, that despite considerably massive scepticisms over the government rating, due to low monitoring and

governance in Indonesia, there is a high consistency between this rating and ISO 14001. Although some people may argue that environmental rating measure environmental outputs (e.g. pollution), while ISO 14001 measures environmental management systems, it makes sense to say that good environmental management systems should result in good environmental performance.

CONCLUSION AND SUGGESTION

Based on the description in the previous sections, it can be concluded that environmental performance is not significantly associated with financial performance in Indonesia. However, it is significantly associated with company size, stock exchange listing and ISO 14001, which also indicates the consistency between the government rating and international standards of environmental management certification.

One limitation is noted in this study. As the data consisted of listed and unlisted companies, this may arise question regarding the accuracy of that of unlisted companies. However, there is one advantage of using unlisted companies as it covers both types of companies and therefore reduce bias of selecting the data.

Future research can be addressed to discover what types of reporting strategies (i.e. voluntary disclosures, income smoothing, etc.) used by Indonesian companies to avoid political cost and maintain legitimacy of their activities in relation to environmental issues. This is relevant with the increasingly environmental awareness amongst the stakeholders in Indonesia that would eventually bring about political pressures to the companies.

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