

# Does Green Investment Increase Financial Performance? Empirical Evidence from Indonesian Companies

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**Abstract.** The negative effects of globalization and rapid growth of industries on environment have changed the business paradigm from profit issues to profit, people and planet (triple bottom line). Consequently, a number of companies have invested their money in environmental issues (called as green investment). This study aims to investigate the effect of firm characteristics on green investment and how green investment influences financial performance. Using annual reports of companies receiving the Program for Pollution Control, Evaluation and Rating (PROPER) award and listed on the Indonesia Stock Exchanges in the year of 2009-2014 as research data, the findings showed that firm size, foreign ownership, industry profile, and frequency of audit committee meeting significantly influenced green investment whereas ISO14001 management certification had no effect on it. Interestingly, green investment positively determined an increase in firm financial performance. This reveals that the better the green investment, the higher the financial performance of the companies. The findings contribute to the importance of adopting green investment as a company's strategy to increase profit without destroying the environment. Secondly, this finding can be used by government as a reference for formulating any regulations concerning business and environment. Finally, the finding contributes to the importance of including environmental issues in business education.

## 1 Introduction

Green investment is seen as interesting issues in business and accounting areas since there is a shift in the business paradigm from single P (Profit) to Triple P (Profit, People and Planet). A number of companies listed in capital markets have implemented green investment to attract potential shareholders. Green investment can be defined as company's efforts in managing environmental issues by reducing the negative impact of business activities on environment [1]–[3]. It is believed that green investment can increase competitive advantage, firm reputation and value [4], [5]. Therefore, a number of studies have been carried out to investigate the determinants and consequences of green investment.

Unfortunately, in the business context, previous studies have been focused on environmental disclosure [6]–[9]) and environmental performance [10]–[12]. The studies tend to ignore the determinants of green investment from the perspectives of firm characteristics and corporate governance. In addition, most of the studies were conducted in developed countries and it is not easy to find similar studies on green investment in emerging countries, including Indonesia. Thus this study is intended to investigate the effect of firm characteristics (industry profile, firm size, ISO14001 management certification) and corporate governance (foreign ownership and audit committee meeting) on green investment. The findings may contribute to the

importance of adopting green investment as a company's strategy to increase profit without destroying the environment. Secondly, this finding can be used by government as a reference for formulating any regulations concerning business and environment. Finally, the finding may contribute to the importance of including environmental issues in business educations.

## 2 Hypotheses development

### 2.1 Firms size and green investment

Firm size reflects the number of assets and resources owned by companies to achieve their business objectives. As large companies have more opportunities to invest than that of smaller companies, stakeholders are more concerned with large companies as such investment may influence their interests [13]–[15]. In fact, as claimed by legitimacy theory, large companies are committed to environmental issues as such commitment can be used to gain and maintain legitimacy. Previous studies showed that big companies are more transparent in implementing and reporting their environmental and social policies [16]–[19]. Moreover, government puts more attention on larger companies than smaller ones in regard to any company policies concerning social and environmental issues. Hence, the larger the company, the greater the ability of the

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company to implement environmental-related policies [7], [20]–[23], including environmental investment and green management [17], [20], [23]–[25]. This study proposes the following hypothesis:

*H1. Firm size positively affects green investment*

## 2.2 Foreign ownership and green investment

Stakeholder theory claims that shareholders are seen as powerful stakeholders in influencing company's policies, including green investment. Such influence depends on how powerful are the stakeholders compared to other ones. Foreign investors—mostly institutional investors—are seen as powerful stakeholders who may put pressures on environmental issues. Borrowing Reference [26] arguments, companies with large foreign ownership are seen as powerful in monitoring management, especially environmental issues [11], [27]–[32]. Some studies on carbon emission policies also support this claims [28], [33]. Thus, this study proposes the following hypothesis

*H2: Foreign ownership positively affects green investment*

## 2.3 Industry profile and green investment

Industry types play important roles in determining green investment. In line with its sensitivity to the environmental issues, the types of industry can be divided into two main clusters, namely high-profile and low-profile industry. Borrowing Reference [9], high-profile industry refers to an industry on which their consumer visibilities, political risks, competitions are high (for example, petroleum, chemical, forest and paper, automobiles, aircraft, extractive, agricultural, liquor and tobacco, and media and communications industries). In the Indonesian setting, the Government (in the PROPER assessment) commonly monitors the palm oil industry, oil and gas industry, and textile industry (PROPER Assessment Report, 2011), which are similar to high-profile industry proposed by Reference [9]. Hence, it is claimed that this type of industry may affect green investment as described by the legitimacy theory. The theory insists that the company seeks to get legitimacy from all stakeholders [34] by implementing policies (including green investment) that are consistent with their interests and values. Indeed, green investment help companies to gain legitimacy. The more sensitive the types of industry on environmental issues, the more serious the companies in environmental issues [17], [35]–[39]. Therefore, the hypothesis is proposed as a follow:

*H3. Companies in high-profile industry positively influence green investment*

## 2.4 Audit committee meeting and green investment

Audit committee is part of governance mechanism, which is responsible for overseeing the implementation of financial and accounting policies [40]–[43], including green investment policies. Therefore, the green

investment policy cannot be separated from the role of audit committees. Borrowing previous studies on the role of audit committees in various corporate policies such as compliance with regulations [44], [45], and firm performance [46], it is believed that the effectiveness of the audit committee determines the reason why companies implement green investment. Studies on the relationship of audit committees and environmental issues can also be traced to Reference [47]. Thus, it is argued that the more effective the audit committees in monitoring company's policies, the higher the green investment of the company. The effectiveness of audit committees can be related to the frequency of the audit committee members in holding formal meeting. Based on the argument, this study proposes the following hypothesis

*H4. Frequency of Audit Committees Meeting positively affects green investment*

## 2.5 ISO14001 management certification and green investment

The ISO14001 standard can be used as a framework for improved corporate environmental management in a multinational perspective [48]. Companies implementing ISO14001 standards because such implementation can increase companies performance. Previous study revealed that there is a positive relationship between environmental management systems and financial performance [49]. Moreover, other studies suggested that ISO14001-certified facilities positively influenced environmental performance because they decreased their pollution emissions faster compared to non participants [50], [51]. The finding implies that companies with ISO14001 certificates are committed to higher green investment than those without the certificate. When the companies believe that ISO14001 management certification contributes to the companies' performance, then they will increase their funding in green investment. Consequently, this study proposed the following hypothesis.

*H5: ISO14001 management certification positively influences green investment*

## 2.6 Green investment and financial performance

Legitimacy theory points out that companies actively look for and maintain their legitimacy [34] by aligning company values, policies and strategies to the community values. Green investment can be seen as a company's strategy to gain and maintain legitimacy. The reason is that green investment enables companies to manage the impacts of their business on environment by minimizing the use of energy and decreasing carbon emissions and other negative impacts [1]–[3]. Green investment can increase company reputation, and competitive advantages of companies [4], [5]. Success in managing environmental issues can eventually increase

firm values[12], [37], [52]–[58]. Therefore, the proposed hypothesis is as a follow.

H6: Green investment positively affects firm financial performance.

### 3 Research method

This study employed five variables: green investment, financial performance, foreign ownership, industry profile, firm size, ISO14001 certification and frequency of audit committee meetings. Green investment refers to the total investment incurred by the company to reduce the negative impact of company activities [54]. Unfortunately, it is not easy to find monetary expenditure of green investment on annual reports. Hence, green investment (GI) is measured by the rank of PROPER Award received by companies with measurement scales as follows: five (5) for Gold (excellent), four (4) for Green, three (3) for Blue, two (2) for Red, and one (1) for Black (very poor). The reason is that, companies with higher ranks of PROPER Awards actually show that the companies are serious in investing their money to manage the negative environmental impacts of their business.

Foreign ownership (FO) is measured by proportion of shares owned by foreign shareholders to total outstanding shares. Firm Size (FS) is measured by Ln total assets of the company[17], [19], [54]. Industry profiles (IP) are considered as a dummy variable which refers to low profile or high profile industry (high profile industry is scored by one, otherwise zero). ISO14001 management certification (IS) is also dummy variable, which is measured by one (1) if the company has ISO14001 management certification, otherwise zero. Meanwhile, frequency of audit committee meetings (FM) is measured by the number of audit committee meetings within one year. Finally, financial performance (FP) is measured by ROA (Earnings After Tax divided by Total Assets).

Population of this study consists of all companies listed on the Indonesia Stock Exchanges in the year 2009-2014. Samples are chosen based on the following criteria: the company published annual reports in the year 2009-2014 and won PROPER awards in the observation year. Data were then analyzed using ordinal logistic regression and linear regression based on the following models.

$$GI = \alpha + \beta_1 FS + \beta_2 FO + \beta_3 IP + \beta_4 ISO + \beta_5 FM + e \quad (1)$$

$$FP = \alpha + \beta_1 GI + e \quad (2)$$

Where GI represents green investment; FP is financial performance; FS show a firm size; FO is foreign ownership; IP represents Industry Profile; IS shows ISO14001 management certification; and FM is Frequency of Audit Committee Meetings.

### 4 Findings and discussion

Based on the availability of data, 172 companies have received PROPER Awards from 2009 to 2014, but only

135 companies met sample criteria (27 companies receiving the PROPER Award were not those listed on the Indonesia Stock Exchanges). Table 1 indicated descriptive statistics of empirical data.

Table 1 demonstrated that most companies (54.80%) received Blue category of PROPER award. This reveals that the companies have arranged their green investment at the minimum level. In other words, they invested their money in green activities because of mandatory reasons, which is just to qualify the minimum requirements specified by regulators. Hence, the initiatives of the companies to voluntarily invest in environmental issues exceeding the minimum requirements were not indicated in the sample companies. In fact, only 9% and 26% of the total sample received Gold and Green category of PROPER awards respectively.

**Table. 1** Descriptive Statistics

Variables	Indicators	Number	Percentage
EI	Gold	12	8.90%
	Green	40	29.60%
	Blue	74	54.80%
	Red	8	5.90%
	Black	1	0.70%
IP	low profile	30	34.80%
	high profile	105	65.20%
IS	With ISO14001	130	96.30%
	Without ISO14001	5	3.70%
	Valid	135	100.00%
Variables	Min	Max	Mean (St.D)
FS (Ln)	21.97	32.08	28.86(1.64)
FO	0.00	100.00	36.60(35.37)
FM	1.00	57.00	8.90 (9.90)
FP	-19.57	54.40	9.20(11.40)

In terms of firm size, the data showed that on average, the firm size of the samples (LnFS) was 28.86 (equivalent to 3.3 trillion Rupiahs). The description of foreign ownership (FO) also reveals that foreign shareholders only hold 36.60 outstanding shares. It is interesting to note that there is a sample company by which 100% of its shares are owned by foreign shareholders. Concerning industry profiles (IP), the samples (65.20%) are dominated by high profile companies. Furthermore, the audit committees on average held eight formal meetings (FM) a year. The formal meetings were seen as quite high for publicly listed companies in Indonesia. Finally, the majority of

samples were dominated by companies with ISO14001 management certification (96.30%).

**Table. 2** Ordinal Logistic Regression: Model 1 (Dependent= Green Investment)

Variables	Estimation	Wald	Sig.	Results (Ha)
FS	0,122	3,670	0,049*	Supported
FO	0,012	14,671	0,000*	Supported
IP	0.361	10.684	0.001*	Supported
FM	0,024	4,601	0,032*	Supported
IS	-0,910	1,514	0,218	Not supported
-2 log Likelihood (Chi-Square) = 257.006 (Sig. = 0,000)				
Coefisien of Determination (Nagelkerke) = 0,302				

Note: \*Significant at 5%

While descriptive statistics described the characteristics of research sample, hypothesis testing were run by using ordinal logistic regression (Model 1) and simple regression (Model 2) to confirm whether empirical data support the hypothesis. Table 2 demonstrated the empirical findings. Table 2 indicated that the Chi-Square value is equal to 257.006 ( Sig. = 0.000), which implies that the model can be employed to explain the determinants of green investment. Based on the results of Table 2, it can be inferred that the predicted variables, which significantly affected the green investment were firm size (FS), foreign ownership (FO), industry profiles (IP), and audit committee meetings (FM)). However, ISO14001 management certification (IS) did not significantly influence green investment. Finally, Nagelkerke coefficient has a value of 0.32, which implied that the degree to which firm size (FS), foreign ownership (FO), industry profiles (IP), and audit committee meetings (FM)) influenced green investments was only 32%.

**Table. 3** Results of Regression: Model 2 (Dependent= Financial Performance)

Variable	Stand. Coeff	t	Sig.	Results (Ha)
GI	0.322	3.926	0.000*	Supported
Coefisien of Determination (Adj R <sup>2</sup> ) = 0.104				

Note: \*Significant at 5%

The second model was intended to investigate how green investment (GI) affects firm financial performance (FP). Table 3 showed the results of statistical test. It can be inferred from Table 3 that the empirical data supported the hypothesis (Sig. 0.000). This reveals that green investment significantly and positively influences financial performance. Thus, green investment can be

used as a strategy to boost financial performance (profitability). The findings of hypothesis testing are further discussed below.

The first hypothesis claimed that firm size positively influences green investment. The finding supported the hypothesis. Companies with larger assets tend to have better green investment policies. This finding is consistent with legitimacy theory, which argues that larger companies tend to pay more attention on social and environmental issues than smaller ones because they want to align their interests to the community and environment ones [13]–[15] for legitimacy reasons. Furthermore, the finding is in line with previous studies concerning firm size and social and environmental issues [7], [16], [19]–[23], [59] including pollution and green management [17], [20], [23]–[25]

The second findings of this study indicated that foreign ownership significantly affects green investment. This means that companies implemented green investment because of pressures from foreign shareholders. The finding also reveals that foreign shareholders have significant power to influence management in the implementation of green investment policies as claimed by stakeholder theory. The finding is also consistent with findings by previous studies claiming that the greater the ownership, the greater the pressure on the company to manage all policies relating to the environment issues [8], [11], [27]–[32] and carbon emission policies [24], [28], [33]

The third hypothesis proposes argument that industry profiles positively influence green investment. The finding indicated that the empirical data supported this hypothesis. This reveals that environmentally high sensitive-companies (high profile industries) tend to have better green investment policies than low profile ones. It is, therefore, not surprising that industry profiles in Indonesia, which are intensively overseen by the Ministry of Environment are those in palm oil industry, oil and gas industry, and textile industry, which are similar to high profile industries. As claimed by legitimacy theory, to gain and maintain legitimacy and get public supports, companies must identify any activities, which are consistent with the public expectations [20], [23], [60]–[64], including activities related to green investments. In addition, the finding supported previous studies arguing that company concerns on environmental issues will increase when their business activities have significant impacts on the environment [17], [35]–[39]

The fourth hypothesis argues that the frequency of audit committees meetings—representing the effectiveness of the audit committees—positively determines the green investment. The hypothesis was supported by empirical data, which means that audit committees play an important role in overseeing the green investment policy of the companies. The average meeting held each year reached nine times, and these meetings might discuss any policies related to green investment issues. Based on the similar studies on the role of audit committees in various corporate policies such as compliance with regulations [44], [45], [65], and firm performance [46], this study supported the finding

of the previous studies [47]. Indeed, audit committees play important roles in monitoring company policies on environmental issues [47]. This reveals that the effectiveness of the audit committee determines the reason why companies implement green investment.

The fifth hypothesis examines the effect of ISO14001 management certification on green investment. The empirical data did not support the hypothesis, which infers the ISO14001 management certification did not have effect on green environment of the companies. This empirical data was interesting as the number of companies used as samples were mostly dominated by those with ISO14001 management certification. The reason for this is that companies get ISO14001 management certification because it provides them with business advantages in terms of “improved corporate image” or for being seen as “responsible citizens” [50] [50]. Indeed, previous studies found that there is great variability in the implementation of ISO14001 standards [66], [67] and consequently, the standard is not effective in terms of environmental performance improvements [68].

Finally, it is believed that green investment positively influences firm financial performance. The empirical data of this study supported the hypothesis. This means that companies with better green investment tend to have higher financial performance. The research finding supported legitimacy theory [34] insisting that environmental issues (including green investments) can be used to build corporate images to gain and maintain their legitimacy. This will lead to the increase in company reputation and competitive advantages [4], [5] and eventually increase financial performance. This study supported other studies that firm value or financial performance will improve when the company implements an adequate environmental investment policies [12], [37], [52]–[58].

## 5 Concluding remarks

Studies on environmental issues and financial performance, including their antecedents have been conducted in many countries, but it is not easy to find the similar studies in Indonesia. This study aimed to investigate the effect of firm size, foreign ownership, industry profile, and frequency of audit committee meeting, and ISO 14001 management certification on green investment of companies listed on the Indonesia Stock Exchanges (IDX) and receiving PROPER award. Secondly, we also examined how green investment increases firm financial performance.

The findings showed that the level of companies' green investment is moderate. This can be seen from the PROPER award received by the companies (as a proxy of green investment) which are mostly on the Blue category. The research findings inferred that companies were committed to green investment because of regulation reasons, namely to qualify requirement set by the Minister of Environment, Republic of Indonesia. Moreover, this study found that firm size, foreign ownership, industry profile and frequency of audit

committee meetings determined the companies' green investment. However, ISO 14001 management certification did not affect green investment. Meanwhile, it is confirmed that green investment positively influenced firm financial performance.

The findings of this study provide us with useful contributions. Firstly, firm size, foreign ownership, industry profile and frequency of audit committee meetings are important determinants of green investment. Thus, this study enriches prior findings, which mostly related firm size, foreign ownership, industry profile and frequency of audit committee meetings to social and environmental disclosures and tend to ignore the effect of these predictors on green investment. Secondly, the government or regulators may utilize the findings as reference in making regulations concerning environmental issues on business, especially for large-scale companies and those which are sensitive to the environmental issues. Thirdly, the positive correlation of green investment and financial performance provides companies with ideas of how to earn profits without destroying the environment. Finally, the results of this study can be utilized by accounting academicians on the importance of including environmental issues into business education.

Despite its contributions, this study suffers from limitations. Firstly, this study only used limited samples from companies receiving PROPER awards and were listed on the Jakarta Stock Exchanges. Thus, the findings cannot be generalized to all companies listed on the Indonesia Stock Exchanges and other markets. Secondly, this study only covered five main variables as predictors of green investment. We suggest that the future studies should include more companies listed on the Indonesia Stock Exchanges or Asian emerging markets and should consider more variables such as the activity of independent board of directors, audit committee expertise/skills, and institutional ownership as predictors of green investment.

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