Impact of Carbon Emission Disclosure and Corporate Social Responsibility on Indonesian Manufacturing Companies

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Abstract

This study aims to examine the effect of carbon emission disclosures (CED) and corporate social responsibility (CSR) on the financial performance of manufacturing companies in Indonesia. The research utilizes secondary data extracted from the financial statements and annual reports of companies listed on the Indonesia Stock Exchange (IDX) during the period from 2017 to 2019. The analysis employs multiple regression panel data using SPSS software to assess the relationships between variables. These findings contribute to the understanding of the relationship between environmental disclosure, corporate social responsibility, and financial performance in the context of manufacturing companies in Indonesia. The negative impact of carbon emission disclosure on financial performance highlights the importance of managing and reducing carbon emissions to enhance financial outcomes. Additionally, the non-significant effect of CSR on financial performance suggests that other factors might have a more significant influence on companies' financial success. Furthermore, when considered simultaneously, both carbon emission disclosure and corporate social responsibility demonstrate an influence on financial performance.

Keywords: Carbon Emission Disclosure, Corporate Social Responsibility, Financial Performance

1. Introduction

The issue of climate change cannot be separated from sustainable development. In its implementation, Indonesia has ratified Law (UU) No. 6 Th. 1994 on the United Nations Framework Convention on Climate Change and ratified the Kyoto Protocol through Law no. 17 Th. 2004 on Climate Change. In line with the Law, Presidential Regulation (Perpres) No. 61 Th. 2011 was issued as a form of commitment to planning, implementing, monitoring, and evaluating carbon emission reduction in Indonesia. Ironically, Indonesia is still included in the 8 largest carbon-emitting countries in the world in 2021 because this form of commitment is still voluntary. Carbon emissions disclosure in the company's financial statements is increasingly attracting the attention of investors and stakeholders because the disclosure is a form of the company's intent to deal with the climate change impact's threat.

Voluntary social and environmental disclosures to maintain the company's reputation and avoid various rejections from investors and stakeholders. The fact that Indonesia is included in the world's largest carbon emitter can cause investors to withdraw their funds from Indonesia. This will impact the increment of the cost of equity capital, and reduce the...
company's operational and financial performance, which will reduce the stock price and firm value. Increasing disclosure of carbon emissions and CSR needs to be done by companies to maintain the company's value in society.

Agyemang, OS & Ansong, A. (2017) found that better CSR companies are better positioned to achieve improvements in financial performance. Chakroun et. al. (2020) shows that good corporate governance can elevate financial performance. Companies tend not to disclose carbon emissions because they are considered a burden or reduce resources. This study intends to see how the influence of CED and CSR disclosures on the financial performance of manufacturing companies in Indonesia [1].

- **Legitimacy Theory**
  Legitimation theory explains that the disclosure of social responsibility is carried out by the company in its efforts to gain legitimacy from the community where the company is located and maximize its financial strength in the long term. Legitimation theory is a social contract that occurs between a company and the community where the company operates and uses economic resources [2] [3]. Legitimation theory encourages companies to take responsibility for the environment so that it looks legitimate in the eyes of the community. Companies will tend to act according to the wishes of the community, namely being capable of being responsible for the environment. Environmental problems caused by the company's operations are not only related to the environment around the company but have developed into global warming caused by the gas emissions produced by the company [4].

- **Carbon Accounting**
  Carbon accounting is a process of measuring, recording, and reporting the carbon produced by the company. Carbon accounting as "assessing your organization's carbon emissions and setting targets for reduction". With carbon accounting, companies can find out the level of carbon emissions they produce from the measurement results, then company management can determine strategies to reduce carbon emissions and report them to company stakeholders. Companies that disclose carbon emissions and are responsible to the community are able to have a good impact on their financial performance, found that carbon emission disclosures have a positive effect on financial performance [5].
  
  
  \[ \text{H}_1: \text{Carbon Emission Disclosure (CED) has a positive effect on financial performance} \]

- **Corporate Social Responsibility**
  Since the 1950s, Corporate Social Responsibility (CSR) has become an important topic. Evidence of businesses seeking to improve a particular community, community, or stakeholder group can be traced back hundreds of years. Sudibyo (2019) found that corporate social responsibility does not affect financial performance [6].
  
  \[ \text{H}_2: \text{Corporate social responsibility (CSR) positive effect on Financial Performance} \]

The existing research on the impact of carbon emission disclosure and corporate social responsibility (CSR) on Indonesian manufacturing companies' financial performance reveals several gaps. First, there is a lack of studies specific to the Indonesian context, necessitating further exploration of the unique dynamics in this setting. Second, the underlying mechanisms and specific aspects of carbon emission disclosure that contribute to its negative impact on financial performance require more investigation [7] [8]. Third, there is limited focus on other dimensions of CSR, such as community engagement and ethical practices. Additionally, the study does not examine potential moderating or mediating factors and would benefit from longitudinal research to capture long-term trends and changes over time [9]. The research conceptual framework is as follows.
2. Research Method

Quantitative research methods by using secondary data of Manufacturing companies listed in the Indonesia Stock Exchange (IDX)'s annual financial statements from 2017 to 2019 are used in this study. Total 39 companies that disclose carbon emissions and CSR are used in this study. Measurement of carbon emission disclosure using a checklist adapted [10][11]. The measurement of CSR disclosure is based on the fourth generation Global Reporting Initiative (GRI) Index or called G4 with 91 CSR disclosure indexes. Variable operationalization shown in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Performance (Y)</strong></td>
<td>Return on Assets</td>
<td>Nominal</td>
</tr>
<tr>
<td><strong>Carbon Emission Disclosure (X1)</strong></td>
<td>Choi et. Al. (2013)</td>
<td>Dummy</td>
</tr>
<tr>
<td><strong>Corporate Social Responsibility (X3)</strong></td>
<td>GRI Indeks Index</td>
<td>Dummy</td>
</tr>
</tbody>
</table>

Source: Data processed

Data analysis techniques in this study are descriptive analysis, classical assumption test, data normality test, multicollinearity test, and heteroscedasticity test. The hypothesis testing model used in this study is Multiple Regression. In addition, the F statistical test, T-test, and coefficient of determination were tested.

3. Findings

3.1 Descriptive Analysis

Total 39 annual reports from 168 manufacturing companies in Indonesia are used for this study. Table 2 shows the mean CED of 0.59 or 59% with a standard deviation of 0.20 or 20%. Thus, the carbon emission disclosure in manufacturing companies in Indonesia has revealed as many as 10 of the total 18 indicators. Meanwhile, CSR disclosure is 46% or 41 indicators out of a total of 91 indicators from 2017 to 2019.
3.2 Chow Test Results

The fixed effect was chosen as the best model because of the value of Prob. = 0.0188 for Cross-Section F < 0.05. The level of confidence in the tests carried out was 95% because the specified significance level was 5% or 0.05 (Table 3).

Table 3. Results of Chow-Test

<table>
<thead>
<tr>
<th>Effect Test</th>
<th>Statistic</th>
<th>d.f</th>
<th>prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Section F</td>
<td>2.854372</td>
<td>(20,16)</td>
<td>0.0188</td>
</tr>
<tr>
<td>Cross Section Chi-square</td>
<td>59.243650</td>
<td>20</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Data processed

Because the results of this test select the fixed effect as the best model, it is necessary to carry out further housing tests to choose between the fixed effect model or random effects as the best model.

3.3 Hausman Test Results

The fixed effect was chosen as the best model because of the value of Prob. = 0.0234 for Cross-Section random < 0.05. The level of confidence in the tests carried out is 95% because the specified significance level is 5% or 0.05.
Table 4. Hausman-Test. results

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Square Statistic</th>
<th>d.f</th>
<th>prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Section F</td>
<td>7.509315</td>
<td>2</td>
<td>0.234</td>
</tr>
</tbody>
</table>

Cross Section random effects test comparisons

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed</th>
<th>Random</th>
<th>Diff</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>-3.188126</td>
<td>-0.328286</td>
<td>1.397470</td>
<td>0.0156</td>
</tr>
<tr>
<td>X2</td>
<td>-0.218893</td>
<td>0.032156</td>
<td>0.160975</td>
<td>0.5315</td>
</tr>
</tbody>
</table>

Classic Assumption Test Results

Normality Test Results

Based on Figure 2, the probability value is 0.513920 or the Prob value. > 0.05 then the data is normally distributed.
3.4 Multicollinearity Test Results

<table>
<thead>
<tr>
<th>Y</th>
<th>X1</th>
<th>X2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>0.0196498</td>
<td>0.5143214</td>
</tr>
<tr>
<td>X1</td>
<td>0.1255247</td>
<td>0.5478989</td>
</tr>
<tr>
<td>X2</td>
<td>0.0196498</td>
<td>0.5143214</td>
</tr>
</tbody>
</table>

Source: Eviews Results, 2021

Table 5 shows the strength of the correlation between independent variables < 0.8, thus no multicollinearity.

3.5 Autocorrelation Test Results

Table 6. Durbin Watson Hasil Results

Dependent Variable: Y
Method: Panel Least Squares
Date: 06/30/21 Time: 19:32
Sample: 2017 2019
Periods included: 3
Cross-sections included: 21
Total panel (unbalanced) observations: 39

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>t</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>-0.139049</td>
<td>0.396216</td>
<td>-0.350942</td>
<td>0.7277</td>
</tr>
<tr>
<td>X2</td>
<td>0.061411</td>
<td>0.074073</td>
<td>0.829064</td>
<td>0.4125</td>
</tr>
<tr>
<td>C</td>
<td>8.199548</td>
<td>16.50078</td>
<td>0.495919</td>
<td>0.6223</td>
</tr>
</tbody>
</table>

R-squared: 0.019114
Adjusted R-squared: -0.035380
S.E. of regression: 7.667729
Sum squared resid: 2116.586

Log likelihood: -133.2216
F-statistic: 0.350759
Durbin-Watson stat: 1.078224

Source: Eviews Results, 2021

If the value of DU>DW>4-DU then there is an autocorrelation problem. Based on Table 6, where DU>DW<4-DU, there is an autocorrelation problem.

3.6 Heteroscedasticity Test Results

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another observation. The presence or absence of heteroscedasticity symptoms [12] can be determined by two things, including:

Impact of Carbon Emission Disclosure and Corporate Social Responsibility
a. If the scattering of data in the form of dots forms a certain and regular pattern, a heteroscedasticity problem occurs.

b. If the scattering of data in the form of dots does not form a certain pattern and spreads above and below the y-axis, then there is no heteroscedasticity problem.

Table 7. Results of Heteroscedasticity Test

Source: Eviews Results, 2021

| Dependent Variable: RESABS Method: Panel Least Squares Date: 06/30/21 Time: 20:00 Sample: 2017-2019 Periods included: 3 Cross-sections included: 21 Total panel (unbalanced) observations: 39 |
|---|---|---|---|---|
| Variable | Coefficient | t | Std. Error | t-Statistic | Prob. |
| X1 | -0.741264 | 0.261201 | -2.837905 | 0.0074 |
| X2 | 0.109419 | 0.048832 | 2.240731 | 0.0313 |
| C | 32.98963 | 10.87795 | 3.032706 | 0.0045 |

R-squared | 0.195431 | Mean dependent var | 4.995616 |
Adjusted R-squared | 0.150733 | S.D. dependent var | 5.485136 |
S.E. of regression | 5.054866 | Akaike info criterion | 6.152383 |
Sum squared resid | 919.8600 | Schwarz criterion | 6.280349 |
| Hannan-Quinn Log likelihood | -116.9715 | Durbin-Watson stat | 0.843979 |
Prob(F-statistic) | 0.019959 |

If the value of Prob. <0.05 then there is a heteroscedasticity problem. Table 7 shows the value of Prob. \( X_1 \) and \( X_2 < 0.05 \) then there is a heteroscedasticity problem.

4. Hypothesis Test Results

Based on Table 8, the regression equations that can be obtained based on the estimation results of the Y variable are:

\[
Y = 0.1665265 - 0.3188126X_1 - 0.0218893X_2 + e
\]

Information:

\( Y \) = Financial Performance

\( X_1 \) = Carbon Emission Disclosure

\( X_2 \) = Corporate Social Responsibility

The constant value of financial performance (Y) indicates that if CED and CSR are constant, then financial performance will increase by 0.1665265. CED and CSR as independent variables both have no positive relationship to the dependent variable financial performance. When CED and CSR increase, the value of financial performance will not increase.
4.1 Coefficient of Determination Test Results (R2)

The value of the coefficient of determination can show how much the ability of the independent variable to explain the dependent variable. Based on the test results in Table 8, the coefficient of determination (R-squared) of the Financial Performance (Y) variable obtained is 0.785269. All independent variables used in this regression equation have a 78% match in explaining corporate reputation. While the remaining 22% is influenced by other variables not examined in this study.

4.2 Simultaneous Effect Test Results (F-Test)

Based on Table 8, the probability value of calculated statistical F is 0.024623 or F-Test < 0.05. So statistically it can be concluded that H0 is rejected and H1 is accepted. The results of testing the CED hypothesis and CSR simultaneously affected the financial performance of manufacturing companies in Indonesia from 2017 to 2019. Thus the model can be used to predict the influence of variables.
4.3 Partial Test Results (T-Test)

The results of statistical tests in Table 8 for the CED variable (X₁) are the value of Prob. is 0.0222 and the value of Prob. CSR (X₂) is 0.6011 with a significance level of 5% or 0.05. This shows that CED is partially stated to have no positive effect on financial performance while CSR is partially stated to not affect the financial performance of Manufacturing Companies in Indonesia from 2017 to 2019. Thus, the results of the study reject all hypotheses (Reject H₁ and H₂). Based on the research, it was found that CED did not have a positive influence and CSR did not have a significant effect on the financial performance of manufacturing companies in Indonesia from 2017 to 2019.

<table>
<thead>
<tr>
<th></th>
<th>CED</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Performance</td>
<td>0.0222</td>
<td>0.6011</td>
</tr>
</tbody>
</table>

Table 9. Discussion Results

Shown in Table 9 that of the two variables, only the CED variable shows an influence on the financial performance of Manufacturing Companies from 2017 to 2019 as proxied by Return on Assets (ROA). While CSR shows no effect on financial performance because the significant value of the CSR variable is above = 0.05 or 5%. The discussion of the above results and their impact on the financial performance of manufacturing companies in Indonesia in 2017-2019 will be explained in the review below:

1. Based on the results of the study, it can be concluded that the disclosure of carbon emissions in the annual report harms the financial performance of manufacturing companies in Indonesia. This finding is not in line, where the disclosure of carbon emissions has a positive effect on financial performance. This happens because the manufacturing industry has different characteristics from other industries [13] [14] [15].

2. This study also finds that the disclosure of corporate social responsibility in companies does not affect the financial performance of manufacturing companies in Indonesia [16] [17].This study also found that the disclosure of carbon emissions and CSR simultaneously affect the financial performance of Manufacturing Companies in Indonesia [18] [19] [20] with the results of Cross-Section Fixed data processing results of 78%. The two variables used, namely CED and CSR can explain financial performance and the rest is influenced by other variables that are not tested in this study [21] [22] [23].

5. Conclusion

Based on the results of our research above, it can be concluded that. First, the Disclosure of Carbon Emissions in the Annual Report does not have a positive effect on the Financial Performance of Manufacturing companies in Indonesia. The second Disclosure of Corporate Social Responsibility in the Annual Report does not have a positive effect on the Financial Performance of Manufacturing companies in Indonesia. Third Disclosure of Carbon Emission & Corporate Social Responsibility in the Annual Report does not affect the Financial Performance of Manufacturing companies in Indonesia.

Our suggestion for further research, especially to consider the effect of the Corporate Social Responsibility variable on the Company's Financial Performance, is to use a minimum sampling of the company's Annual Report data for 5 consecutive years with the number of samplings above 30 companies so that the test results on these variables are more accurate.
References


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