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Environmental Performance and Earnings Persistence: Empirical Evidence from Indonesia

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Abstract

When firms have higher environmental performance, they can provide sustainable business that allows firms to build the value of credibility and ethics, higher reputation, higher productivity, and lower costs. The advantages of environmental responsibilities help firms to maintain their earnings level over a long-term period. This research aims to examine the effect of environmental performance on earnings persistence. Research samples include 413 manufacturing firms-years listed in the Indonesian Stock Exchange and the PROPER evaluation in 2013–2019. Environmental performance is measured by PROPER evaluation rating. The result shows that environmental performance has a positive effect on earnings persistence. The advantage of environmental responsibilities allows firms to enjoy performance sustainability and persistence in a long-term period, not only periodically. Also, the positive effect of environmental performance on earnings persistence occurs more in the environmentally sensitive industry than non-sensitive ones. Since an environmentally-sensitive industry brings more environmental damage, higher environmental performance is more valuable to provide sustainability. This research has limitations to use all the Indonesian Stock Exchange-listed firms since not all firms participate in the PROPER evaluation. This research implies firms' management should maintain earnings persistence and sustainability by implementing higher-quality environmental responsibility, especially for firms in an environmentally-sensitive industry.

Keywords: Environmental Performance, Earnings Persistence, Sustainability, Indonesia

JEL Classification Code: L25, Q51, Q56

1. Introduction

Earnings are important information to evaluate firms' performance. It shows how firms run their business and generate a good result from their operational activities. Another important aspect of performance evaluation is the firms' continuity to generate earnings, such as earnings persistence. Persistent earnings show recurring, permanent, and sustainable earnings (Park & Shin, 2015). It captures the ability of firms to maintain their recurring business activities to generate sustainable earnings.

Earnings persistence is one indicator of earnings quality where it is important to help stakeholders to make an economic decision. Persistent earnings help stakeholders to evaluate firms' business sustainability and predict future performance. For example, stock market participants use earnings persistence to make equity valuation (Penman & Zhang, 2002; Richardson et al., 2005). Previous studies (Easton & Zmijewski, 1989; Kormendi & Lipe, 1987; Widiatmoko & Indarti, 2018) find that market responses on earnings information also relate to earnings persistence. Since it helps stock market participants, such as an investor, higher earnings persistence can lead a firm to generate a lower cost of equity (Francis et al., 2004).

Only sustainable firms' can provide sustainable earnings. Sustainable business can be achieved by providing the triple bottom line of business which are profit, people, and planet (Elkington, 1997). Environmental responsibilities are includes in the concept of the triple bottom line. When firms have higher environmental performance, they can provide sustainable business. Environmental performance allows firms to build the value of credibility and ethics (Lys et al., 2015).

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It also provides a higher reputation (Greening & Turban, 2000), higher productivity (Gabriel et al., 2017), and lower penalty costs from the regulator (Hillman & Keim, 2001). The advantages of environmental responsibilities help firms to maintain their earnings level in a long-term period (Laksmana & Yang, 2009).

However, there is still a lot of environmental problem in Indonesia. The cases of environmental problems in Indonesia like the PT. Freeport in Papua and Lapindo Brantas in Sidoharjo, East Java, and in Papua by PT. Freeport-McMoRan has damages to the environment, which indicates that the corporate governance function in Indonesia is still weak (Agustina et al., 2015). Law Enforcement General Directorate of Environment and Forestry Ministry of Indonesia states that there are 462 companies' environmental cases of 1,544 environmental approval; and cases of toxic and dangerous material waste with the outcome of administrative sanction for 61 companies, enforcement of 65 criminal cases with nine cases have been ready to be taken to the court (Head of Public Relation of Environment and Forestry Ministry of Indonesia, 2018).

The advantages of environmental responsibility have a different level from one firm to another. It depends on the type of business industry. The industry where there is higher environmental damage contribution includes environmentally sensitive industries (Solikhah, 2016). In the environmentally-sensitive industry, environmental responsibility becomes more valuable than the non-environmentally sensitive industry. Thus, there is a greater sustainable business in higher environmental performance for environmentally-sensitive industry firms. Higher environmental performance for firms in an environmentally-sensitive industry can bring more persistent earnings than firms in a non-environmentally sensitive industry.

Mahjoub and Khamoussi (2012) find that environmental performance affects earnings persistence. Mahjoub and Khamoussi (2013) also find that environmental policy implementation helps firms to increase earnings persistence. Alipour et al. (2019) find that environmental disclosure quality improves earnings persistence. This research aims to examine the effect of environmental performance on earnings persistence.

2. Literature Review

2.1. Signaling Theory

Signaling is an action done by the firms to give private information about firms' prospects in the future (Brigham et al., 2017). Signaling theory is one of the important components to explain earnings persistence since it provides important information on performance for investors. Signaling theory explains how important the firms give the signal of private information to the financial statement users (Kim et al., 2014). The signal might capture the information about firms' strategies to guarantee what the investor or shareholders want. Also, it could be the information to shows firms' quality. Earnings persistence is a signal that explains earnings sustainability in the future. It helps investors and creditors to use earnings information as a consideration to make an economic decision. In the context of environmental responsibilities, signaling theory explains that firms aim to give a signal of firms' quality (Montiel et al., 2012; Ramchander et al., 2012). It could be a signal of high-quality information (King et al., 2005) or sustainability (Moratis, 2018)voluntary standards involving governments, non-governmental organisations and companies have gained much traction in recent years and have been in the limelight of public authorities and policymakers. From a firm perspective, sustainability standards can be a way to demonstrate that they engage in corporate social responsibility (CSR. Since the higher quality signal is costly (Spence, 1973), only firms that spend some costs of environmental responsibility can provide a signal of sustainability (Barnett, 2007; Barnett & Salomon, 2012; Su et al., 2016).

2.2. Legitimacy Theory

Legitimacy theory states that firms are continually looking for ways to ensure their operations are within the limits and norms prevailing in society (Gray et al., 1996). In the perspective of legitimacy theory, a firm company will voluntarily do environmental responsibilities if the firm considers that this is what the community expects. The legitimacy theory relies on the premise that there is a "social contract" between the firm and the community in which the company operates. The social contract is a way of explaining to a large extent society's expectations of how a firm should carry out its operating activities. Expectations in a social contract are not absolutely the same and fixed but can change over time. It requires firms to always be responsive in dealing with the dynamics and uncertainties of social and environmental conditions in which the company is running its business operations.

If the firm feels that social and environmental responsibility is not sufficient to legitimize its operating activities, the company can take several resistance strategies, such as (1) the firm can try to educate and inform its stakeholders about the changes that are happening in the company, (2) firms can attempt to change the views of stakeholders without changing company behavior, (3) firms can attempt to manipulate stakeholder perceptions by diverting stakeholder attention from the issue of primary concern to other issues that are of interest to the stakeholder, and (4) firms can try to replace and influence the expectations of external parties about the company's performance (Guthrie & Parker, 1989).

In legitimacy theory, firms must demonstrate that they have been operating sustainably in a manner consistent with social values. It can be achieved by improving environmental responsibility and its performance.

2.3. Stakeholder and Corporate Governance Theory

Stakeholder theory explains that firms should consider the role of other stakeholders, besides shareholders, to achieve the goals of the organization (Freeman et al., 2010; Freeman & Dmytriyev, 2017). One of the goals of an organization is to generate higher earnings and ensure that the earnings are persistent and sustainable. Firms need to involve all stakeholders to achieve their goals. Firms have to fulfill all stakeholders' interests to generate persistent and sustainable earnings. Environmental responsibilities could be an alternative strategy to fulfill stakeholders' interests. By achieving good environmental performance, firms fulfill the interests of society, community, natural environment, and regulator. Also, it can provide persistent earnings to help financial statement users, such as investors and creditors, to make an effective economic decision.

Stakeholder theory also relates to the corporate governance concept. Corporate governance theory explains that corporate governance is an instrument to guarantees maximum performance (Shleifer & Vishny, 1997), include high-quality performance that can predict future profitability (Dang et al., 2020). It is implemented by monitoring, supervising, and controlling functions to ensure transparency and maximization of business activities. In a wider context, the objective of corporate governance is to protect the interest of various stakeholders; include shareholders, customers, suppliers, employees, and society (Madhani, 2017). Monitoring, supervising, and controlling functions are not only to ensure shareholders' value maximization, but also to ensure that shareholders value maximization is fulfilled without making any conflicts to other stakeholders interests, or even shareholders value maximization done by other stakeholders value maximization.' It means that a firm has to achieve high profitability in ethical ways such as to avoid environmental damaging, avoid law-breaking, or increases environmental performance.

2.4. Earnings Persistence

Earnings information provides important content to evaluate firms' performance. Higher earnings quality reflects sustainable earnings in the future, includes accrual and cash components, and as a picture of firms' financial condition and performance. Since earnings have an important role for the investor, earnings characteristic is a crucial issue to be examined, such as earnings characteristic of persistence.

Scott (2014) explains earnings persistence is an earnings attribute that explains future earnings which are reflected in the current earnings. Earnings persistence helps stakeholders to make an effective decision. Higher earnings persistence allows investors and creditors to use current earnings information to predict future earnings (Francis et al., 2004). To get accurate predictions, earnings have to have good quality to avoid prediction errors. Accurate future earnings prediction can be implemented if earnings are persistent. Persistent earnings have lower noise which shows accurate financial performance and reflects sustainable earnings in the future (Hayn, 1995).

Higher quality earnings have lower perceived noise and reflect the real firms' performance (Abdel-Meguid et al., 2019). Kormendi and Lipe (1987) explain that perceived noise in earnings information might come from transitory events, such as accruals concept implementation in the accounting process. Transitory events are not recurring events and only happen at a certain time. It can give a big fluctuation in accounting earnings information. Transitory events are not usually occurring in persistent and sustainable earnings.

2.5. Environmental Performance

Environmental performance refers to how effective firms do environmental responsibilities Environmental activities by the company have been regulated generally in Act no. 40 2007 about Limited Company [*UU no.40 Tahun 2007 tentang Perseroan Terbatas*] (Limited Company, 2007) and specifically in Government Regulation no. 47 2012 about Social and Environmental Responsibility of Limited Company [*PP no. 47 2012 tentang Tanggung Jawab Sosial dan Lingkungan Perseroan Terbatas*] (Social and Environmental Responsibility of Limited Company, 2012). It says that companies have to do environmental responsibility, especially for companies that are related to natural resources processing and/or business activities waste that have a big impact on the environment.

In Indonesia, the first national-wide corporate environmental performance assessment conducted is the PROPER (*Program Penilaian Peringkat Kinerja Perusahaan Dalam Pengelolaan Lingkungan* [Performance Rating Assessment of Environmental Program]) program by BAPEDAL (*Badan Pengelola Dampak Lingkungan* [Agency of Environmental Consequences Management]) that has been initiated in 1995. PROPER's steps are: (1) determining current company's status about environmental regulation compliance, (2) disagreement and clarification of the status, (3) determining final status, (4) environmental performance assessment that beyond compliance, and (5) determining final company's rating (Program Penilaian Peringkat Kinerja Perusahaan Dalam Pengelolaan

Lingkungan Hidup [Performance Rank Assessment of Environmental Program], 2013). Assessment of compliance consists of documents or permission of environmental, water contamination management, air contamination management, and dangerous and toxic waste management; while assessment of beyond compliance consists of the environmental management system, resource management, society empowerment, and environmental performance reporting (Program Penilaian Peringkat Kinerja Perusahaan Dalam Pengelolaan Lingkungan Hidup [Performance Rank Assessment of Environmental Program], 2013). PROPOR's final rating is determined by five colors, which are (1) Black (the firm does environmental damaging and not comply with environmental regulation); (2) Red (the firm does not comply with some parts of environmental regulation); (3) Blue (the firm does comply fully to environmental regulation); (4) Green (the firm does beyond compliance of environmental regulation); and (5) Gold (the firm does beyond compliance of environmental regulation consistently by getting Green rating three times in a row) (Program Penilaian Peringkat Kinerja Perusahaan Dalam Pengelolaan Lingkungan Hidup [Performance Rank Assessment of Environmental Program], 2013).

2.6. Hypotheses

Stakeholder theory explains that business sustainability depends on economic and non-economic strategy by fulfilling all stakeholders' interests. As implementation of stakeholder theory, firms do environmental responsibility to build business sustainability by achieving not only profit, but also other stakeholders' needs. The higher environmental performance gives advantages of firms' reputations in front of stakeholders, such as customers that are motivated to buy firms' products. It leads to higher sales growth in a long-term period. Also, higher environmental performance reduces costs, such as penalty costs by regulators or activists, and operational cost, that lead to cost efficiency. Environmental responsibility also helps firms to make an efficient investment (Erawati et al., 2021). Long-term sales growth and stable cost efficiency make firms experience lower uncertainty risk and higher growth. Environmental performance is not only can give periodic financial advantages, but also sustainable and persistent business performance. The sustainable and persistent business performance also can be achieved by maintaining higher quality employees. Hoang et al. (2020) also find that environmental responsibility attracts higher-quality employees. Mahjoub and Khamoussi (2012) and Alipour et al. (2019) find that environmental disclosure increase earnings persistence. Mahjoub and Khamoussi (2013) also find that environmental policy implementation improves earnings sustainability. Laksmana and Yang (2009) find that corporate social responsibility disclosure, include in environmental activities, affects earnings persistence.

H1: *Environmental performance has a positive effect on earnings persistence.*

Environmental performance can give financial advantages differently between firms. In signaling theory, environmental responsibility confirms that firms can manage their business to not harm any damage to the environment. Since an environmentally sensitive industry give a more negative impact on environmental damage, firms get more financial advantage when they achieve higher environmental performance, such as sustainability and persistence benefits of business performance. Mahjoub and Khamoussi (2013) find that environmentally-sensitive industry firms need to implement higher quality of environmental policy to generate persistent earnings.

H2: *Positive effect of environmental performance on earnings persistence occurs more in the environmentally-sensitive industry than non-environmentally sensitive industry.*

Based on hypotheses development and previous findings, this research examines two hypotheses. Hypothesis examination is controlled by variables of firms' size, market value to assets ratio, leverage, and auditor quality. Details of control variables can be seen in the section "Research Variable". The framework to capture hypothesis examination is in Figure 1.

3. Research Design

3.1. Research Sample

Research samples include manufacturing firms listed in the Indonesian Stock Exchange and the PROPER evaluation in 2013–2019. Manufacturing firms run business that involves the fabrication process that contributes to environmental damage bay generating waste and pollution. Manufacturing firms also have higher risks of sales and earnings uncertainty (Ahmed & Azim, 2015) where it can reduce earnings persistence. The total sample includes 413 firm-years is shown in Table 1.

3.2. Research Variables

Environmental performance is measured by the PROPER evaluation rating. It is provided as five colors of rating. *Black* refers to firms where they harm the environment. *Red* refers to firms where they do not harm the environment, but lack environmental responsibilities. *Blue* refers to firms where they do environmental responsibilities as regulatory

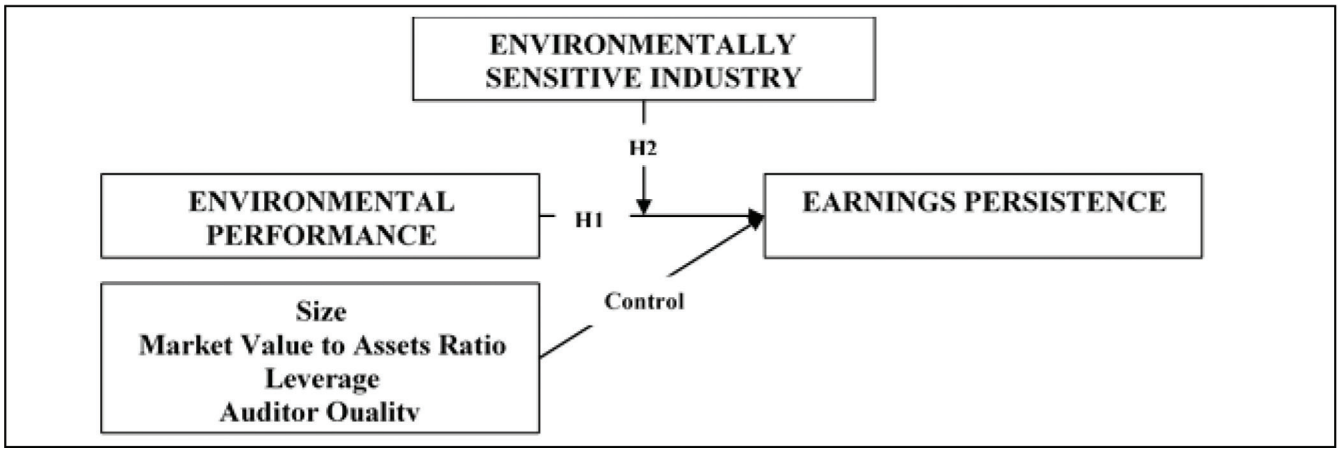

Figure 1: Research Framework

Table 1: Sample

Criteria	Number of Firms							
	2013	2014	2015	2016	2017	2018	2019	Total
Manufacturing firms listed in the Indonesian Stock Exchange	138	143	142	143	152	158	159	1,035
Does not participate in PROPER	(77)	(86)	(80)	(80)	(92)	(99)	(100)	(614)
Incomplete data	(2)	(1)	(2)	(2)	(1)			(8)
Net Sample	59	56	60	61	59	59	59	413

guidance. *Green* refers to firms where they do environmental responsibilities beyond regulation. *Gold* refers to firms where they get a *Green* rating three times in a row. Interval scoring of PROPER rating is 1–5.

Earnings persistence refers to how far earnings can be sustainable, recurring, and permanent (Francis et al., 2004). The original model of earnings persistence can be seen in equation 1 (Francis et al., 2004).

$$\text{EARNINGS}_{t+1} = a + b_1 \text{EARNINGS}_t + e \quad (1)$$

Where EARNINGS_{t+1} is earnings in period $t + 1$ divided by total assets period t and EARNINGS_t is earnings in period t divided by total assets period t. Coefficient b_1 in equation 1 shows the level of earnings persistence.

Control variables include firms' size, market value to asset ratio, leverage, and auditor quality. Size, market value to assets ratio, and leverage associate with the implementation of environmental responsibilities (Hategan et al., 2018). Since earnings persistence is one of the earnings quality indicators, it also is affected by auditor quality. Firms' size is measured by the natural logarithm of total assets. Market value to asset ratio is measured by the market value of equity divided by total assets. Leverage is measure by total liabilities divided by total assets. Auditor quality is measured by dummy variables where score 1 if firms are audited by Big 4 auditors and score 0 if otherwise.

3.3. Analysis Method

The analysis method uses the earnings persistence model of equation 1 and is adjusted by environmental performance, control variables, and industry-effect. The analysis model can be seen in equation 2.

$$\begin{aligned}\text{EARNINGS}_{t+1} = {} & a + b_1 \text{EARNINGS}_t \\ & + b_2 \text{EARNINGS}_t \times \text{ENV} \\ & + b_3 \text{ENV} + b_4 \text{SIZE} + b_5 \text{MVA} \\ & + b_6 \text{LEV} + b_7 \text{BIG4} \\ & + \sum \text{Industry} + e\end{aligned} \quad (2)$$

Where ENV is environmental performance, SIZE is firms' size, MVA is market value to assets ratio, LEV is

leverage, BIG4 is auditor quality, and ∑Industry is the industry-fixed effect. H1 is accepted if b_1 in equation 2 is positive and significant for all samples. H1 is accepted if b_1 in equation 2 is positive and significant for the environmentally sensitive industry group of the sample, at the same time, b1 in equation 2 is negative significant or insignificant for the non-environmentally sensitive industry group of the sample. Based on Environmental Minister Regulation no. 5/2012 about Obligation of Environmental Impact Analysis; cement, chemical, woods, and pulp and paper sectors are determined as industry groups with an obligation to make environmental analysis before running their business activities and report it to the regulator. In this case, firms in cement, chemical, woods, and pulp and paper sectors are categorized as an environmentally sensitive industry.

4. Results

4.1. Descriptive Statistics

Table 2 shows that the lowest environmental performance score (ENV) is 2 (*Red* rating) while the highest one is 5 (*Gold* rating). The average environmental performance score (ENV) is 3 with its deviation of 0.52. The lowest future earnings ($EARNINGS_{t+1}$) are –0.25 while the highest ones are 0.58. The average of future earnings ($EARNINGS_{t+1}$) is 0.06 with its deviation of 0.012. The lowest current earnings ($EARNINGS_t$) are –0.22 while the highest ones are 0.43. The average of current earnings ($EARNINGS_t$) is 0.06 with its deviation of 0.011. The smallest firm (SIZE) is 26.16 while the biggest one is 32.27. The average firms' size (SIZE) is 28.98 with its deviation of 1.47. The lowest market value to assets ratio (MVA) is 0.04 while the highest one is 22.56. The average market value to assets ratio (MVA) is 1.84 with its deviation of 3.25. The lowest leverage (LEV) is 0.04 while the highest one is 2.62. The average leverage (LEV) is 0.48 with its deviation of 0.30.

Table 2: Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
ENV	2.00	5.00	3.00	0.52
$EARNINGS_{t+1}$	–0.25	0.58	0.06	0.12
$EARNINGS_t$	–0.22	0.43	0.06	0.11
SIZE	26.16	32.27	28.98	1.47
MVA	0.04	22.56	1.84	3.25
LEV	0.04	2.62	0.48	0.30

4.2. Environmental Performance and Earnings Persistence

Table 3 shows that the interaction between current earnings and environmental performance ($EARNINGS_t$ × ENV) has a coefficient value of 0.093 (significant in 0.05). It indicates that environmental performance has a positive effect on earnings persistence. Environmental performance allows firms to build the value of credibility and ethics, higher reputation, higher productivity, and lower penalties costs from the regulator. Long-term sales growth and stable cost efficiency make firms experience lower uncertainty risk and higher growth. Environmental performance- not only can give periodic financial advantages, but also sustainable and persistent business performance. The advantages of environmental responsibilities help firms to maintain their earnings level in a long-term period. The result is consistent with Mahjoub and Khamoussi (2012) and Alipour et al. (2019) who find firms that do environmental responsibility are more likely to generate persistent and sustainable financial performance.

4.3. Industry Sensitivity, Environmental Performance, and Earnings Persistence

Table 4 shows that the interaction between current earnings and environmental performance ($EARNINGS_t$ × ENV) has a coefficient value of 0.234 (significant in 0.05) and 0.069 (insignificant) for environmentally sensitive

Table 3: Environmental Performance and Earnings Persistence

Variables	Coefficient	
	(1)	(2)
Constant	0.010	0.031
$EARNINGS_t$	0.751*	0.461*
$EARNINGS_t$ x ENV		**0.093****
ENV		–0.003
SIZE	0.000	–0.000
MVA	0.010*	0.009*
DAR	0.000	–0.003
BIG4	0.005	0.004
Adj *R*-Square	0.829	0.831
F-Statistics	100.70*	93.006*

Note: *Significant in 0.01, **significant in 0.05, (1) original earnings persistence model, (2) environmental on earnings persistence.

Table 4: Industry Sensitivity, Environmental Performance, and Earnings Persistence

Variables	Coefficient			
	(1)		(2)	
	(3)	(4)	(3)	(4)
Constant	–0.260	–0.264	0.058	0.077
$EARNINGS_t$	0.377*	–0.422	0.764*	0.552*
$EARNINGS_t$ x ENV		0.234**		0.069
ENV		0.010		–0.006
SIZE	0.012**	0.010**	–0.002	–0.001
MVA	0.000	0.002	0.010*	0.010*
DAR	–0.163*	–0.163*	0.002	0.001
BIG4	–0.003	–0.013	0.004	0.004
Adj *R*-Square	0.507	0.568	0.857	0.857
F-Statistics	11.532*	11.765*	124.482*	110.895*

Note: *Significant in 0.01, **significant in 0.05, (1) environmentally sensitive industry, (2) non-environmentally sensitive industry, (3) original earnings persistence model, (4) environmental on earnings persistence.

industry and non-environmentally sensitive industry group of the sample. It indicates that the positive effect of environmental performance on earnings persistence is more pronounced for an environmentally sensitive industry group of samples than a non-environmentally sensitive industry one. Since an environmentally sensitive industry give a more negative impact on environmental damage, firms get more financial advantage when they achieve higher environmental performance, such as sustainability and persistence benefits of business performance. In the environmentally sensitive industry, environmental responsibility becomes more valuable than the non-environmentally sensitive industry. Thus, there is a greater sustainable business in higher environmental performance for environmentally sensitive industry firms. The result is consistent with Mahjoub and Khamoussi (2012) who find firms in an environmentally sensitive industry are more likely to generate persistent and sustainable financial performance.

5. Conclusions

This research aims to examine the effect of environmental performance on earnings persistence. The result shows that environmental performance has a positive effect on earnings persistence. The advantage of environmental responsibilities allows firms to enjoy performance sustainability and persistence in a long-term period, not only periodically. Also, the positive effect of environmental performance on earnings persistence occurs more in the environmentally sensitive industry than non-sensitive ones. Since an environmentally sensitive industry brings more environmental damage, higher environmental performance is more valuable to provide sustainability.

This research has limitations as it uses all the Indonesian Stock Exchange-listed firms since not all firms participate in the PROPER evaluation. Future research is expected to use a wider sample size so the result can be generalized to all manufacturing firms. This research implies firms' management to maintain earnings persistence and sustainability by implementing higher-quality environmental responsibility, especially for firms in an environmentally sensitive industry.

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