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CARBON EMISSION DISCLOSURE IN INDONESIA: THE EFFECT OF PROFITABILITY AND LEVERAGE ON COAL SUB-SECTOR

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Abstract This study aims to examine the effect of profitability and leverage on carbon emission disclosure (CED) in coal sub-sector mining companies in the 2021-2022 period. The population in this study amounted to 30 companies. The sampling technique used purposive sampling so as to get 18 sample companies with 36 observations. This research is a quantitative research using secondary data and tested with the method adopted from the check list obtained from the Carbon Disclosure Project (CDP). The results showed that the profitability variable and the leverage variable had no effect and were not significant to the disclosure of carbon emissions.

Keywords: *Carbon Emission Disclosure, Coal Sub-sector, Leverage, Profitability, Kyoto Protocol,*

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Introduction

The introduction of emissions trading in the European Union (EU) and the work of the Intergovernmental Panel on Climate Change (IPCC), the Stern Report, and the Carbon Disclosure Project have had a significant impact on changes in entrepreneurial decision making (Stechemesser & Guenther, 2012). One of the impacts is the consideration of greenhouse gasses (GHG), which makes the calculation of carbon dioxide (CO2) allowances to be included in annual financial statements, so these allowances are considered in management accounting (Stechemesser & Guenther, 2012). One of the emissions resulting from greenhouse gasses (GHG), namely CO2 emissions from power plants and energy-intensive facilities (production and processing of ferrous metals and mineral industries) are emissions covered by the European Union's Greenhouse Gas Emissions Allowance Trading Scheme (ETS) (Directive 2003/87/EC). CO2 emissions from other processes or other greenhouse gasses (GHGs) listed in the Kyoto Protocol are not taken into account (Directive 2003/87/EC). Greenhouse gas emissions under the Kyoto Protocol include: Carbon Dioxide (CO2), Methane (CH4), Nitrogen Oxides (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF6) (Directive 2003/87/EC).

The Kyoto Protocol is an international treaty adopted in December 1997 in Kyoto, Japan, it was the first addition to the United Nations Framework Convention on Climate Change (UNFCCC) and required 41 countries plus the European Union to reduce their emissions to 5.2 percent below 1990 levels during the commitment period of 2008-2012 (Britannica, 2024). The drafting of the Kyoto Protocol has the objective of stabilizing greenhouse gas (GHG) concentrations in the atmosphere at a level that does not harm the Earth's climate system (Muhamad & Ruhaeni, 2022). On July 28, 2004, Indonesia enacted Law Number 17 of 2004 which was the result of ratifying the 1997 Kyoto Protocol in the first period. The law contains the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Muhamad & Ruhaeni, 2022).

The second period of the Kyoto Protocol was held in Doha, Qatar on December 8, 2012, resulting in new targets. The targets require Annex 1 members to reduce GHG emissions by 18 percent from a 1990 emissions baseline over the 2013-2020 commitment period or 8 years (United Nations Framework Convention on Climate Change (UNFCCC), 2012). This second period of the Kyoto Protocol was ratified by Indonesia on September 30, 2014 (Irwhantoko & Basuki, 2016). The implications of the Kyoto Protocol gave rise to carbon accounting. Where it becomes mandatory for companies to justify, measure, record, present and disclose greenhouse gas emissions in sustainability reports and websites (Oktavia, 2022). The World Business Council for Sustainable Development/World Resources Institute (WBCSD-WRI) and the standards issued by the United Nation Environment Programme (UNEP) are the CO2 provisions adopted and used by companies in Indonesia to calculate carbon emissions (Irwhantoko & Basuki, 2016).

Based on Our World in Data, greenhouse gas emissions include carbon dioxide, methane and nitrous oxide from all sources, including land-use change in Indonesia reached 7.7 tons CO2eq, higher than the average greenhouse gas emissions in the Asian region which reached 6.4 tons CO2eq (Hannah et al, 2023). In Indonesia, greenhouse gas emissions are dominated by the exploitation of fossil fuels which accounts for 21.38% of total national greenhouse gas emissions (Ahdiat, 2023). Companies engaged in fossil fuel exploitation consist of coal, oil, gas, cement production, other industry, and gas flaring. Of these sectors, the highest contributor to greenhouse gas emissions in Asia is dominated by coal, as well as in Indonesia (Hannah et al, 2020). The coal sector alone accounts for two of the six greenhouse gas emissions regulated under the Kyoto Protocol. Two of these greenhouse gas emissions are Methane (CH4) and Carbon Dioxide (CO2). Greenhouse gas (GHG) emissions in the mining sector are generated from coal exploration

activities, coal production operations, transportation, coal combustion, and coal distribution both globally and locally.

The coal production process will produce coal mine methane (CMM), which even if coal production activities stop, the methane emissions will remain, so it is called abandoned mine methane (AMM), for a long time (Kholod et al, 2020). The US EPA's 2019 website revealed that the coal industry accounts for 11% of global methane emissions generated by human activities (Kholod et al, 2020). However, many experts argue that current estimates of methane emissions from fossil fuels are still too low (Kholod et al, 2020). Compared to annual carbon dioxide (CO_2) emissions from coal measured in tons in Asia, annual carbon dioxide (CO_2) emissions from coal in Indonesia reached 404.57 million tons in 2022. This is the highest Indonesia has reached in 133 years (1889-2022). Methane (CH4) and Carbon Dioxide (Co2) both contribute large amounts of greenhouse gas (GHG) emissions.

The activities of a company will certainly not be fixed or the same, it will certainly experience an increase or decrease (fluctuating). An increase in company activities can potentially increase carbon emissions in the surrounding environment, especially Carbon Dioxide (CO2) and Methane (CH4) emissions generated from coal mining. So companies, especially large companies will choose to disclose their environmental performance. In addition to fulfilling and complying with existing regulations, but also to improve the company's financial performance. This is supported by several studies conducted by Matsumura, Prakash, and VeraMunoz (2014), Saka and Oshika (2014), and Ganda (2017), which show that disclosure of GHG emissions has a positive effect on firm value and return on assets (ROA), the shifting of issues to sustainable financial issues such as environmental and social issues related to financial performance also supports the disclosure of corporate carbon emissions or their environmental performance (Madyan, 2024).

Based on the description above, it can be seen that CED activities carried out by companies have a positive impact on the performance of a company, especially on its financial performance. So that our research raises the discussion of "How carbon accounting in coal mining companies in Indonesia discloses Carbon Emission Disclosure (CED), will the disclosure be affected by the profitability and leverage of a company from 2021-2022?". The method used in this research is a quantitative method. The data source used in this study is secondary data where the data source comes from sustainability reports, literature, articles, journals and sites on the internet related to the research conducted.

The theory used as the basis for carbon emissions disclosure in this study is legitimacy theory. This theory focuses on the relationship between companies and society through regulations made by the government Gray et al. (1995) explains that legitimacy is a mechanism to support organizations in implementing and developing voluntary social and environmental disclosures to fulfill the social contract between companies and society, where companies allocate economic resources to the community in reducing the impact of environmental damage due to company operations (Hardiansyah et al, 2020)

Signaling theory is widely used for voluntary disclosure of carbon emissions in annual reports or sustainability reports. Signals will arise from information disclosed by companies in the form of financial and non-financial information (Hardiansyah et al, 2020). Openness in environmental disclosure through sustainability reports or financial reports can generate favorable responses from investors. Because, investors will be impressed with companies that disclose information about environmental sustainability development (Hariadi & Nurwanda, 2024). Disclosing information about environmental sustainability development can reflect the value of the company. Where high company value has a significant positive impact on the market and investors' assessment of the company's performance and future prospects (Hardiansyah et al, 2020).

Choi et al. (2013) examined the factors that influence carbon emission disclosure using a checklist obtained from the CDP (Carbon Disclosure Project) (Irwhantoko & Basuki, 2016). Choi et al. (2013) used independent variables of company size, profitability, carbon emission level, industry type, and corporate governance quality (Irwhantoko & Basuki, 2016). These independent variables can influence carbon emission disclosure (Yusuf, 2021). Najah (2012) defines carbon disclosure as a series of information in both quantitative and qualitative forms related to the past and projected carbon emission levels of a company, or, in other words, as the past and future actions of the company to manage the risks and opportunities of carbon emission disclosure; its exposure to climate change-related risks and opportunities; and their financial implications (Hapsoro & Ambarwati, 2018). For shareholders, companies that disclose carbon emissions will make it easier for them to make decisions regarding the status of the company's carbon emissions performance; regarding climate change policies and regulations, shareholders make decisions to contribute to public debate (Hapsoro & Ambarwati, 2018).

Profitability

According to Choi et al. (2013), companies with good financial conditions are able to pay for additional human or financial resources needed for voluntary reporting and better carbon emission disclosure to withstand external pressure (Yusuf, 2021). Although environmental disclosure is still voluntary, companies with better performance will be more capable of doing it, and the more detailed the disclosure area (Irwhantoko & Basuki, 2016). This argument is supported by the results of Horváthová's (2010) study, which is based on a meta-analysis of 64 research results from 1978 to 2008 and shows that the influence between environmental performance and economic performance is positive (55%), negative 15%, and the remaining 30% has no effect.

Choi et al. (2013), in their study, found that company profitability has a positive effect on carbon emission disclosure. Cahya (2016), in his research on sharia companies listed on the IDX in 2012-2014, showed that company profitability has a positive influence on carbon emission disclosure. The research results of Zulaikha, (2016), on non-financial companies listed on the IDX from 2014-2015; Rizqi Abdul Majid, (2015), on companies listed on the IDX from 2011-2013; and Jannah & Muid, (2014), on non-financial companies listed on the IDX from 2010-2012, also show that profitability has a positive effect on carbon emissions disclosure. Hapsoro and Ambarwati (2018) also revealed that profitability has a positive effect on carbon emissions' disclosures. Based on the description of the research results above, it can be hypothesized as follows.

H1*: Company profitability has a positive effect on Carbon Emission Disclosure*.

Leverage

The ability of a company to meet its financial obligations, both short-term and long-term, is demonstrated by the company's solvency (Irwhantoko & Basuki, 2016). Choi et al. (2013) showed in their research that companies with high levels of debt have a responsibility to creditors to prioritize debt repayment over environmental disclosure (Yusuf, 2021). On the other hand, in the research by Freedman and Jaggi (2005), it is revealed that the risk causing debt failure that is being disclosed to creditors is the risk of climate change (Irwhantoko & Basuki, 2016). It can be concluded based on the research by Freedman and Jaggi (2005) that one way for companies to control the risk of debt failure caused by the company's large obligations is by disclosing carbon emissions (Irwhantoko & Basuki, 2016). Leftwich et al. (1981 and Roberts (1992) also state that environmental performance is related to the sustainability of companies operating in the future. Therefore, companies with high leverage tend to disclose more information.

Pratiwi (2017), in her research, did not find any influence of leverage on carbon emission disclosure. On the other hand, the results of the study by D'Amico et al. (2014) state that there is

a positive correlation between leverage (measured by comparing debt and equity) and environmental disclosure (Irwhantoko & Basuki, 2016). Clarkson et al. (2008) found that leverage affects environmental disclosure. Hapsoro and Ambarwati (2018) also revealed that leverage has a positive effect on carbon emissions' disclosures. According to previous research, there are two different outcomes related to the study on the impact of leverage on carbon emission disclosure. Therefore, the author proposes hypothesis as follows:

H2*: Company leverage has a positive effect on Carbon Emission Disclosure*.

Research Methods

This study uses a type of causality research that aims to test the effect of one variable on another. This study examines the effect of profitability and leverage in the disclosure of carbon emissions. The data used is secondary data by taking companies in the mining sector, especially coal companies as research objects. The data source for this research is obtained from the company's sustainability report and annual report obtained from the company's official website and the Indonesia Stock Exchange www.idx.co.id. in the period 2021-2022.

The population in this study are coal subsector mining companies listed on the Indonesia Stock Exchange in 2021-2022. The sample selection in this study used a purposive sampling method with consideration of certain characteristics of the existing population. The sample criteria used in this study are:

1. Mining companies listed on the Indonesia Stock Exchange during the period 2021-2022
2. Mining companies that provide sustainability reports and annual reports during the 2021-2022 period.

Table 1 ***Research Criteria***

No	Description	Total
1	Mining companies listed on the Indonesia Stock Exchange during the period 2021-2022	30
2	Mining companies that provide sustainability reports and annual reports during the 2021-2022 period	(12)
Number of Sample Companies		**18**
Number of Years of Observation		**2**
Number of Samples during the Observation Year		**36**

Source: Data processed by the author (2024)

Based on the criteria in the table above, the sample used is as follows:

Table 2 ***Research Sample***

No	Company Code	Company Name
1	BUMI	PT. Bumi Resources Tbk
2	ADRO	PT. Adaro Energy Tbk
3	INDY	PT. Indika Energy Tbk
4	BRAU	PT. Berau Coal Energy Tbk
5	PTBA	PT. Bukit Asam (Persero) Tbk
6	DEWA	PT. Darma Henwa Tbk
7	BOSS	PT. Borneo Olah Sarana Sukses Tbk
8	BSSR	PT Baramulti Suksessarana Tbk

9	BYAN	PT Bayan Resources Tbk
10	GEMS	PT Golden Energy Mines Tbk
11	HRUM	PT Harum Energy Tbk
12	ITMG	PT Indo Tambangraya Megah Tbk
13	KKGI	PT Resource Alam Indonesia Tbk
14	MBAP	PT Mitrabara Adiperdana Tbk
15	SMMT	PT Golden Eagle Energy Tbk
16	DSSA	PT Dian Swastatika Sentosa Tbk
17	TOBA	PT TBS Energi Utama Tbk
18	BESS	PT. Batulicin Nusantara Maritim Tbk

Source: Data processed by the author (2024)

Variabel Independen

Profitability is the company's ability to generate profits during a certain period (Sanjaya, 2018). Profitability variables are measured using Return on Asset (ROA), which is the company's ability to generate net profit based on total assets.

$$Return\ on\ Asset\ (ROA) = \frac{Net\ Profit}{Total\ Asset}$$

Leverage is measured using DER (Debt to Equity Ratio) which compares the amount of debt to the amount of equity. This ratio is used to show the company's ability to use debt to fund its operations.

$$Debt\ to\ Equity\ Ratio\ (DER) = \frac{Total\ Debt}{Total\ Equity}$$

Variabel Dependen

Carbon Emissions Disclosure is done by calculating each item using the carbon emissions checklist. The number 1 is given if the company discloses carbon emission disclosure items and the number 0 is used if the company does not disclose carbon emission disclosure items

$$Carbon\ Emission\ Disclosure\ (CED) = \frac{Total\ Disclosed\ Items}{Total\ Items}$$

Table 3 *Carbon Emission Disclosure*

No	Category	Items	Description
1	Climate Change Items: Risks and Opportunities	CC 1	Description or assessment related to the existence of rules or regulations governing climate change and actions taken by the company to address these risks.
2		CC 2	Description of the financial, business and opportunity implications of climate change both now and in the future.
3	Greenhouse gas (GHG) emissions	GHG 1	Description of the methodology used to calculate greenhouse gas emissions (e.g. kyoto protocol, greenhouse gas protocol, or ISO etc.).

4		GHG 2	There is external verification of the results of the greenhouse gas emissions calculation.
5		GHG 3	Total greenhouse gas emissions (metric tons CO2-e) produced by the company.
6		GHG 4	Scope 1 and 2, or 3 greenhouse gas emissions disclosure
7		GHG 5	Disclosure of greenhouse gas emissions by origin or source (e.g. coal, electricity, etc.).
8		GHG 6	Disclosure of greenhouse gas emissions by facility or segment level used by the company.
9		GHG 7	Comparison of the company's greenhouse gas emissions over several years or the previous year.
10	Energy Consumption	EC 1	Amount of energy consumed by the company (e.g. Tera-Joules, MAP-Joules).
11		EC 2	Calculation of energy used by the company from renewable resources.
12		EC 3	Disclosure of energy consumed by type, facility, or segment used by the company.
13	Greenhouse Gas Reduction and Cost (RC or Reduction and Cost)	RC 1	Details of plans or strategies to reduce greenhouse gas emissions.
14		RC 2	Specification of the target, level or levels and years of greenhouse gas emission reductions
15		RC 3	Emission reductions and costs or savings achieved to date as a result of the carbon emissions reduction plan.
16		RC 4	The cost of future emissions taken into account in capital expenditure planning.
17	Accountability of Emission Carbon (AEC)	AEC 1	There is a board committee or other executive body responsible for addressing climate change.
18		AEC 2	Description of the mechanism by which the board or other executive body reviews the company's efforts to deal with climate change..

Source: Choi et al (2013)

Results and Discussion

Descriptive Statistical Analysis

This test is used to describe the sample data profit which includes, among others, mean, maximum, minimum, and standard deviation. The purpose of descriptive statistics is to provide an overview of data seen from the average, standard deviation, variance, maximum, minimum, kurtosis, and skewness (skewness of distribution) (Melja et al, 2022).

Table 4 ***Descriptive Statistics Results***

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	36	-.316	.616	.24115	.208858
DER	36	-.187	11.631	1.39986	3.118951
CED	36	.278	.890	.59613	.169869
Valid N (listwise)	36				

Source: SPSS data processing

It can be seen that the lowest, highest, average and standard deviation values of the variables studied in the Coal Mining Sub Sector companies listed on the Indonesia Stock Exchange in 2021-2022 amounted to 18 companies. The dependent variable, namely the disclosure of carbon emissions, has a minimum value of 0.278 and a maximum value of 0.890. This variable obtained an average (mean) of 0.59613 and a standard deviation of 0.169869.

The independent variable profitability (ROA) has a minimum value of -0.316 and a maximum value of 0.616. This variable obtained an average value (mean) of 0.24115 and a standard deviation of 0.208858. The second independent variable, namely leverage (DER), has a minimum value of -0.187 and a maximum value of 11.631. This variable obtained an average value (mean) of 1.39986 and a standard deviation of 3.118951.

Classical Assumption Test

Normality Test

The normality test is to test the independent variable data (x) and the dependent variable data (y) in the resulting regression equation, normally distributed or abnormally distributed. The regression equation is said to be good if it has independent variable data and dependent variable data distributed close to normal or normal. In this study using a normality test can be done with the Kolmogorov-Smirnov Test to determine the normality of the data. If the Kolmogorov-Smirnov (K-S) results show a significant value above 0.05, then the residual data is normally distributed, while below 0.05, then the residual data is not normal (Melja et al, 2022).

Table 5 *One-Sample Kolmogorov-Smirnov Result*

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			36
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		.16559556
Most Extreme Differences	Absolute		.095
	Positive		.095
	Negative		-.064
Test Statistic			.095
Asymp. Sig. (2-tailed)[c]			.200[d]
Monte Carlo Sig. (2-tailed)[e]	Sig.		.550
	99% Confidence Interval	Lower Bound	.537
		Upper Bound	.563

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Source: SPSS data processing

Based on the table of normality test results with one sample kolmogorov-smirnov, the significance value of Asymp.Sig. (2-tailed) is 0.200 which exceeds the standard alpha value (0.05). This

indicates that the data can be considered normal and an adequate level of normality in the context of multiple linear regression models.

Multicollinearity Test

According to Melja et al (2022) this Multicollinearity Test is applied to multiple regression analysis consisting of two or more independent variables or independent variables (X1,2,3....n) where the relationship between the independent variables will be measured through the amount of the correlation coefficient (r). With the following criteria:

1. If the tolerance value <0.1 and the VIF value> 10 then multicollinearity occurs.
2. If the tolerance value> 0.1 and the VIF value < 10 then there is no multicollinearity.

Table 6 Multicollinearity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.552	.046		12.071	<.001		
	ROA	.181	.138	.223	1.312	.199	1.000	1.000
	DER	.001	.009	.012	.069	.946	1.000	1.000

a. Dependent Variable: CED

Source: SPSS data processing

Multicollinearity occurs when the tolerance value is less than 0.1 and the incremental variance factor (VIF) value is greater than 10. Conversely, when the tolerance value exceeds 0.1 and the VIF value is less than 10, multicollinearity occurs but is not shown. The table above shows that the independent variables tested have a tolerance value that is more than the value of 0.1 and a VIF value that is less than the value of 10.

The results of these tests show that the profitability variable (ROA) and the leverage variable (DER) have the same tolerance value and coefficient. Where the acceptable tolerance value is 1.000, and the efficiency coefficient is 1.000. So it can be concluded that the results of this regression model test have no indication of multicollinearity in the data used in this study.

Autocorrelation Test

Autocorrelation testing is done with the durbin watson test by comparing the calculated durbin watson value (d) with the durbin table value, the test criteria are as follows:

1. If 0 < d < dL, then there is positive autocorrelation.
2. If d-dL < d < 4, then there is negative autocorrelation.
3. If du < d < 4-du, then there is neither positive nor negative autocorrelation.

Table 7 *Autocorrelation Test Results*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.223[a]	.050	-.008	.170540	1.663

a. Predictors: (Constant), DER, ROA

b. Dependent Variable: CED

Source: SPSS data processing

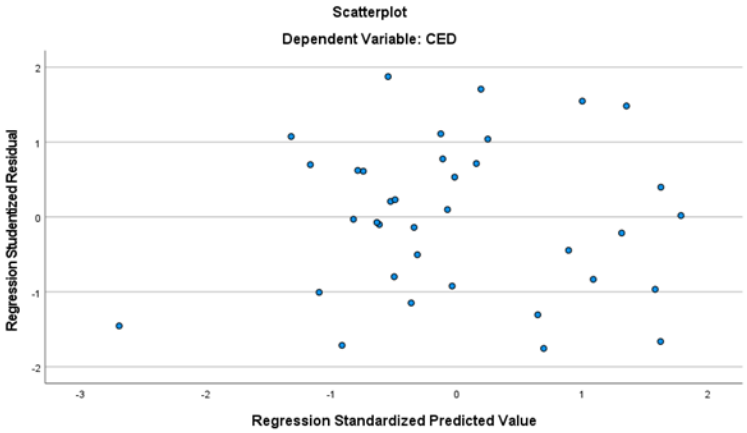
The table above shows that the value in Durbin Watson is 1.663. The dU value is 1.5872. So that dU (1.5872) < DW (1.663) < 4-dU (2.4128) which means that it is in an area where there is no autocorrelation in the regression model so that this research is feasible to continue.

Heteroscedasticity Test

A good regression equation if there is no heteroscedasticity. With the following criteria as follows:

1. If there is no certain pattern, such as the existing points forming a regular pattern (wavy, widening, then narrowing) then heteroscedasticity occurs. heteroscedasticity
2. If there is no clear pattern, such as the dots spreading above and below the number 0 on the y-axis, there is no heteroscedasticity. y-axis then there is no heteroscedasticity.

Table 8 Heteroscedasticity *Test Results*



Source: SPSS data processing

Based on the results of the heteroscedasticity test in the figure above, there is a clear pattern, such as dots spreading above and below the number 0 on the y axis. So it can be concluded that heteroscedasticity does not occur.

Multiple Linear Regression Analysis

Multiple linear regression analysis is a measurement of the influence between variables involving more than one independent variable on the dependent variable called multiple linear regression analysis (Ghozali, 2012). Multiple linear regression analysis aims to determine the magnitude of the influence of the independent variable on the dependent variable. The equation of multiple linear regression is as follows:

$$\mathbf{Y = \alpha + b1X1 + b2X2 + e}$$

Description:

Y = Disclosure of Carbon Emissions

X1 = Profitability (ROA)
X2 = Leverage (DER)
α = Constant
b1, b2, b3 = Regression coefficient
e = Error

Table 9 ***Multiple Linear Regression Analysis Test Results***

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.552	.046		12.071	<.001		
	ROA	.181	.138	.223	1.312	.199	1.000	1.000
	DER	.001	.009	.012	.069	.946	1.000	1.000

a. Dependent Variable: CED

Source: SPSS data processing

Based on the results of multiple linear regression analysis, it shows that the coefficient results above refer to the following regression analysis equation:

$$Y = 0.552 + 0.181\ X1 + 0.001\ X2$$

From the above equation, it can be concluded as follows:

1. The constant value (a) is 0.552 which indicates that the independent variable is in a constant or unchanged (equal) state. Constant or unchanged (equal to 0), then the value of the dependent variable disclosure of carbon emissions (Y) is 0.552.
2. The value of the regression coefficient X1 is 0.181 with a positive relationship direction indicating that profitability (ROA) increases, it will be followed by an increase in disclosure of carbon emissions by 0.181 with the assumption that the other independent variables are considered constant.
3. X2 regression coefficient value is 0.001 with a positive relationship direction that indicates that leverage (DER) increases, it will be followed by an increase in carbon emission disclosure of 0.001 with the assumption that other independent variables are considered constant.

Hypothesis Testing

Partial Test

According to Ghozali (2012) Partial test basically shows how far the influence of one independent variable individually in explaining the dependent variable. This test is carried out using a significance level of 0.05. Acceptance or rejection of the hypothesis is done with the following criteria:

1. If the positive value> 0.05 then the hypothesis is rejected (the registration coefficient is not significant). This means that partially the independent variable has no significant effect on the dependent variable.
2. If the positive value is <0.05, the hypothesis is accepted (the registration coefficient is significant). This means that partially the independent variable has a significant influence on the dependent variable.

Or it can be tested by comparing t-table and t-count as follows:

1. If t-table < t-count then the independent variable individually has no effect on the independent variable.
2. If t-count > t-table, the independent variable individually affects the dependent variable.

Table 10 ***Parsial Test Results***

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.552	.046		12.071	<.001		
	ROA	.181	.138	.223	1.312	.199	1.000	1.000
	DER	.001	.009	.012	.069	.946	1.000	1.000

a. Dependent Variable: CED

Source: SPSS data processing

$$t_{table} = (\alpha/2; n - k - 1) = (0.05/2; 36 - 2 - 1) = (0.025; 33) = 2.035$$

So it can be seen that the value in the t_{table} is 2.035 so that it can be compared with t_{count} to determine the effect of the independent variable on the dependent variable.

In testing hypothesis 1 in the table above, it can be seen that the significant value for the effect of profitability (ROA) on the disclosure of carbon emissions is 0.199> 0.05 and t_{count} 1.312 < 2.035 t_{table} so it can be concluded that H1 is rejected, it can be concluded that profitability (ROA) has no effect and is not significant on the disclosure of carbon emissions.

In testing hypothesis 2 in the table above, it can be seen that the significant value for the effect of leverage (DER) on disclosure of carbon emissions is 0.946> 0.05 and t_{count} 0.069 < 2.035 t_{table} so it can be concluded that H2 is rejected, it can be concluded that leverage (DER) has no effect and is not significant on disclosure of carbon emissions.

Coefficient of Determination (R2)

The coefficient of determination (R^2) aims to measure how far the ability of the independent variables (Profitability and Leverage) to explain variations in the dependent variable (Disclosure of Carbon Emissions). The coefficient of determination is between zero and one. A value close to one means that the independent variables provide almost all the information needed to predict the dependent variable (Ghozali, 2012).

Table 11 ***Coefficient of Determination Test Results***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.223[a]	.050	-.008	.170540	1.663

a. Predictors: (Constant), DER, ROA

b. Dependent Variable: CED

Source: SPSS data processing

Based on the table above, it is obtained that the coefficient of determination (R Square) is 0.050 and the adjusted coefficient of determination (Adjust R Square) is -0.008. This means that 5% of the variation of the independent variables, namely profitability (ROA) and leverage (DER), is able to explain the dependent variable, namely the disclosure of carbon emissions. While the remaining 95% (100% - 5%) is explained by other variables not included in this study.

Conclusion

Based on the tests and research results that have been carried out regarding profitability and leverage on carbon emission disclosure, it can be concluded that:

1. Profitability has no effect and is not significant on the disclosure of carbon emissions in coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2021-2022. Which means that the size of the profit generated by the company will not affect the company's decision to disclose carbon emissions because disclosure can be considered as a reduction in profit or vice versa.
2. Leverage has no influence and is significant on the disclosure of carbon emissions in coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2021-2022. Companies with a high level of leverage tend to have a responsibility to creditors to prioritize debt repayment rather than disclosing information about carbon emissions generated by the company.

This study has several limitations, including the results of the coefficient of determination test showing that the carbon emission disclosure variable can only be explained by 5% according to the R square results. So it can be seen that there are other variables outside the research model that affect the disclosure of carbon emissions. From the conclusions and limitations that have been stated, the researchers provide suggestions for future research, if data is available, so that the number of samples of companies studied is increased and the sector is more varied to get more accurate results. Future research will be better if it adds other variables that can affect the company's carbon emission disclosure practices, such as company size, carbon performance of a company, capital expenditures, the level of information asymmetry, and so on. In addition, regarding the assessment mechanism of Carbon Emission Disclosure (CED) items that are limited to a maximum of 18 points, perhaps the assessment points can be added so that it can be more than 18 points.

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