The effect of environmental performance and accounting characteristics to earnings informativeness

V Herawaty
Faculty of Economic and Business, Universitas Trisakti, Jakarta, Indonesia

Corresponding Author: vinola.herawati@trisakti.ac.id

Abstract. The objective of this empirical study is to analyze the influence of environmental performance and company's accounting characteristics to earnings informativeness proxied by earnings response coefficient (ERC) on manufacturing companies listed on Indonesia Stock Exchange and consistently follow the PROPER assessment in 2010–2014. One of the company's considerations is to create the green environment reflecting its environmental measures, drawing investors to respond to the company's environmental performance. The data were obtained from Indonesian Capital Market Directory (ICMD), the Indonesia Stock Exchange homepage, the company's annual reports, the decree of the Minister of Environment. The samples used in this research are 27 go public manufacturing companies listed on Indonesia Stock Exchange that consistently follow the PROPER in 2010–2014. The sampling technique used was the purposive method. This research uses multiple regression analysis. The results show that the environmental performance and profitability have a positive influence to earnings informativeness, while leverage has a negative influence to earnings informativeness. Growth opportunities as a control variable has a positive effect on earnings informativeness. This research has proved that the environmental performance is crucial through observing the investors’ reaction in the capital market.

Keywords: environmental performance, earnings response coefficient (ERC), leverage, PROPER

1. Introduction
The Indonesian Ministry of Environment explained that the environmental performance is a result of an integrated natural resource and environmental management policy to support the achievement of sustainable development as well as emphasize the green economy (www.menhl.go.id). One of the environmental performance measurement tools in Indonesia is the Corporate Performance Rating Program in Environmental Management, abbreviated as PROPER which is one of the leading programs conducted by the Ministry of Environment (KLH), seeking to supervise by public disclosure mechanism that gives incentives or disincentives to the person in charge of the business or activities stipulated in Regulation of the Minister of Environment No. 5/2011.

Environmental performance is the company's performance in creating a green environment [1]. The company's environmental performance is measured by colour ranging from the best ones, i.e., gold, green, blue, red, to the worst of black (www.menhl.go.id). Through this community, it will be easier to know the arrangement level of management in the company [2]. A higher environmental performance will affect the reaction of investors [3]. In making investment decisions, investors use PROPER as one of the information to be taken into account in investment.
A gauge that can be used to measure the investor reaction to accounting earnings information is the earnings response coefficient (ERC), which is the correlation between unexpected earnings with the abnormal return of the stock. ERC is defined as the measure of the abnormal return rate of the stock in response to the unexpected earnings component [4]. ERC reflects the market participants’ confidence in the quality of earnings announced by the company as well as represents the perspective of a measure of earnings quality based on the market performance. A strong market reaction to earnings information will be reflected by a high ERC showing are marketable quality of corporate income, and vice versa [5]. Companies that have a high leverage means they own a larger debt than the capital. If there is an increase in profits, then the beneficiary is the creditor. Thus, the better the condition of the company’s earnings, the more negative the response of shareholders since they assume that the profit only benefits creditors [6]. The capital structure significantly affects ERC [6], [7]. ERC is the effect of unexpected earnings on the cumulative abnormal return (CAR), which is shown through the slope coefficient in the regression of the abnormal return of stock with unexpected earnings [8].

Environmental performance will also be achieved at a high level if the company proactively conducts various environmental management actions in a controlled manner. Furthermore, the company’s management is encouraged to disclose these environmental management measures in the annual report [9]. The objective of this empirical study is to examine and to analyze the influence of environmental performance and company’s accounting characteristics to earnings informativeness represented by ERC on manufacturing companies listed on Indonesian Stock Exchange and consistently follow the PROPER assessment at the year 2010–2014. Therefore, the hypotheses of this research are (1) $H_1$: Environmental performance has a positive effect on earnings informativeness, (2) $H_2$: Profitability positively affects the informativeness of earnings, and (3) $H_3$: Leverage negatively affects earnings informativeness.

2. Research Method

2.1. Data and Sample
This study was conducted on manufacturing companies listed on Indonesia Stock Exchange and consistently followed PROPER. The samples were chosen by the purposive sampling method. Secondary data were obtained from Indonesia Stock Exchange in the form of audited financial statements. This study was conducted by an empirical approach using data recorded during 2010–2014. The data analysis was carried out by the multiple linear regression. The statistical test is necessary to decide whether to accept or reject the proposed hypotheses.

2.2. Variable Measurement

Earnings Informativeness

The earnings response coefficient (ERC) is formulated as follows [10]:

$$\text{CAR}_{i,t}(-5,+5) = \beta_0 + \beta_1\text{UE}_{i,t} + \epsilon_{i,t}$$  \hspace{1cm} (1)

$\text{CAR}_{i,t}(-5,+5)$ is the cumulative abnormal return of company $i$ in year $t \pm 5$ days from publication of financial report, $\beta_0$ is the constant, $\beta_1$ is the coefficient of ERC, $(\text{UE}_{i,t})$ is the Unexpected Earnings (UE) of company $i$ in year $t$, $\epsilon_{i,t}$ and $t$ is the error component.

The first stage is the computation of Cumulative Abnormal Return (CAR). The calculation of cumulative abnormal return at the time of accounting earnings being published, referring to [11], is using the window (time interval) of 11 days, i.e., 5 days before (-5) financial reporting, 1 day (0) and 5 days after (+5) the company’s financial report. It is based on the account that the window period of 11 days is considered as neither too short nor too long. The cumulative abnormal return formula is as follows:

$$\text{CAR}_{i,t}(-5,+5) = \sum_{t=-5}^{+5} \text{AR}_{i,t}$$  \hspace{1cm} (2)
Environmental Performance

Based on the research [12], the measurement of environmental performance is conducted by giving a score on the PROPER rating obtained from the company. PROPER's performance rating system includes the company's ranking in five colors, i.e., Gold is Very Very Good with Score = 5, Green is Very Good with Score = 4, Blue is Good with Score = 3, Red is Bad with Score = 2, and Black is Very Bad with Score = 1.

- Profitability is proxied by Return on assets that can be calculated by dividing a company's annual earnings by its total assets.
- Leverage is represented by Debt to equity ratio that can be calculated by dividing a company's total liabilities by its stockholders' equity.
- Growth Opportunities are proxied by Price to book value that is the ratio of the company's share market price over its book value of equity.

Population and Sample of the Research

The population used in this research is the manufacturing sector companies listed on the Indonesia Stock Exchange and follow the PROPER program. The sample selection criteria are manufacturing companies listed on Indonesia Stock Exchange (BEI) in 2010–2014 and follow the Corporate Performance Rating Program in the 2010–2014 Environmental Management, as well as a manufacturing company that is consistent with the Company's Performance Rating Program in Environmental Management for five consecutive years (2010–2014) and publishes financial reports during 2010–2014.

ERC is obtained from the α1 slope on the CAR relationship with the UE. The multiple regression model is as follows:

\[
CAR = a0 + a1 \text{UE} + a2 \text{Proper} + a3 ROA + a4 DER + a5 PBV + a6 \text{UE} \times \text{Proper} + a7 \text{UE} \times ROA + a9 \text{UE} \times DER + a11 \text{UE} \times PBV + e
\]
CAR is the cumulative abnormal return of company $i$ during the observation period of ±5 days from the publication of financial reports. UE is unexpected earnings, ROA is return on assets or profitability ratios, DER is debt to equity ratio or ratio of capital structure (leverage), Proper is corporate performance rating program in environmental management, and PBV is price to book value ratio which is a proxy for the company's growth.

3. Results and Discussion
This study uses samples of manufacturing companies listed on the Indonesia Stock Exchange and consistently follow PROPER during the observation period of 2010–2014. From 135 samples, there are 12 outlier data resulted in the study, suspected to potentially cause the whole samples could not meet the classical assumption test that they would have an extreme value. Therefore, during that period, only 123 companies meet the sample criteria for five years (Table 1).

| Variables | N | Minimum | Maximum | Mean | Std. Dev |
|-----------|---|---------|---------|------|----------|
| CAR       | 123 | -0.160 | 0.391 | 0.011 | 0.068    |
| UE        | 123 | -1.247 | 1.660 | 0.022 | 0.282    |
| ROA       | 123 | -0.619 | 0.341 | 0.057 | 0.106    |
| DER       | 123 | 0.040  | 14.890 | 1.394 | 2.424    |
| PROPER    | 123 | 1.0    | 5.0    | 3.187 | 0.716    |
| PBV       | 123 | -1.280 | 8.740 | 2.112 | 1.886    |

The outcome of classical assumption test of the multiple regression model has fulfilled the assumption of normality, heteroscedasticity, and autocorrelation, yet there is a problem with the multicollinearity. In general, moderating regression analysis model will cause a high multicollinearity between variables [13]. The existence of this multicollinearity issue is difficult to avoid since the moderation variables are the interaction of independent variables. The assumption of multicollinearity may be ignored if there is at least one independent variable that has a significant effect on the dependent variable at the initial regression result [14].

The hypothesis testing with multiple regression analysis is based on the results of the research model processing. The multiple regression model is as follows:

$$
CAR = -0.075 + 0.697 (UE) + 0.110 (ROA) + 0.001 (DER) + 0.014 (PROPER) + 0.003 (PBV) + 0.798 (UE * ROA) - 0.028 (UE * DER) - 0.218 (UE * PROPER) + 0.14 (UE * PBV)
$$

Based on the analysis of F-test, the results show that the independent variables have a significant influence on the informative earnings variables. It can be seen from the F-test significance value of 0.000 which is much smaller than the alpha of 5% (0.000 < 0.05). Thus, it can be concluded that the research model has been appropriate, then the test could be continued. The value of adjusted R$^2$ of 0.316 indicates that the capability of independent variables to explain the influence of corporate social responsibility, profitability, and leverage to earnings informativeness equals to 0.316 or 31.6% (with environmental performance as the moderation variable and growth opportunities as the control variable), while the rest of 68.5% can be explained by other variables not included in the study.

Partial test (t-test) is used to examine the effect of each independent variable on the dependent variable (Table 2).

| Hypotheses | Pred. | Variables | Beta  | t     | Sig.  | Decisions |
|------------|-------|-----------|-------|-------|-------|-----------|
| H1         | +     | UE x PROPER | 0.218 | 2.948 | 0.009 | H1 is accepted |
| H2         | +     | UE x ROA   | 0.798 | 2.584 | 0.011 | H2 is rejected |
| H3         | +     | UE x DER   | -0.028| -3.039| 0.003 | H3 is accepted |
Based on Table 2, it is known that UE x PROPER has a significance value of 0.009 (<0.05) with a beta value of 2.18. Thus, H1 is accepted, implying that environmental performance has a positive effect on earnings informativeness. The companies having environmental performance will tend to reveal their measures since it provides good news for market participants. Therefore, these companies publish more environmental information both quantitatively and qualitatively, compared with firms having worse environmental performance. The better the environmental performance, the companies’ environment will be much more improved and the value of the companies increases, attracting investors to respond to them. Companies with good environmental performance include not only their concern for the environment, but also the product quality, product safety, corporate social responsibility to the surrounding community, even the safety issue as well as the welfare of their workforces [2]. It owes to the fact that investors are more interested in investing their capital in an environmentally friendly company.

Based on the results of partial regression testing shown in Table 2, it is known that the EE x ROA has a significance value of 0.011 (<0.05) with a beta value of 0.798. Thus, H2 is accepted, stating that profitability has a positive effect on earnings informativeness. In other words, the higher the profitability, the higher the informative earnings. It means that the company's ability to earn profits from available assets will positively affect the earnings response coefficient. The outcome of this study is consistent with the research conducted by [11] and [15] which state that profitability has a positive and significant effect on ERC.

The significance of EU x DER is 0.003 (<0.05) with a beta value equals to −0.028. Thus, H3 is accepted, implying that leverage negatively affects earnings informativeness. Therefore, the higher the level of corporate leverage, the lower the ERC. progressively high level of debt structure or leverage means that the company has a larger debt than its capital. The result of this study is consistent with the studies conducted by [16], [17], and [18] saying that the leverage has a negative and significant effect on earnings response coefficient. Thus, if there is an increase in the net income, the beneficiary is the creditor since the debtor has the belief that the company will be able to make payments on the debt.

The opportunity to grow (PBV) as the control variable has a significance value of 0.001 (<0.05) with a beta value of 0.141. It can be concluded that growth opportunities have a positive effect on earnings informativeness. This study is consistent with the research conducted by [16] and [18] which state that growth opportunities have a positive effect on ERC, meaning firms with greater growth opportunities will have a higher ERC. This condition indicates that the greater the company’s growth opportunities, the higher the chances of the company getting or adding earnings in the future and the higher the ERC as well.

4. Conclusion
This study concludes that environmental performance and profitability has a positive effect on earnings informativeness, while the leverage has a negative effect on earnings informativeness. It can assist investors in analyzing the factors affecting earnings informativeness. This research can be used as a reference by investors in considering the decision to invest, sell their shares, and maintain their investment so that the return on investment can be profitable for investors. The results of this study serve as additional information for the company to determine whether there are factors affecting the earnings informativeness. Hence, the revenue generated by the corporation can provide relevant information about its performance. This study can benefit or contribute to the development of economics, especially accounting, on the earnings informativeness, profitability, and leverage. It can provide additional literature for further research development as well. For the community, the results of this research can be supplementary information to know whether the companies have caused environmental pollution and whether they are obedient to environmental regulations. The further study should add other independent variables that can affect the informative earnings such as the company size and the corporate governance to obtain a greater adjusted R-squared value.
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