

The Value Relevance Of Environmental Performance: Evidence From Indonesia

Full paper

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Abstract: *This study aims to provide empirical evidence on the value relevance of environmental performance by testing the relationship between share prices of Indonesian listed corporations and their environmental performance ratings, called the PROPER ratings. PROPER (Program for Evaluation of Environmental Performance Ratings) is carried out by Indonesia Ministry of Environment, which annually evaluates and rates environmental performance of selected Indonesian companies and releases the results to the public. 62 listed companies participating in PROPER during 2002-2012 were identified as usable sample, resulting an unbalanced 256 firm-year observations. Following Clarkson et al. (2004) which modifies Ohlson (1995) model, share price is regressed against earnings per share, book value per share, PROPER ratings and other control variables commonly used in value relevance literature. We find that superior environmental performance is associated with higher share price. Specifically, there is evidence that environmental performance information is value relevant incremental on that of the accounting information, and particularly on profitable firms.*

Keywords: *environmental performance, Indonesia, PROPER ratings, value relevance*

1 Introduction

This study aims to provide empirical evidence on the value relevance of environmental performance by testing the relationship between share prices of Indonesian listed corporation and their environmental performance ratings. Such ratings are annually by The Indonesia Ministry of Environment, through its' program called PROPER (Program for Evaluation of Environmental Performance Ratings). We find that superior environmental performance is associated with higher share price published. Specifically, there is evidence that environmental performance information is value relevant incremental on that of the accounting information, and particularly on profitable firms.

PROPER aims to target selected Indonesian companies whose operational impacts are considered significant to the environment. Initiated in 1995 as a pilot project funded by the World Bank, PROPER restarted in 2002 and fully funded by the state budget. The number of PROPER participants have increased overtime, from 82 in 2002 up to more than 1.000 in 2014. PROPER rates corporate environmental performance using color codes: black, red, blue, green, and gold, indicating the poorest to best environmental performance (Indonesia Ministry of Environment, 2007). One of its purposes is to provide rewards and punishment mechanism for targeted companies based on their environmental performance. By publicly releasing their environmental performance ratings to the stakeholders (2011), the Ministry expects that the PROPER ratings will influence the stakeholders in making investment and related decisions. For example, green investors and creditors may use PROPER ratings in assessing the risks and return of the rated firms. Meanwhile, green consumers may find PROPER results useful for making purchase decisions.

However, after more than a decade of implementation, there has been little research undertaken to evaluate the effectiveness of the PROPER program, specifically on how different stakeholders value such information as a reward and punishment mechanism, as planned by the ministry. Furthermore, studies on how environmental performance information affects the capital market in an emerging economy, such as Indonesia, is relatively rare, in spite of extensive studies from more developed nations (e.g., Clarkson, et

al. 2004; Goldar, 2003; Konar & Cohen, 2001; Stevens, 1984). This study contributes to the literature by providing empirical evidence on how corporate environmental performance influence their share prices. Using the framework by Ohlson (1995), share prices of Indonesian listed companies are regressed against their PROPER ratings and other control variables.

Previous studies on the relationship between environmental performance and financial performance have been extensive, but are inconclusive (Hughes 2000; Clarkson, et al. 2004; Hassel *et al.* 2005; Moneva & Cuellar 2009). Various measures of financial performance, both accounting and market measures, have been used in these studies and may contribute to the inconclusiveness. Other studies that investigate the relationship between environmental performance and environmental disclosures have also found mixed results (e.g. Hackston & Milne, 1996; Magness, 2003; Neu, et al., 1998; O'Donovan, 2002; Patten, 2002). Environmental performance was also measured using different proxies, such as environmental emissions (e.g., Clarkson, et al., 2004.; Decker & Jalbert, 2003; Johnson, 1995; Konar & Cohen, 2001; Shadbegian & Gray, 2003), companies with hazardous sites (Hutchison, 1997) , and firms partially environmental responsible parties by US EPA (Mitchell, 1994).

These studies use only negative environmental performance indicating only poor performers and neglecting good environmental performers in the sample by classifying them into the control sample, i.e. the same category as average performers. We argue that positive environmental performance could also have information content. Therefore, the use of a environmental performance measure that distinguishes poor and good performers, such as PROPER ratings, provides exclusive contribution to the literature. One particular study by Nilsson (2003) uses a five-scaled index of environmental performance of listed Swedish companies provided by a rating firm, named Caring Company. Although such an index includes both poor and superior environmental performance, it may contain of potential validity and reliability problems, because such an index was derived from corporate annual reports, instead of an evaluation by authorized third party. Another study by Endrikat (2015) uses environmental events, i.e., company announcements with regards to managerial decisions, to measure negative and positive environmental performance.

Similarly, this measure bears similar issues as compared to third party announcements, because corporate announcements involve much subjectivity of the internal management.

In relation to value relevance literature, prior studies have extensively examined how capital markets combine accounting information with “other information” for firm valuation. For example, Floros (2008) and Oehler, et al. (2013) investigated how political events, such as election, influence capital markets. Barth, et al. (1998) finds that brand value estimates are positively related to prices and returns, incremental to accounting variables. This is consistent with the findings in market valuation literature that find financial information provided by the historical cost basis of accounting lack of relevance (Scott, 2003). This study also contributes to the empirical findings by testing how environmental performance affects firm value.

The results of this study provide contributions as follows. First, as the Indonesia Ministry of Environment’s intention to provide a “stick and carrot” mechanism of the PROPER program, this study gives insight on whether investors, as the primary stakeholders, value corporate environmental performance information in the form of PROPER ratings, which is reflected in the share price. Such an evaluation may help the ministry to understand the effectiveness of PROPER program and how to improve its implementation. This study also provides implications for the managers of Indonesian corporations in developing strategies and managing environmental issues. By understanding how investors respond to environmental performance information, different strategies may be considered in the development of environmental management systems and the handling of their environmental and social reputations. Finally, as mentioned earlier, this study contributes to the literature by providing insight on the information content of environmental information by investigating the value relevance of corporate environmental performance.

2 Theoretical Framework And Hypothesis Development

2.1 The Concept of Value Relevance

In capital markets research, accounting information is considered to be value relevant because it indicates future profitability, and is thus used by market participants in corporate valuation (Beaver, 2002). While only some economic activities are manifested in current earnings, other information about current economic performance and its implications for future profitability can be assessed by capital market participants (Jiambalvo, et al., 2002). If it has implication for future earnings, then it will be reflected in current share prices.

Accounting Information

Companies are competing for limited capital resources; therefore, information about earnings is of a particular interest for investors in relation to their investment decisions. Early studies (e.g., Ball & Brown 1968; Beaver 1968) expound that earnings information contributes to the changes in market value of a company, hence had been used to predict future earnings. Similarly, Nichols and Wahlen (2004) assert current period earnings offers wealth creation information that is useful for predicting future earnings.

Earnings information may be more value relevant to the market than the book value of equity for companies that have a good financial condition (Barth, et al., 1998) and may provide complementary information to book value of equity when abnormal earnings are more persistent (Ohlson, 1995). However, book value of equity (which is the information provided by the balance sheet) is adequate in determining the market value of a normal-growth corporation (Nwaeze, 1998), and is deemed to be more relevant than earnings information where losses are more prevalent and one-time items are substantially impounded in earnings (Barth et al.,1998). Therefore, the complementary value relevance of earnings and book value in various contexts has been a particular interest for extant value relevance studies.

Environmental Information

Jiambalvo et al. (2002) argue that sophisticated investors utilize information (i.e. financial and non-financial) to predict future earnings and this is impounded in current share prices. Accordingly, although non-financial information might not be manifested in current earnings, it may have an impact on future earnings. Therefore, accounting information may not adequately represent future corporate financial performance.

The value relevance of information beyond earnings and book value has been investigated by many studies. For example, Hughes (2000) examines the value relevance of air pollution measures and finds that the market uses this information to estimate future environmental liabilities of the electric utility industry. Moneva and Cuellar (2009) investigate whether financial and non-financial environmental performance information is value relevant to the share market. They find that financial measures of environmental performance (environmental assets/investments, environmental costs, and provisions) are value relevant but non-financial disclosures (environmental policy and environmental management systems) are not. Clarkson et al. (2004) examine the value relevance of environmental capital expenditures of pulp and paper companies and find environmental capital expenditures for low polluting firms are value relevant to the market. Studies in the context of environmental performance information evidently show that environmental information is regarded as value relevant by investors and is useful for equity valuation. This summarizes that non-financial information has implications on the future financial performance of a company and provides additional information to that of earnings and book value of equity.

2.2 PROPER Ratings and The Value Relevance of Environmental Performance

PROPER is an environmental performance ratings which have been released by the Indonesia Ministry of Environment annually for more than a decade. Such ratings are given to companies whose operating facilities are considered having significant impact to the environment. PROPER has expanded its coverage

from 82 in 2002 to more than 1,000 facilities in 2014. It evaluates and rates the participating companies into five color code ratings, black, red, blue, green and gold, from the worst to the best, respectively. Such ratings are given based on the documentation provided by the participating companies and the environmental audit performed by the ministry.

PROPER ratings provide information about corporate environmental performance to the stakeholders, such as equity investors. Companies with superior performance are expected to gain rewards by the increase in share price, and vice versa. In other words, environmental management system and corporate environmental performance are expected to influence corporate performance. A study by Clarkson et al. (2004) reveals that companies with good environmental performance are favored by the share markets as indicated by increased share prices. Management effort to manage company's environmental performance can influence its financial performance and thus companies need to calculate its sacrifice or investment to adopt cleaner production strategies (Porter & Linde, 1995; Russo & Fouts, 1997).

Previous studies support the argument that information about environmental performance is value relevant in particular context (P. Clarkson & Li, 2004; Hamilton, 1995; Hassel, Nilsson, & Nyquist, 2005; Hughes, 2000; Moneva & Cuellar, 2009). (P. M. Clarkson et al.(2004) investigates the value relevance environmental capital expenditure by firms in pulp and paper industry in the US from 1989 to 2000. Categorizing firms of good and poor environmental performance based on their capital expenditure, they reveal incremental economic benefits associated with environmental capital expenditure investment by low-polluting firms but not high-polluting firm.

Hughes (2000) examines the relation between the market value of equity and pollution measures sulfur dioxide emissions. He finds that the levels of sulfur dioxide emissions are negatively associated with share prices. Hamilton (1995) reported that the higher pollution figures (such as air emissions or offsite shipments of toxic waste) were in a firm's TRI reports, the more likely print journalists were to write about the firm's toxic releases. Stockholders in firms reporting TRI pollution figures experienced negative abnormal returns

upon the first release of the information. However, Hassel et al. (2005) finds environmental investments represent only increased costs, resulting in decreased earnings and lower market values. Using a sample of Swedish companies they find that the results of their study support the cost-concerned school, because the results indicate that environmental performance has a negative influence on the market.

Based on these inconsistent results, we believe that a new investigation on the value relevance of environmental performance information will have an important contribution to existing literature. Using a different context and measures of environmental performance, we expect that this particular study will provide empirical finding on how environmental related information influence the share markets. The use of Indonesia as an emerging economy and PROPER ratings are unique in this study and therefore are expected to provide significant contribution to the existing literature which is mainly from developed nations.

Information regarding environmental performance ratings can be value relevant if it provides additional information to the accounting numbers and helps investors access the future financial performance of the firms. As discussed earlier, firms with superior performance may gain benefits from such ratings because they are protected from environmental costs or liabilities. Firms with good PROPER ratings can have higher reputation and legitimacy, which may improve their competitive advantages, and future profitability. Since PROPER ratings indicate future profitability, we predict that PROPER ratings are valued by investors as reflected in share prices:

Hypothesis 1: Environmental performance ratings are value relevant to the market.

3 Research Method

3.1 Sample Selection

The population of this study consists of 71 unique listed companies covered under PROPER from the period of 2003 to 2012 (except for 2006 and 2007 when PROPER was suspended). This forms 313 firm-year observations. Since the sampling method is based on the availability of data, companies that do not provide

the information needed for this study are excluded from the sample. After cleaning for the unavailable data, the final sample consists of 62 unique companies forming 256 firm-year observations.

3.2 *Data Collection*

Two types of data sources used in this study are financial data and environmental performance data. The financial data was mainly collected from electronic database, OSIRIS. Where these database failed to provide such data, corporate financial reports from Indonesia Stock Exchange website and ICMD (Indonesian Capital Market Directory) were used to obtain financial figures. Data regarding environmental ratings (PROPER) was obtained from the website of the Indonesian Ministry of Environment when such ratings were released. Due to its limited economic resources, PROPER only evaluates companies whose environmental impacts are considered significant, but with expanded coverage over time. It includes listed and unlisted companies.

3.3 *Statistical Method*

This study uses panel data approach. The sample size of 256 observations formed an unbalanced panel. Based on Hausman test (Wooldridge, 2013) it is found that the preferred model to analyze the panel data is the fixed-effect model.

3.4 *Research Model*

The value relevance of environmental ratings in this study is examined using the Ohlson (1995) model modified by including the environmental ratings and control variables, in which we argue that environmental ratings are information incremental to those of accounting information. The model is as follows:

$$SP_{it} = \delta_0 + \delta_1 E_{it} + \delta_2 BV_{it} + \delta_3 Environmental\ Ratings_{it} + \delta_4 Control\ Variables_{it} + \varepsilon_1$$

Where,

SP = Share prices of company i at year t

E = Earnings per share of company i at year t

BV = Book value per share of company i at year t

Environmental Ratings = PROPER ratings of company i at year t

Control Variables = Consists of Growth, Leverage, and Liquidity of company i at year t

Dependent Variable

This study uses share prices three months after the end of fiscal year. In this case the share prices used are share prices as of March 31 since the fiscal year end of all the samples at the related years is December 31. Share prices represent firms' expected future cash flows and therefore would provide a more objective measure of firms' financial performance.

Independent Variables

Earnings

Earnings per share is the first independent variable in this study. It is measured by earnings before interest and taxes divided by number of shares outstanding. According to Ball and Brown (1968), Beaver (1968), and Tucker and Zarowin (2006), earnings which is the product of income statement have a role in determining firms' market value. This is because studies have shown that earnings contain information useful for shareholders to examine firms' value.

Book Value

Book value per share is the second independent variable which is measured by book value of equity divided by number of shares outstanding. Book value of equity is the product of balance sheet (or statement of financial position) and is deemed value relevant because it provides information that can affect the value of equity. Ohlson (1995) states that current book value can be a factor to determine future earnings, thus provides fair estimation for market value of the firms.

Environmental Performance (PROPER Ratings)

To operationalize the variable for environmental performance this study uses PROPER ratings. As mentioned earlier, PROPER is a performance evaluation program conducted by the Indonesia Ministry of Environment to selected Indonesian companies' facilities. The results are released to the public using five color-coded instruments; *black, red, blue, green and gold* represent environmental ratings from worst to best. In this study, we define these ratings into an order scale; 1 to 5 for black to gold, respectively.

Since PROPER evaluates and rates companies of their selection based on facilities, companies with more than one facilities will likely to earn more than one ratings and the we averaged the ratings for the purpose of this study. For example, in 2001 PT.Indocement Tunggal Prakasa Tbk. (IDX ticker: INTPT) was awarded 2 blues and 1 green for its three facilities located in different areas. The average ratings for INTPT is 3,33. Furthermore, we categorized companies with PROPER ratings of larger than 3 as good performers, and poor performers otherwise.

Control Variables

Growth

Growth is measured by percent of changes in sales. This is one indicator of firms' potential future financial performance because it provides information regarding future investment opportunity (Minnis, 2011). As a result, shareholders may consider that this information is valuable to capture firms' future performance.

Liquidity

Liquidity is measured by total assets divided by total liabilities. Liquidity is one indicator of firms' performance. Firms that are more liquid have more financial resources to conduct environmental related activities as a signal of their capacity in complying with environmental regulation.

Leverage

Leverage is measured by total liabilities divided by total assets. Leverage captures firms' capacity to finance their assets through debt (Clarkson, et al., 2008) . The higher the debts to assets ratio results in a highly leveraged company which makes it riskier to invest in. This means, if a company becomes default, shareholders may lose all their investments.

4 Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics of 256 observations are presented on Table 1. On average, the share prices of all companies are around Rp3,500 with the minimum of Rp50 and maximum of Rp55,050. This shows the relative wide range of samples. The earnings per share are approximately Rp164, while the book value per share has an average of Rp1,263. However, it can be seen from the table that there are companies with negative earnings which might influence the examination. The PROPER ratings are around 2.9 in which we categorized the samples as poor environmental performers, on average. The sample companies have PROPER ratings as low as 1 and as high as 4.5. The sales growth of average companies is 13% which is higher than the average inflation rate in Indonesia as presented in www.inflation.eu, thus could be said that the average sample companies have positive growth rate. The liquidity ratio shows that the average companies have total assets which are 2.85 times higher than total liabilities. This indicates that those companies are relatively liquid. The leverage is 0.55, indicating that samples have total liabilities of 55% of the total assets.

Table 1 Descriptive Statistics

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
SP	256	3533.86	7589.753	50	55050
E	256	164.2081	1034.606	-8330	4415
BV	256	1263.098	4033.619	-23417	15353
PROPER	256	2.94625	0.6448073	1	4.5
GROWTH	256	0.1328661	0.4896434	0.741594	5.825738
LIQ	256	2.851614	5.202012	0.4284	62.8832
LEV	256	0.5512289	0.3360641	0.0159	2.3345

Notes: SP: share price; E: earnings per share; BV: book value per share, PROPER: proper ratings, GROWTH: sales growth; LIQ: liquidity; LEV: leverage

4.2 Classical Assumptions

We ran the classical assumptions tests for regression analysis and found some issues of normality, heteroskedasticity, and autocorrelation. We use STATA package which is able to address these issues, which are common in panel data. The Saphiro-Wilk test (Gujarati, 2004) of normality shows that all the variables are not distributed normally (p -value < 0.05). In addition, when predicting the cook's distance, 21 of 256 observations are found to be influential outliers. Therefore, at first those observations are retained with the consideration that the additional hypothesis testing would be conducted by excluding the influential outliers to test for robustness of the results. Testing for heteroskedasticity problem by using Breusch-Pagan/Cook-Weisberg test (Gujarati, 2004), we found the p -value of less than 0.05, which indicates the existence of heteroskedasticity problem in the model. We use robust standard errors to correct for heteroskedasticity.

To test for multicollinearity problem we conduct variance inflation factor (VIF) test. The results show that

none of the VIF is larger than 10, thus indicate that collinearity problem does not exist among the independent variables (Gujarati, 2004). Autocorrelation problem is tested using Wooldridge test (Wooldridge, 2013) for autocorrelation in panel data. It is found that the p -value of the test is less than 0.05, indicates autocorrelation problem in the samples. This problem is controlled by clustering the observation (Wooldridge, 2013).

4.3 Regression Results

To test the hypothesis the first regression is conducted on the pooled samples. Table 2 presents the results. It is found that the model is not significant at all (p -value = 0.3198), indicates that the independent variables cannot explain the changes in share prices. However, reflecting on the descriptive statistics where on average the samples are comprised of poor performers, it would be problematic to draw an early conclusion about the results. Therefore, additional testing is conducted to refine the results.

Table 2 Regression Results for Pooled Data

Variable	Coefficients	P>t
E	0.747	0.165
BV	0.919	0.134
PROPER	1,327.39	0.097
GROWTH	128.952	0.45
LIQ	36.101	0.382
LEV	2,325.12	0.542
_cons	-3062.585	0.371
Dependent Variable	SP	
R-squared	0.228	
Adj. R-squared	0.210	
F	1.198	
Prob>F	0.3198	
N	256	

legend: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Given that on the descriptive statistics it is shown that there are firms with negative earnings and book value, we argue that this negative accounting information might bias the results. Therefore, we exclude the negative earnings and book value and rerun the test. The results are available on Table 3 below.

Table 3 Regression Results for Positive Earnings and Book Value Firms

Variable	Coefficients	P>t
E	7.486***	0.000
BV	-0.191	0.817
PROPER	1,783.091*	0.035
GROWTH	3.152	0.987
LIQ	14.501	0.712
LEV	863.286	0.854
_cons	-3945.546	0.199
Dependent Variable	SP	
R-squared	0.415	
Adj. R-squared	0.397	
F	6.596	
Prob>F	0.0000	
N	206	

legend: *p<0.05; ** p<0.01; *** p<0.001

After excluding negative earnings and book value, 206 observations remained. The results on Table 3 shows that the model is significant at 0.001 level (p -value = 0.000), suggests that the independent variables are able to explain the changes in dependent variable. The adjusted R^2 is 0.397 which means that 39.7% of the changes in dependent variable can be explained by the independent variables.

Among the accounting information, it can be seen that only earnings is positive and significant (p -value = 0.000). However, the significant influence of book value to the share prices does not exist. This shows that the market values information of accounting earnings rather than that of book value, meaning that earnings are more value relevant to the market. PROPER is significantly positive at 0.05 level (p -value =

0.035). There is evidence that environmental ratings would be value relevant on companies that have better financial performance. This is parallel to the argument that better financial performance is indicative of firms' capacity to better perform environmentally (Al-Tuwaijri, Christensen, & II, 2004; Bosworth & Clemens, 2011).

A study by Clarkson et al. (2004) finds that the market favors information about capital expenditure investment of low polluter firms but not that of high polluters. This indicates that the market could potentially value PROPER ratings of good and poor performers differently. Therefore, the third regression analysis is conducted over the split samples to compare to examine whether the findings are consistent with the notion. The results are shown in Table 4.

Table 4 Regression Results for Split Samples

Variable	Good Performers		Poor Performers	
	Coefficients	P>t	Coefficients	P>t
E	13.849**	0.002	0.563	0.203
BV	1.311	0.152	0.709	0.282
PROPER	1,677.690*	0.030	442.732	0.262
GROWTH	-50.906	0.928	255.674	0.295
LIQ	77.310*	0.017	25.406	0.322
LEV	8,407.412*	0.015	1,230.39	0.521
_cons	-1.18e+04**	0.003	85.82	0.968
Dependent Variable	SP		SP	
R-squared	0.763		0.193	
Adj. R-squared	0.735		0.168	
F	31.70		0.686	
Prob>F	0.0000		0.6616	
N	57		199	

legend: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

When conducting the regressions among the split samples, it is found that compared to poor performers that comprised of 199 observations, the number of observations for good performers is reduced remarkably to 57 observations. This means that most of the observations have PROPER ratings equal to or less than 3. Although the poor performers outnumbered the good performers, the regression model for good performers is significant at 0.001 level (p -value = 0.000) and gives the highest explanatory power compared to other regressions (adjusted $R^2 = 73.5\%$).

Table 4 shows that, for good performers, earnings are positive and significant at 0.01 level (p -value = 0.002), meaning that information about earnings is still regarded as value relevant to the market, consistent with previous results. It is also found that PROPER is positive and significant at 0.05 level for good performers (p -value = 0.030) relative to poor performers. This confirms that the market values environmental performance of good and poor performers differently. Two of the control variables, i.e. liquidity and leverage are both positively significant at 0.05 level (p -value = 0.017 and 0.015 respectively). The findings show that financial condition of good performers is valuable to the market compared to that of their counterparts. These significant results are absent in the regression of poor performers.

To test the robustness of the results, additional tests are conducted after excluding the influential outliers. This exclusion reduced the sample size to 235 observations. The results on Table 5 are fairly consistent for earnings across all the regressions, although not for PROPER. In fact, the significant result of PROPER that exists in the previous regression on the positive earnings and book value observations is now absent. Nevertheless, all the results from previous regressions hold when the test is conducted among good performers. This shows that besides accounting information, information about environmental ratings is value relevant to the market. Specifically, the market values the environmental performance of good performers more than that of their poor counterparts.

Table 5 Robustness Test

Variable	Pooled		Positive Earnings and BV		Good Performers		Poor Performers	
	Coefficients	P>t	Coefficients	P>t	Coefficients	P>t	Coefficients	P>t
E	2.796**	0.009	6.461*	0.031	13.185**	0.008	1.341***	0.000
BV	0.61	0.075	0.509	0.333	0.584	0.369	0.048	0.424
PROPER	552.668	0.305	802.544	0.116	2,368.063*	0.011	128.189	0.501
GROWTH	-212.829	0.162	-222	0.321	279.7	0.257	2.841	0.974
LIQ	622.38	0.215	429.406	0.436	1,833.625**	0.008	27.956	0.850
LEV	4,193.41	0.201	1,811.67	0.572	17311.212*	0.042	-322.214	0.750
_cons	-4203.851	0.293	-3940.202	0.275	-2.22e+04**	0.010	1,212.15	0.251
Dependent Variable	SP		SP		SP		SP	
R-squared	0.313		0.427		0.798		0.209	
Adj. R-squared	0.295		0.408		0.771		0.182	
F	2.099		1.823		844.5		12.25	
Prob>F	0.0674		0.112		0.0000		0.0000	
N	235		193		53		182	

legend: *p<0.05; ** p<0.01; *** p<0.001

5 Conclusion, implication, and limitation

This study investigates whether corporate information of environmental performance is value relevant. Using environmental performance ratings by Indonesia Ministry of Environment, called the PROPER ratings, we test whether such information influences share prices in Indonesian capital market. Prior studies from different contexts using various measures of environmental performance have resulted in mixed findings. The use of Indonesia as an emerging economy and PROPER ratings, which indicate both negative and positive environmental performance, are unique to this study. Such uniqueness provides significant contribution the existing literature that reveals how financial and non-financial information are both value relevant (Jiambalvo et al., 2002; Clarkson et al., 2004).

We use a sample of 62 firms during 2003-2012 and resulted in 256 firm-year observations as our final

sample. Following Clarkson et al. (2004) that modified Ohlson (1995) model to find the value relevance of environmental performance, we regressed share price with earnings (EPS) and book value (BVS), adding PROPER ratings and other control variables commonly used in the literature, namely growth, liquidity, and leverage.

We did not get significant result for the overall model using the pooled data. However, after excluding firms with negative EPS and BVS, we find that PROPER, as well as earnings, are positively associated with share price, whereas book value of equity and other financial information are not. This finding is consistent with prior studies which find that firm's financial performance is indicative of its capacity to better perform environmentally (e.g., Clarkson et al., 2004; Al-Tuwaijri et al., 2004). When we split the sample into good and poor performers, we find that such positive relationship between PROPER and share price only exists among good performers. This confirms that the market values environmental performance of superior and inferior performers differently.

Furthermore, we conduct four additional tests for robustness by repeating the procedures, but excluding outliers. Similar to the prior procedure, the results show consistency in the association of earnings and share price. However, PROPER was only significant when poor performers were excluded from the sample, which indicates that good news regarding environmental performance are better valued by investors than its bad news. Overall, this study confirms that "other information" does have information content.

We emphasize some limitations of this study. First, due to limited funding, PROPER only rates small portion of listed companies, mostly those who are large and sensitive to the environment. This selection creates potential issue in sample selection bias, because stock market could value environmental performance of smaller and less environmentally sensitive firms. Second, we did not observe different types of corporate environmental performance other than PROPER. Environmental events involving corporations which are reported by the press and environmental information reported by management in the annual reports and company websites may also contain information for investors in assessing firm value. These limitation not control for in our tests potentially confounds inferences.

Extensive research in this topics employed archival method using secondary data. This opens opportunities for further investigations in this issue. The use financial analysts in an experimental or survey setting will advance the research methodology and improving the understanding of how stock market values environmental information. Finally, this study also offers practical implications for management and regulators, such as the Indonesian Ministry of Environment, on the effectiveness of PROPER program. Our finding shows that Indonesian capital market values positive rather than negative environmental ratings, implying that the rewards mechanism seems to function better than the punishment.

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