

# The associations between environmental disclosures with financial performance, environmental performance, and firm value

Refandi Budi Deswanto and Sylvia Veronica Siregar

Refandi Budi Deswanto is based at the Department of Accounting, Universitas Indonesia, Depok, Indonesia.

Sylvia Veronica Siregar is based at the Department of Accounting, Faculty of Economics and Business, Universitas Indonesia, Depok, Indonesia.

## Abstract

**Purpose** – This study aims to investigate both the direct and indirect associations of environmental disclosures with financial performance, environmental performance and firm value.

**Design/methodology/approach** – The samples are companies listed on the Indonesia Stock Exchange in the agriculture industry, mining industry, basic industry and chemicals, miscellaneous industry and consumer goods industry and that are participating in the Performance Rating Assessment Program on Environment Management (PROPER/Program Penilaian Peringkat Kinerja Perusahaan) of the Ministry of the Environment Republic of Indonesia or have been awarded the Green Industry Award by the Ministry of Industry Republic of Indonesia in 2012-2014. Data are collected from sustainability reports, annual reports and annual financial statements. The authors used simultaneous equation modeling and panel data regression analysis to analyze the data.

**Findings** – The authors find that the financial performance does not affect the environmental disclosures. The lagged environmental performance has a positive effect on the current environmental disclosures, and environmental disclosures do not affect the firm market value and do not mediate the effect of financial performance and environmental performance on firm value.

**Originality/value** – This study comprehensively examines both direct and indirect associations of environmental disclosures with financial performance, environmental performance and firm value, which is rarely examined in extant studies.

**Keywords** Financial performance, Corporate social responsibility, Firm value, Environmental performance, Environmental disclosure

**Paper type** Research paper

## Introduction

Global warming has become one of the world's central issues since the end of the twentieth century. The United Nations Framework Convention on Climate Change ([Declaration of the UN Conference on the Human Environment, 1992](#), p. 3) defines global warming as “a climate change which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.” Another environment-related issue is environment and natural resources sustainability. The Second Principle of the Declaration of the United Nations Conference on the Human Environment ([United Nations Framework Convention on Climate Change, 1972](#)) states that “The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.” These issues will affect firms in performing their

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daily operating activities and, at the same time, society also has become more sensitive to pollution caused by the firms.

This increasing awareness of society has resulted in an increasing demand for firms to take responsibility for the environment wherein the firms conduct their operations. Other stakeholders, such as the government, as well as international and other related associations, strongly require the involvement of firms in preserving the environment through rules and regulations. As a result of getting much pressure from its stakeholders, private industry needs to take responsibility for the impacts its business activities have on society. Private industry also needs to be made responsible to a broader group of stakeholders, not just to creditors and shareholders (Hackstone and Milne, 1996). The Government of Indonesia requires firms to take environmental responsibility through Law No. 32 Year 2009 on Environmental Protection and Management, Law No. 40 Year 2007 on the Limited Liability Company (Article 66 (2c) and Article 74 (1)), Government Regulation No. 47 Year 2012 on the Social and Environmental Responsibility of the Limited Liability Company and Indonesian Capital Market and Financial Institutions Supervisory Agency Regulation No. X.K.6 concerning the Obligation to Submit Annual Report for Issuers or Public Companies.

Ghoul *et al.* (2011) state that one of the benefits that will be received by socially responsible firms is a lower cost of capital. They argue that corporate social responsibility (CSR) increases the investor base and reduces perceived risk. Martin and Moser (2015) find that potential investors give positive responses on firms that voluntarily disclose their green investment initiatives. latidris (2013) finds that environmental disclosures contain value-relevant information. Hence, a CSR program is not only merely created because of regulation pressures but also to attract and influence investors' perception, which economically benefits the firms and, eventually, will be reflected in the firm value.

Firms with high profitability are able to bear the costs associated with the preparation of objective environmental disclosures (Qiu *et al.*, 2014). Clarkson *et al.* (2007) explain that firms with high environmental performance are determined to keep investors and other stakeholders well informed through more voluntary environmental disclosures compared to firms with lower environmental performance. From those findings, we could say that financial and environmental performances are the key factors that determine the extent of environmental disclosures.

The effect of financial performance on firm value is still inconclusive. On the one hand, Hermawan and Ma'ulah (2014) reveal that financial performance does not directly affect firm value. On the other hand, some other studies find that financial performance has a positive impact on firm market value (Qiu *et al.*, 2014; Lu and Abeysekera, 2014) and disclosures positively affect firm market value (latidris, 2013; Lorraine *et al.*, 2004).

The effect of environmental performance on financial performance is also debatable. Runtu and Naukoko (2014) do not observe any direct effect of environmental performance on firm financial performance. Studies by Qiu *et al.* (2014), Clarkson *et al.* (2007) and latidris (2013) find that good environmental performance causes firms to prepare more extensive environmental disclosures, and this eventually leads to a higher firm value (latidris, 2013; Lorraine *et al.*, 2004). This finding suggests that environmental disclosures pose a mediating role for the effect of financial and environmental performances on firm market value.

This study aims to examine:

- the impact of financial and environmental performances on environmental disclosures;
- the impact of environmental disclosures on firm market value; and
- environmental performance as a mediating variable for the impact of financial and environmental performances on firm market value.

Our samples consist of firms listed on the Indonesia Stock Exchange (IDX) and those participating in the Performance Rating Assessment Program on Environment Management (PROPER/Program Penilaian Peringkat Kinerja Perusahaan) from the Ministry of the Environment Republic of Indonesia or firms awarded a Green Industry Award from the Ministry of Industry Republic of Indonesia, where the business is in the field of or related to natural resources. Considering the effective date of Government Regulation No. 47 Year 2012 on the Social and Environmental Responsibility of the Limited Liability Company, our study covers years from 2012 to 2014. With the enactment of this regulation, firms should be more responsible with respect to the environment wherein they conduct their operations, especially firms for which their business is in the field of or related to natural resources.

### Environment management regulations in Indonesia

There are several regulations in Indonesia concerning environmental management, as well as environmental disclosures. Several regulations mandate that firms must engage in environmental protection activities. Article 68 of Law No 32 Year 2009 on Environmental Protection and Management states that “Everybody undertaking business and/or activity shall be obliged to: a. provide information related to environmental protection and management truthfully, transparently, and punctually; b. preserve the sustainability of environmental functions; and c. abide by the provision on the quality standard of environment and/or standard criteria for environmental damage.”

Law No. 40 Year 2007 on the Limited Liability Company regulates both environmental responsibility (Article 74 [1] mandates that a company having its business activities in the field of or related to natural resources to perform its social and environmental responsibility) and the disclosure requirement (Article 66 [2c]), which regulates that one of the items of content of the annual report is a report on the implementation of environmental and social responsibility. In 2012, the government issued another regulation related to Law No. 40 Year 2007, in the form of Government Regulation No. 47 Year 2012 on the Social and Environmental Responsibility of the Limited Liability Company, which explicitly states that social and environmental responsibility is an obligation of firms for which their operation is in the field of or related to natural resources, and that firms that do not undertake such responsibility will be subject to a penalty according to the law.

Another regulation also issued by the capital market regulator (Rule No. X.K.6 on the Obligation to Submit Annual Report for Issuers or Public Companies) mandates that an issuer or public company must submit an annual report that shall contain, among other things, information on its CSR.

### Hypotheses development

According to Heinze (1976), profitability is a factor that allows management to freely and flexibly report CSR to their stakeholders. The reason is that firms with high profit are able to allocate their spending to many aspects, including involvement in social activities. When firms are more involved in social activities, they have more information to disclose. Thus, a high profitability level leads to more social disclosures (Bowman and Haire, 1996; Preston, 1978). Confirming this idea, Siegel (2009) explains that voluntary social and environmental disclosures are related to sales. The measurement of a firm's environmental aspects, such as the amount of waste or greenhouse emissions, tends to significantly increase the firm's spending. Environmental disclosure also requires high real costs, including costs to build systems, and identify, measure and report the information. Hence, only profitable firms are able to bear such costs (Qiu *et al.*, 2014). Lu and Abeysekera (2014) find that profitability is one of the characteristics of firms that significantly causes those firms to disclose social and environmental responsibility initiatives during the year. Based on these arguments, the hypothesis in this study is:

*H1a.* Contemporaneous financial performance has a positive association with environmental disclosure.

In addition to contemporaneous performance, lagged performance also has a positive impact on environmental performance. [Qiu et al. \(2014\)](#) observe that lagged profitability has a positive effect on social disclosures in the current year. Other studies by [Gray et al. \(1995\)](#) suggest that CSR disclosures do not have a significant association with contemporaneous profitability, but do have an association with lagged profitability. Last year's profitability is used as a basis to engage in social activities in the current year. [Qiu et al. \(2014\)](#) explains that firms with high profitability in the past year have the ability to increase expenditures related to engagement with stakeholders (CSR activities) in the current year, and these activities will be reflected in the current year's disclosure. Hence, our hypothesis is as follows:

*H1b.* Lagged financial performance has a positive association with environmental disclosure.

Firms with excellent environmental performance are more motivated to keep their investors and other stakeholders informed through expanded voluntary disclosures, compared to those with poor environmental performance ([Clarkson et al., 2007](#)). Other studies also determine a positive relationship between environmental disclosures and environmental performance ([Iatidris, 2013](#); [Qiu et al., 2014](#)). Firms with excellent environmental performance tend to disclose information that is strong, verifiable and difficult to imitate ([Al-Tuwajjiri et al., 2003](#)). They also have an incentive to prepare extended and objective disclosures ([Qiu et al., 2014](#)). Hence, the hypothesis is as follows:

*H2a.* Contemporaneous environmental performance has a positive association with environmental disclosure.

A range of achievements will increase public attention to firms' environmental issues ([Dawkins and Fraas, 2011](#)). An environmental performance score is often published to increase firms' environmental visibility, which eventually draws public attention to firms' environmental issues. Eventually, the attention causes firms to enhance their environmental performance to show that their environmental performance deserves a high score. The attention is legitimized by the existence of environmental disclosures ([Dawkins and Fraas, 2011](#)) for which the aspects disclosed are determined by the previous period's environmental performance. Another benefit of disclosing environmental information is that it increases the firm's reputation ([Lorraine et al., 2004](#)). An increasing reputation in the current year will be responded to by disclosing the current year's environmental performance in the following period. In other words, lagged environmental performance determines what to disclose in the current year. Therefore, our hypothesis is:

*H2b.* Lagged environmental performance has a positive association with environmental disclosure.

[Martin and Moser \(2015\)](#) find that potential investors tend to give positive responses to voluntary disclosures on green investments. According to [Clarkson et al. \(2007\)](#), a large number of environmental disclosures signals to the investors the assurance of high-quality disclosures, which is difficult for firms with a limited number of disclosed items to do. [Iatidris \(2013\)](#) explains that investors find such disclosures to contain value-relevant information for them to make decisions, hence increasing the firm value. Firms that disclose their environmental policy signal the transparency, reduced uncertainty risks and competitive advantages, while firms that disclose little number of items indicate various risks, such as litigation risk, penalty for pollution, future environmental costs and low future cash flow ([Iatidris, 2013](#)). [Qiu et al. \(2014\)](#) explain that firms will get an economic benefit from preparing expanded social and environmental disclosures in the form of a higher stock price. Based on the above explanations, our third hypothesis is:

H3. Environmental disclosure has a positive association with firm value.

If firms aim to increase their stock price, they may use environmental social responsibility so that the investors can pay attention to environmental performance (Siegel, 2009). In the previous hypotheses, we mentioned several previous studies that observe a positive impact of environmental disclosures on financial performance and a positive impact of environmental performance on firm market value. Therefore, we suggest that for financial performance to affect firm value, environmental disclosures must act as the mediating variable. The disclosures help firms to increase their reputation and eventually build investors' trust. Qiu *et al.* (2014) explain that firms that prepare environmental disclosures tend to have a good reputation and are able to build investors' positive perception of their financial performance. Fernández-Gómez *et al.* (2016) believe that firms with a good reputation tend to have a high market value. Firms with good financial performance need to build a good reputation to be highly valued by the investors. Hence, our fourth hypothesis is:

H4. Environmental disclosures mediate the effect of financial performance on firm value.

According to Cormier *et al.* (2009), disclosures are able to reduce asymmetric information. Environmental disclosures, therefore, are also able to reduce the asymmetric information between management and the investors regarding firms' environmental performance. This ability ultimately affects investors' perception on the firm. Runtu and Naukoko (2014) find an insignificant, positive relationship between lagged environmental performance and the current year's economic performance, which means that the environmental performance cannot directly affect economic performance. In the previous hypothesis, we discussed several studies that reveal the positive impact of environmental performance on environmental disclosures and the positive impact of environmental disclosures on firm market value. The mixed findings in previous studies may be attributed to environmental performance having an indirect impact on firm market value, where the environmental performance first affects environmental disclosure and then environmental disclosure affects firm market value. Therefore, our last hypothesis is:

H5. Environmental disclosures mediate the impact of environmental performance on firm value.

## Research method

This study uses structural equation modeling (SEM) to analyze the relationship between variables. The SEM framework is depicted in Figure 1.

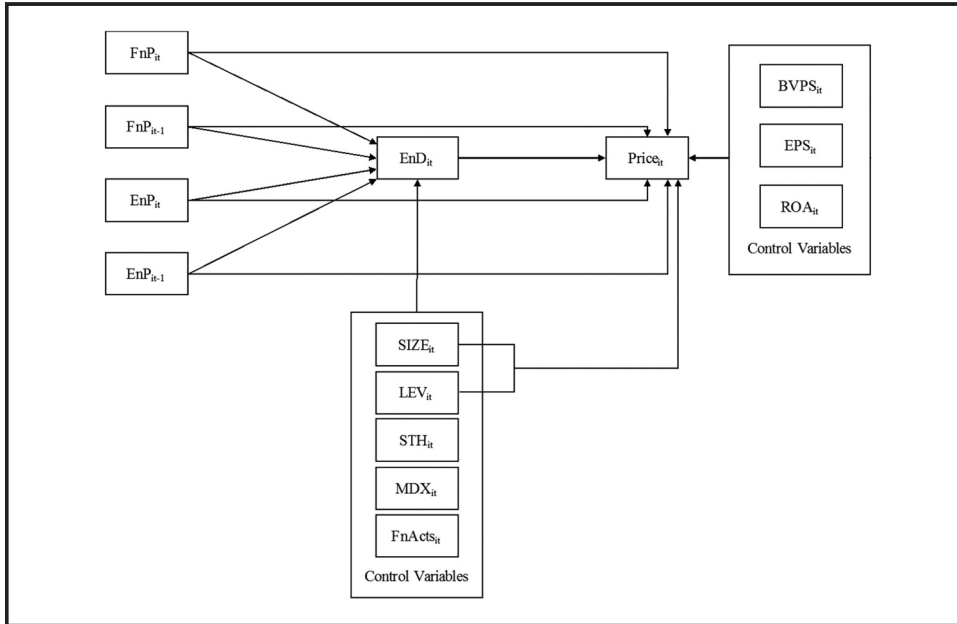
We include several control variables in our research models. We include firm size (SIZE), leverage (LEV), strategic holdings (STH), media exposure (MDX), financial activities (FnActs), as Qiu *et al.* (2014) find these variables to affect environmental disclosures. We also include firm size (SIZE), leverage (LEV), book value per share (BVPS), earnings per share (EPS) and return on assets (ROA) as control variables for firm market value (Qiu *et al.*, 2014).

Table I lists the definitions of the variables used in this study. The data set is gathered from Thomson Reuters Knowledge (Eikon), the Indonesia Stock Exchange's website ([www.idx.co.id](http://www.idx.co.id)), the annual and/or sustainable reports of the firms observed, the website of the Ministry of the Environment Republic of Indonesia ([www.menlh.go.id](http://www.menlh.go.id)) and some known Indonesian news sites (to measure control variable media exposure).

## Results and discussions

Based on the sample selection criteria (Table II), we have 211 observations that come from various industries, such as the agriculture industry, mining industry, basic industry and

**Figure 1** SEM Framework



**Table I** Variable definitions

Variable	Measurement
Firm market value (PRICE)	Stock price at the end of April $t + 1$
Environmental disclosures (EnD)	A scoring technique based on GRI, G3.1 or G4 index, built using the following formula: $\% \text{ Disclosure} = \frac{\text{Number of Items Disclosed}}{\text{Maximum Number of Items Disclosed}} \times 100\%$ We compute the average disclosures based on the industries using the following formula accordingly: $\text{Disclosure Score} = \% \text{ Disclosure} - \text{Mean \% of Sector Disclosure}$
Financial performance (FnP)	The return on sales ratio (ROS) is computed by dividing earnings before interest and taxes (EBIT) by a firm's net sales
Environmental performance (EnP)	Based on a ranking system, ranging from 1 to 5: A score of 5 is given to firms for which the environmental performance management is given the gold color in PROPER or firms that received the Green Industry Award Level 5; A score of 4 for green in PROPER or a Green Industry Award Level 4; A score of 3 for blue in PROPER; A score of 2 for red in PROPER; and A score of 1 for black in PROPER
Firm size (SIZE)	The natural logarithm of the total net sales
Leverage (LEV)	Ratio of the total debt to the total assets
Strategic holdings (STH)	Computed as the number of shares outstanding that are strategically owned by shareholders with at least 5% of ownership
Media exposure (MDX)	The number of articles reporting environmental issues faced by the sample firms from 2012 to 2014. We used environmental sustainability, waste management, pollution and environmental award as the keywords in searching for the articles
Firm activities (FnActs)	The ratio of the net proceeds from the issuance of common and preferred stocks to the net assets at the beginning of the year
Book value per share (BVPS)	The total book value divided by the number of stocks outstanding
Earnings per share (EPS)	The net income divided by the number of stocks outstanding
Return on assets (ROA)	The earnings before interest and tax divided by total assets

**Table II** Sample selection

Sample selection criteria	Total
Number of listed firms on the Indonesia Stock Exchange in 2012-2014	1,477
Industries other than agriculture, mining, basic industry and chemicals, miscellaneous and consumer goods	(880)
Number of listed firms included in the agriculture, mining, basic industry and chemicals, miscellaneous and consumer goods industries	597
Number of listed firms not enrolled in PROPER	(381)
Number of listed firms enrolled in PROPER	216
Number of listed firms not enrolled in PROPER but that achieved a Green Industry Award ( <i>Penghargaan Industri Hijau</i> )	4
Number of listed firms enrolled in PROPER and that also achieved a Green Industry Award ( <i>Penghargaan Industri Hijau</i> )	220
Incomplete data	(9)
Total Number of observations	211

chemicals, miscellaneous industry and consumer goods industry, from 2012 to 2014. [Table III](#) shows the descriptive statistics of the variables in this study. The price variable has a maximum value of 13,448.51 and a minimum value of 50, meaning that this study includes small and large firms. Looking at the maximum (61.36 per cent) and minimum (-61.40 per cent) values for the environmental disclosures (EnD) variable, this study also includes firms with a very low environmental disclosure level compared with the industry average. The average values for contemporaneous and lagged financial performance ( $FnP_t$  and  $FnP_{t-1}$ ) are 10.10 and 11.08 per cent, respectively. The average values of contemporaneous environmental performance ( $ENP_t$ ) and lagged environmental performance ( $ENP_{t-1}$ ) of 3.1 and 3.08, respectively, indicate that our sample received a blue color in PROPER, on average.

We only focus on examining companies whose business activities are in the field of or related to natural resources, which are the agriculture, mining, basic industry and chemicals, miscellaneous and consumer goods sectors. The sample used in this study is a company that has been assessed for environmental performance. The first criterion is firms enrolled in PROPER. PROPER is the most famous, well-planned, authorized and systematic program that rates the environmental performance of companies in Indonesia because it is done directly by the Ministry of Environment of the Republic of Indonesia. The second criterion is firms that have earned a Green Industry Award.

Environmental disclosure in this study is measured with reference to the Global Reporting Initiative (GRI) (GRI 3.1 or 4 depending on which guidance is used by each company). After

**Table III** Descriptive statistics

Variables	Mean	Deviation standard	Maximum	Minimum
Firm market value (Price)	3.159,048	4.265,673	13.448,51	50
Environmental disclosures (EnD)	-0.002844	0.2106608	0.6136275	-0.6139706
Financial performance year $t$ ( $FnP_t$ )	0.1009684	0.1267949	0.4657209	-0.3707578
Financial performance year $t - 1$ ( $FnP_{t-1}$ )	0.1107775	0.1420634	0.4657209	-0.4252323
Environmental performance year $t$ ( $ENP_t$ )	3.099526	0.7712388	5	2
Environmental Performance Year $t - 1$ ( $ENP_{t-1}$ )	3.080569	0.7795919	5	2
Firm size (SIZE) (IDR million)	4.449.487	4.71	201.701.500	11.869
Leverage ratio (LEV)	0.2326756	0.192064	0.8024972	0
Strategic holding (STH)	0.7325438	0.1922753	1.259308	0.1011515
Media exposure (MDX)	0.4265403	1.11614	8	-1
Financial activities (FnActs)	0.008664	0.0206656	0.050985	-0.0382388
Book value per Share (BVPS)	1.465,896	1.833,005	7.728,055	-5.190,524
Earnings per Share (EPS)	168,8297	306,6582	893,2768	-651,5865
Return on assets (ROA)	0.0697142	0.1098724	0.4361236	-0.2245319

calculating disclosure score percentage for each company, we deducted it with the average value of the percentage of each industry to which the firm belongs (company disclosure score – average industry disclosure score). We used this calculation to capture whether a company is relatively superior in terms of environmental disclosure compared to other companies in the same industry. In addition, comparing the disclosure of the respective companies with the average disclosure for the appropriate industry will alleviate the concerns over different disclosure patterns among different industries. This calculation makes the disclosure score relatively more comparable among different industries.

The mean score for environmental disclosure in this study is –0.2844 per cent. The mean value is negative, indicating that in average, the disclosure of the companies in the samples is less than the average level of disclosure in the industry. The maximum value for environmental disclosure is 61.36 per cent (or 61.36 per cent above the average of the industry’s environmental disclosure) and the minimum value for environmental disclosure is –61.40 per cent (which means 61.40 per cent below the average of the industry’s environmental disclosure). An overview of environmental disclosure in each industry for the samples is presented in [Table IV](#).

In [Table IV](#), Panel B, we can see that the industry that has the highest average score for environmental disclosure is mining, with an average of 52.96 per cent for the maximum number of environmental disclosures, and the sector with the lowest average score is consumer goods, with an average of 12.85 per cent. Agriculture and mining have an average score of disclosure that is relatively higher, while basic industry and chemicals, miscellaneous industry and the consumer goods industry have relatively lower scores. This is possibly because agriculture and mining are extractive sectors that directly take resources from nature. In their operations, the two sectors are closely related to nature, and the environment directly affects the conditions, so there are more and more aspects of the environment that the companies need to provide information on in these industries. Therefore, the level of environmental disclosure in the sector is relatively higher than that in other sectors.

There are five companies (three in basic industry and chemicals and two in mining) that have a score for environmental disclosure of 100 per cent. On the other end of the continuum, there are four companies (one in the mining sector and three in consumer goods) that publish an annual report but do not disclose any environmental information (0 per cent). If we see at the score after adjusting the average industry score (Panel A), the basic industry and chemical is the sector with the highest environmental disclosure, while mining is mostly lower than the sector average.

<b>Table IV</b> Environmental disclosure in each industry					
<i>Variables</i>	<i>N</i>	<i>Mean (%)</i>	<i>Standard deviation</i>	<i>Maximum (%)</i>	<i>Minimum (%)</i>
<i>Panel A: before adjusted with average industry score</i>					
Agriculture	24	36.24	0.196507	83.33	8.82
Mining	25	52.96	0.345113	100	0
Basic industry and chemical	78	24.42	0.2544247	100	3.33
Miscellaneous industry	36	15.42	0.135604	83.33	3.33
Consumer goods	48	12.85	0.114026	46.66	0
<i>Panel B: after adjusted with average industry score</i>					
Agriculture	24	0	0.196383	46.19	–27.45
Mining	25	0	0.337377	45.69	–61.40
Basic industry and chemical	78	–0.18	0.254456	75.93	–21.81
Miscellaneous industry	36	–0.21	0.133995	64.17	–15.83
Consumer goods	48	0	0.113581	33.52	–14.17



The SEM estimation of the direct effect is presented in Table V, while that of indirect effect is presented in Table VI. The results of the path analysis are presented in Figure 1[1]. In Table V, for the effect of the dependent variable for of environmental disclosure (EnD), we can see that contemporaneous and lagged financial performance (FnP<sub>t</sub> and FnP<sub>t-1</sub>), as well as contemporaneous environmental performance (EnP<sub>t</sub>), do not significantly affect environmental disclosure, while lagged environmental performance (EnP<sub>t-1</sub>) positively affects environmental disclosure. We can also see that environmental disclosure does not have a significant effect

**Table V** Regression results for direct effect

Independent variables	Coefficient	z	p >  z  (two-tailed)	p-value
<i>Dependent variable: EnD</i>				
FnP <sub>t</sub>	0.002	0.01	0.991	0.496
FnP <sub>t-1</sub>	-0.037	-0.28	0.779	0.390
EnP <sub>t</sub>	0.005	0.24	0.809	0.405
EnP <sub>t-1</sub>	0.068	3.14	0.002	0.001***
SIZE	0.038	4.41	0.000	0.000***
LEV	-0.194	-2.99	0.003	0.002***
STH	-0.112	-1.84	0.066	0.033**
MDX	0.049	4.29	0.000	0.000***
FnActs	-0.484	-0.85	0.396	0.198
<i>Dependent variable: Price</i>				
EnD	1.186,871	1.19	0.235	0.118
SIZE	315,521	2.11	0.035	0.018**
LEV	-763.641	-0.68	0.498	0.249
BVPS	0.339	2.06	0.039	0.020**
EPS	6.015	4.65	0.000	0.000***
ROA	8.988,863	2.83	0.005	0.003***

**Notes:** Price = firm market value, EnD = environmental disclosures level, FnP<sub>t</sub> = financial performance in year t, FnP<sub>t-1</sub> = financial performance in year t - 1, EnP<sub>t</sub> = environmental performance in year t, EnP<sub>t-1</sub> = environmental performance in year t - 1, SIZE = firm size, LEV = firm leverage level, STH = strategic holdings, MDX = media exposures on environmental issues faced by firms, FnActs = financial activity in the form of additional funding, BVPS = firm book value per share, EPS = earnings per share, ROA = return on assets; SEM provides results for all parameters, including for FnP<sub>t</sub>, FnP<sub>t-1</sub>, EnP<sub>t</sub> and EnP<sub>t-1</sub> in the regression with price as dependent variable. For brevity, we do not include the results in this table as we do not have any specific hypotheses for those variables: \*, \*\* and \*\*\* denote significance at α = 10%, 5% and 1%, respectively

**Table VI** Regression results for indirect effect

Dependent variable: price Independent variables	Indirect effect			
	Coefficient	z	p >  z  (two-tailed)	p-value
FnP <sub>t</sub>	2,094	0.01	0.991	0.496
FnP <sub>t-1</sub>	-43,902	-0.27	0.784	0.392
EnP <sub>t</sub>	6,350	0.24	0.812	0.406
EnP <sub>t-1</sub>	80,541	1.11	0.267	0.134
SIZE	45,623	1.15	0.251	0.126
LEV	-230,384	-1.10	0.270	0.135
STH	-133,330	-1.00	0.319	0.160
MDX	57,789	1.14	0.252	0.126
FnActs	-574,284	-0.69	0.490	0.245

**Notes:** Price = firm market value, EnD = environmental disclosures level, FnP<sub>t</sub> = financial performance in year t, FnP<sub>t-1</sub> = financial performance in year t - 1, EnP<sub>t</sub> = environmental performance in year t, EnP<sub>t-1</sub> = environmental performance in year t - 1, SIZE = firm size, LEV = firm leverage level, STH = strategic holdings, MDX = media exposures on environmental issues faced by firms, FnActs = financial activity in the form of additional funding

on firm market value. Hence, *H1a*, *H1b* and *H2a* are not accepted, while *H2b* is accepted. Environmental performance has a positive direct effect on firm market value (*H3* is accepted) (Figure 2).

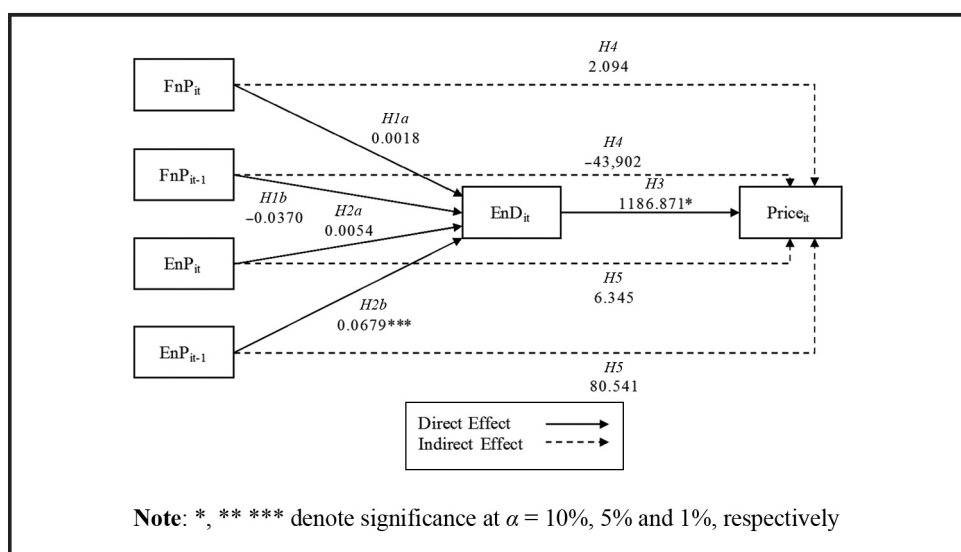
From Table VI, we can see the effect of environmental disclosure as a mediating variable between financial performance and environmental performance on firm market value (price). The results show that environmental disclosure does not mediate the effect of financial performance and environmental performance on firm market value (*H4* and *H5* are not supported). From the results in Table V and Table VI, we can conclude that financial performance and environmental performance instead directly affect firm market value.

Based on our hypotheses testing, we conclude that financial performance does not have a significant impact on environmental disclosure. This conclusion confirms the finding of Qiu et al. (2014) that there is no relationship between financial performance and environmental disclosures. Hackstone and Milne (1996) also suggest that profitability does not have a significant impact on environmental disclosures.

A strong financial performance, indicated by a high profit, is not an incentive for firms to improve their environmental disclosures. In other words, firms do not put profits into consideration when they prepare environmental disclosures. On the other hand, firms with excellent environmental performance will increase the disclosures on their environmental aspects. This result is consistent with studies by Qiu et al. (2014), Clarkson et al. (2007) and Iatridis (2013). Firms that are environmentally sensitive will be motivated to report their environmental aspects, informing their investors about their strategic advantages and their achievements with respect to environmental aspects (Iatridis, 2013). The various achievements and awards received by firms for managing the environment serve as good incentives for them to increase their environmental disclosures.

This study reveals that financial performance does not have an indirect impact on firm market value through environmental disclosures. This study also finds that financial performance can directly affect firm market value. We also find that environmental disclosures cannot serve as a variable that mediates the effect of environmental performance on firm value. The environmental performance instead directly affects firm market value. The same results are found in a study by Lorraine et al. (2004). They argue

**Figure 2** Path analysis of the associations between environmental disclosures with financial performance, environmental performance and firm value



that publications on excellent or poor environmental performance will directly affect stock prices. Publications about the penalties suffered by firms for pollution, awards on high quality of environmental management or environmental performance assessment scores will create reactions in the capital market and eventually affect the firm's stock prices.

For a robustness check, we also used panel data regression analysis by using two-stage least squares. The panel data regression also generates results that are consistent with the main analysis. The lagged environmental performance has a significant impact on environmental disclosure. Contemporaneous and lagged financial performance and environmental performance do not have a significant impact on environmental disclosure. Finally, the environmental disclosure does not have a significant impact on firm market value. These results support our main findings.

From the discussion above, we can see that there is no significant indirect effect (both for financial performance on firm market value through environmental disclosures and environmental performance on firm value through environmental disclosures), and there is a significant direct effect of financial performance on firm market value and a significant direct effect of environmental performance on firm value. All these findings suggest that investors rely heavily on firm performance (both financial and environmental performance) rather than on the mechanism of environmental disclosure.

Such findings are observed possibly because this study examines an emerging country instead of a developed country. According to [Xie et al. \(2017\)](#), CSR practices in emerging economies are highly influenced by the institutional environment. The institutional environment in emerging economies has certain characteristics that are different from those of developed countries, such as differences in the cultural dimensions of individualism and power distance, the political characteristics of corruption and competition and the education and labor systems. In addition, developed countries are equipped with more comprehensive environmental regulations, strong labor unions and a wealth of consumer demands ([Hilson, 2012](#)), which put pressure on companies to adopt good environmental practices. Thus, the effects of CSR on a firm's performance in emerging countries may be influenced by the institutional environment.

The significant effect of country-level variables is also documented by [Cai et al. \(2016\)](#). They reveal that firm characteristics explain very little of the variations in corporate social performance, while country-level factors such as the stages of economic development, culture and institutions explain a significant proportion of the variations in corporate social performance across countries. However, we cannot rule out the possibility that this indirect effect may be due to the fact that our samples do not come from one industry. Different industries may have different indirect effects. Because of the sample limitation, we cannot analyze each industry separately.

Regarding the results of control variables, firm size (SIZE) has a significant positive effect on environmental disclosure. This is consistent with studies by [Brammer and Pavelin \(2006\)](#), [Hackstone and Milne \(1996\)](#), [Cho and Patten \(2007\)](#) and [Lu and Abeysekera \(2014\)](#). Larger companies will have larger stakeholders, so they are under higher scrutiny to disclose information to all stakeholders, including the environmental disclosure. Leverage (LEV) has a significant negative impact on environmental disclosure, consistent with finding of [Brammer and Pavelin \(2006\)](#). Higher leverage will limit the company's flexibility in funding its activities so that the company will focus more on its operational activities and reduce activities such as environmental activities and hence reduce related disclosure. Strategic holdings have a significant negative impact on environmental disclosure. This finding is consistent with that reported by [Brammer and Pavelin \(2006\)](#). This indicates that the increasingly widespread ownership of the company, which is marked by the smaller value of strategic holdings, will further encourage companies to disclose their environmental activities to reduce asymmetric information problems. Next control variable is the media

exposure (MDX), which has a significant positive effect on corporate environmental disclosure. Companies that have greater pressure from mass media in the form of news about environmental issues will have more environmental disclosure. The financial activity variable (FnActs) do not have a significant effect on the environmental disclosure, consistent with the finding reported by [Qiu et al. \(2014\)](#). The proceeds from the sale of shares, which usually resulted in increasing number of shareholders, do not induce the company to increase its transparency through environmental disclosure.

We also find that firm size has a significant positive effect on the firm market value. Larger firm size may be attracting higher number of investors to invest in the company, thus increasing the value of the company. Leverage has no significant effect on the market value, consistent with the finding reported by [Qiu et al. \(2014\)](#). Book value per share, earnings per share and return on assets have significant positive effects on the market value. This is consistent with the finding reported by [Kouser and Azeem \(2011\)](#) and [Qiu et al. \(2014\)](#).

## Conclusions

This study provides five major findings. First, contemporaneous and lagged financial performance do not have an impact on environmental disclosures. This finding conforms to studies by [Hackstone and Milne \(1996\)](#) and [Qiu et al. \(2014\)](#). In other words, the profitability is not a factor that improves the ability of a firm to engage in higher CSR activities and hence do not affect firms' willingness to disclose their CSR.

The second finding is that lagged environmental performance has a positive impact on the current environmental disclosures. Firms tend to disclose their environmental advantages and achievements. This finding confirms the research by [Clarkson et al. \(2007\)](#), [Iatidris \(2013\)](#) and [Qiu et al. \(2014\)](#). The third finding is that environmental disclosures do not have any impact on firm market value. This finding is consistent with the finding reported by [Deegan \(2004\)](#) and [Qiu et al. \(2014\)](#). Firms' environmental disclosures do not affect investors' assessment of the firms. This may indicate that the environmental aspect has not become a concern for the investors when making a decision on the capital market.

The fourth finding is that environmental disclosures do not mediate the effect of financial performance on firm market value. This result suggests that environmental disclosures do not affect investors' assessment of firm's financial performance.

Our last finding is that environmental disclosures do not mediate the impact of environmental performance on firm market value. Environmental advantages and achievements reported in environmental disclosures cannot affect investors' assessment of the firm. Environmental performance instead directly affects firm market value through the reputation built by publications on the firm's environmental performance rating. This finding is consistent with that reported by [Lorraine et al. \(2004\)](#).

For the regulator and the government, this study provides additional information about environmental disclosures in Indonesia. The disclosures have not become a factor that affects stock prices. Given the low disclosures rate, the overseeing role has to be enhanced to improve the preparation of the disclosures and increase firms' compliance. Nevertheless, this study shows that the awards and ratings given by the government are able to improve environmental disclosures. Therefore, the government can trigger increase in disclosures through assessment and rating mechanisms.

There are some limitations of this study that can be used as an avenue for further studies. We only examined listed firms that follow PROPER or have received a Green Industry Award and that are included in the agricultural, mining, basic industry and chemicals, miscellaneous industry and consumer goods sectors. This scope may not be able to describe the overall conditions in Indonesia. We also only examined a one-year lagged

period. There is a possibility that two- or three-year lagged periods may have an effect on environmental disclosures. The measurement of environmental disclosures based on the GRI index is inherently subjective and may not be completely accurate because of subjective judgment when doing the content analysis. Environmental performance is only measured based on the publication of the results of the PROPER assessment and the Green Industry Award. This is because in Indonesia, there are no other data sources in addition to those publications that present environmental performance. In addition, there is a possibility that PROPER and Green Industry Awards tend to be followed by companies that already have good environmental performance.

## Note

1. For brevity, we only include the results of coefficients related to our hypotheses. For complete result please see [Table V](#) and [Table VI](#).

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### Further reading

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### Corresponding author

Sylvia Veronica Siregar can be contacted at: [sylvia.veronica@ui.ac.id](mailto:sylvia.veronica@ui.ac.id)

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