

THE EFFECT OF CARBON EMISSION DISCLOSURE, RETURN ON INVESTMENT, AND ENVIRONMENTAL PERFORMANCE ON THE RETURN OF COMPANY SHARES IN THE INDONESIAN ENERGY SECTOR FOR THE 2019-2024 PERIOD

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Abstract

This study aims to analyze the effect of carbon emission disclosure, return on investment, and environmental performance on the return of company shares in the Indonesian energy sector periode 2019-2024. The research data can be accessed through the official website www.idx.co.id. The sample in the study is as many as 12 energy sector companies with purposive sampling techniques. The data analysis tool in this study uses the panel data regression method with the Eviews 12 application tool with the selected Random Effect Model (REM) model. The results of the study found that carbon emission disclosure has a positive and significant effect on stock returns, return on investment has a positive and significant effect on stock returns, and environmental performance has a negative and insignificant effect on stock returns in energy sector companies listed on the Indonesia Stock Exchange (IDX) for the 2019-2024 period.

Keywords: *The Effect of Carbon Emission Disclosure, Return On Investment (ROI), Environmental Performance and Stock Return.*

INTRODUCTION

Energy companies are companies involved in conducting business operations that directly affect the sustainability of natural resources. This company is included in the category of *high-profile companies*, business activities in high-profile companies are categorized as activities with a high level of sensitivity related to environmental sustainability, risks, politics, and business competition. The relevance between the energy sector and *stock returns* becomes increasingly important when considering non-financial factors such as emissions disclosures and a company's environmental performance. In this context, corporate transparency on carbon emissions through carbon exchanges is an important signal for investors in evaluating long-term risks and prospects. Good emissions disclosure reflects the company's commitment to sustainability and environmental risk management, which can ultimately increase investor confidence and positively impact stock returns.

Therefore, in analyzing the stock returns of companies in the energy sector, it is necessary to involve variables such as carbon emission disclosure, and environmental performance which are important indicators in modern investors' assessment of the company's value as a whole. *Stock return* is the profit or return earned by investors from investing in stocks. In a company, a good stock return is a return of 15-20% of shares by investors in one year (Pamungkas et al., 2023). An increase in profits in a company does not constitute an increase in shares received by investors so that the return of economic decisions is carried out by investors is highly dependent on information regarding the financial condition of the company provided (Daud et al., 2023). Financial Performance is the main indicator of the Company's success and contributes directly to the value of the shares. Indicators such as *Net Income*, *Net Operating Tax*, and *Earnings Per Share* are the main analytical tools in evaluating the Company's financial health (Oktavia Permatasari et al., 2022). Disclosure of carbon emissions and environmental performance is a matter of great concern today, because the information submitted by the company certainly affects the company's reputation for sustainability in the future. Therefore, the company needs to make related disclosures for the sake of its reputation

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and business sustainability. Those most affected by these emission restrictions as well as carbon emission disclosures are companies that operate by producing high CO₂ emissions, or activities related to companies in the value chain that have high CO₂ emissions. Given these developments, the public and investors will expect to see risks associated with carbon emissions reflected in the cross-section of stock buybacks (Mujjani, Juardi, & Fauziah, 2020). *Return On Investment* is a ratio that will be used in the company to show the strength to obtain profits from the assets used. In addition, ROI also has another function as an indicator of an efficiency standard in regulating investments. This *Return on Investment* ratio shows the return of all assets controlled without including the funding source, this ratio is usually calculated as a percentage. *Return On Investment* is the most commonly used approach to evaluate the financial consequences of a business investment decision and action (Sari, 2020).

The Ministry of Environment (KLH) has developed the Corporate Performance Assessment Program in Environmental Management (PROPER) since 2002. This program aims to increase the role of companies in environmental conservation efforts (Sundari & Sulfitri, 2022). According to (Nisaputra, 2023), Indonesia is currently ranked at the bottom of 159 countries due to the slow implementation of the green economy in preparing for NZE (*Net Zero Emissions*). Environmental performance is assessed based on environmental policies, environmental goals, and environmental targets following the guidelines on ISO 14000 and 14001. The government's tangible form of supporting the implementation of environmental performance is by making a PROPER policy (Company Performance Rating Assessment Program). Based on the background description of the above phenomenon and the *research gap* from previous studies, so the author is interested in taking the title "The Effect of Carbon Emission Disclosure, *Return on Investment*, Environmental Performance on Company Stock *Returns* in the Indonesian Energy Sector for the 2019-2024 Period".

LITERATURE REVIEW

Legitimacy Theory

Legitimacy theory is the effort made by an organization to ensure that its actions are within the boundaries and norms accepted by society. The main goal of *legitimacy* theory is to build public trust through the exposure of corporate social responsibility, thereby enabling the company to gain support and trust from the community and the surrounding environment. *Legitimacy theory* states that the Company prioritizes public perception and recognition as an encouragement to disclose information in company reports. *The legitimacy* of the community towards the company is an urgent factor, if it does not get legitimacy, the company's operations can be disrupted due to demands to fulfill the rights of the community and the environment (Sayuti et al., 2020)

Stakeholder Theory

Stakeholder theory was first introduced by the Stanford Research Institute in 1963. This theory explains that the sustainability and success of a company is highly dependent on optimal relationships with various stakeholder groups. According to (Saputri et al., 2024) in this view, companies need to manage the interests of *stakeholders* properly because stakeholders have power that can influence or control the use of the company's economic resources. *Stakeholder theory* is related to the concept of corporate social responsibility, where the survival of the company is influenced by stakeholders. The company's responsibility is not only to maximize profits and the interests of shareholders, but also to pay attention to the community, customers and suppliers as part of the company's operations.

Signalling Theory

In the *signalling theory* popularized by space in 1973, this theory explains the provision of information signals about the company by the company concerned to the beneficiaries of the information. According to (Suhara & Susilowati, 2022), *signalling theory* is used to explain information that can be used by companies to give positive or negative signals to its users. *Signalling theory* focuses on the importance of the information published by the company on investment decisions that will be taken by external parties, as well as the company's motivation to provide this information to external parties. If a company expects its shares to be looked at by investors, the company is obliged to provide transparent financial reporting.

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Return Saham

Return, or rate of return, is the return expected by investors as compensation for the risks they take in investing. This description provides a basis for formulating *stock returns*, which will make it easier for investors to evaluate their investment performance (Rohman, 2021). *Stock return* is calculated with the following formula:

$$RS = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Information:

RS = *Return Saham*

P_t = Initial Period Stock Price

P_{t-1} = End-Period Stock Price

Carbon Emissions Disclosure

Carbon emission disclosure is information that reflects the company's commitment to social responsibility expected by stakeholders, so the wider the disclosure of carbon emissions, the higher the company's value in the eyes of investors, which also supports the company's sustainability in the future (Bahriansyah & Lestari Ginting, 2022). To measure carbon emission disclosure, the *Carbon Emission Disclosure (CED) checklist* identifies 18 items grouped into three main categories related to climate change and carbon emissions. Companies categorized based on emissions are divided into three categories, namely *scope 1-3*. *Scopes 1 and 2* are mandatory, while *scope 3* is optional. The total carbon emission disclosure score obtained using the *CED checklist* will be calculated with the following formula:

$$CED = \frac{\text{Jumlah item yang dilaporkan}}{\text{Jumlah yang seharusnya dilaporkan menurut CED checklist}}$$

Return On Investment

Return On Investment or ROI is a measurement of the company's overall ability to generate profits with the total number of assets available in the company. The higher this ratio, the better a company is in a state (Fernando et al., 2021). The size of the profit measured by ROI will affect the return on the stock. The company has high profits, so the company's ROI is high, then it drives the increase in stock prices and the increase in stock returns. This ratio measures net margin after tax against total assets, the greater the ROI value, the more effective a company's management is. *Return On Investment* with the formula:

$$\text{Return On Investment} = \frac{\text{Net Profit}}{\text{Nilai Investasi}} \times 10$$

Environmental Performance

Environmental Performance is a company's contribution to maintaining environmental sustainability. Environmental achievements are assessed through a ranking system by institutions related to the environment (Asyari & Hernawati, 2023). Environmental performance refers to the evaluation and measurement of the impact of the activities of an entity, such as a company or organization, on the surrounding environment. Good corporate environmental performance can be one of the factors in increasing the value of the company and its shares. Using the PROPER indicator, it can assess the environmental performance of an entity from best to worst. The colors given are gold, green, blue, red, and black.

Proper Color Performance	Pasing Grade	Score
Gold	Excellent	5
Green	Good	4
Blue	Already Obedient	3
Red	Not Obeyed	2
Black	No Effort	1

The conceptual framework and hypothesis in this study are as follows:

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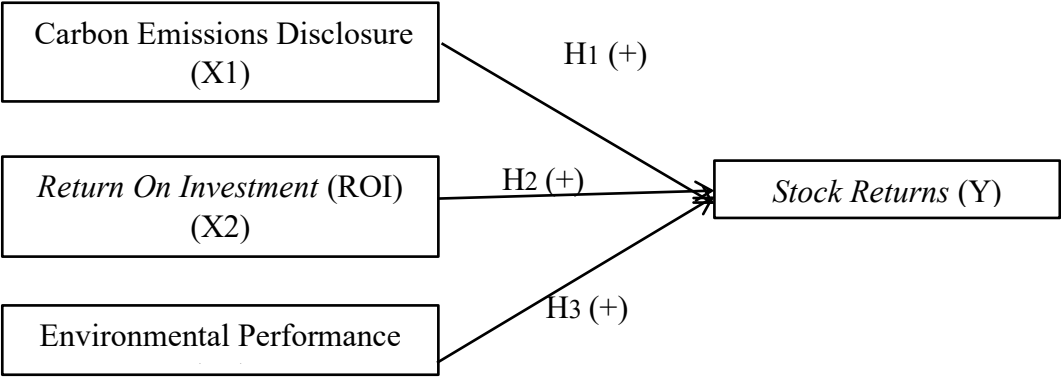


Figure 1. Conceptual Framework

Based on the theory and previous research above, the hypotheses raised in this study are:

- H1: Carbon Emission Disclosure has a positive effect on stock returns in energy companies listed on the Indonesia Stock Exchange.
- H2: Return On Investment (ROI) has a positive effect on stock returns in energy companies listed on the Indonesia Stock Exchange.
- H3: Environmental performance has a positive effect on stock returns in energy companies listed on the Indonesia Stock Exchange

METHOD

The object of this study is Carbon Emission Disclosure, Return On Investment, Environmental Performance and Stock Return of the Energy Sector listed on the Indonesia Stock Exchange for the 2019-2024 period. The location of this research was conducted on the Indonesia Stock Exchange (IDX) by visiting the official website, namely www.idx.co.id. The population used in this study is energy sector companies listed on the Indonesia Stock Exchange, which is as many as 90 companies. The sampling technique used in this study is purposive sampling. This research will use secondary data as a source of quantitative data in the form of numbers related to the research. The data in this study is sourced from financial and annual reports on energy sector companies that listed on the Indonesia Stock Exchange (IDX) for the 2019-2024 period. The data was obtained by visiting the official website of the Indonesia Stock Exchange, namely www.idx.co.id. The data collection method uses secondary data, secondary data obtained from the official website of the Indonesia Stock Exchange (IDX), IDX Carbon and sustainability reports as well as historical stock price data obtained from each energy company. After the data is collected, the researcher will look for things needed to calculate each variable. The data used for the documentation study is the annual financial statements of Energy companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2024.

RESULTS AND DISCUSSION

Results

Data Panel is an approach that combines two forms of data, namely cross-section and time series data. The analysis method used in this study is to conduct quantitative analysis displayed in numerical numbers, which will be calculated using statistical methods assisted by the E-Views 13 statistical data management program. According to Ghozali 2018, there are several approaches carried out in panel data regression analysis, namely, Common Effect Model (CEM), Fixed Effect Model (FEM), AND Random Effect Model (REM). To get the best model in this study, the chow test, the hausman test, and the lagrange multiplier (LM) test were carried out. The results of the chow test, thirst test, and lagrange multiplier (LM) test are as follows: The Chow Test is a test used to determine the best model between the Common Effect Model (CEM) and the Fixed effect model (FEM). According to (Gujarati, 2012) the basis of decision-making is seen from the value of Probability. If the probability value is above 0.05 then the best model is CEM, and vice versa if the probability value is below 0.05 then the best model chosen is FEM.

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Table 1. Chow Test Results

Effects Test	Statistic	d.f.	Prob
Cross-section F	0.967466	11,57	0.4858
Cross-section Chi-square	12.324934	11	0.3397

Based on the results of the *chow* test in Table 1 above, it can be seen that the *probability value* on the Chi-square line is 0.3397 above 0.05. Therefore, conclusions can be drawn based on the results of the Chow test, the best model in this study is the *Common Effect Model* (CEM). Then it is continued with the Hausman Test and the LM Test.

Table 2. Lagrange Multiplier Test (LM Test)

	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	0.832026 0.3617	5.924018 0.0149	6.756044 0.0093

Based on the results of the LM test, it can be seen that the probability value on the *Breusch-Pagan* line is 0.0093 below 0.05. Therefore, conclusions can be drawn based on the results of the third test, the best model in this study is the *Random Effect Model* (REM).

Estimasi Regresi Data Panel

Table 3. Panel Data Regression Estimation with Random Effect Model (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.0064	0.5403	-1.8626	0.0668
VERY	2.1231	0.8025	2.6456	(0.0101)**
KING	0.7248	0.3214	2.2549	(0.0274)**
AT	-0.0145	0.0864	-0.1684	0.8668

Based on Table 4.6 of the regression panel data using REM above, the following linear equations can be arranged:

$$RS = -1.0064 + 2.1231*PEK + 0.7248*ROI - 0.0145*KL + \dots$$

From the equation above, it can be seen that the constant value in this study is -1.0064. This shows that PEK, ROI, KL have no value (value 0). Then the Stock Return will remain constant with a value of -27174.

Discussion

Such Hypotheses

Results of Panel Data Regression Estimation

The Effect of Carbon Emission Disclosure on Stock Returns

The results of this study show that the disclosure of carbon emissions has a positive and significant effect on *stock returns* with a coefficient value of 2.123189 and a significance level of 5% with a probability value of 0.0101. Therefore, it can be concluded that the disclosure of carbon emissions (PEK) has a positive and significant effect on the *Company's stock return* (RS) in the Indonesian Energy Sector. These findings show that H1 in this study is accepted, which means that the findings in this study support the hypothesis. A positive coefficient value shows that the higher the carbon emission disclosure (PEK), the higher the *stock return* (RS). The findings are in line with previous research which revealed that carbon emission disclosure (PEK) has a positive and significant effect on the *Company's stock return* (RS) (Gabrielle & Toly, 2019). Disclosure of carbon emissions demonstrates transparency and a company's commitment to sustainability, thereby increasing investor confidence. This confidence can drive demand for stocks and have a positive impact on the company's stock returns (Aprilia & Sarumpaet, 2023).

The Effect of Return On Investment on Stock Returns

The results of this study show that *return on investment* has a positive and insignificant effect on *stock returns* with a coefficient value of 0.724831 and a significance level of 5% with a probability value of 0.0274. Therefore, it can be concluded that *return on investment* (ROI) has a positive and significant effect on the *Company's stock return*.

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(RS) in the Indonesian Energy Sector. These findings show that H1 in this study is accepted, which means that the findings in this study support the hypothesis. This positive impact effectively affects the market by increasing interest in buying company shares and vice versa. The company strives to maintain increased ROI to get positive feedback from investors. Basically, the demand and supply of shares determine the share price of a company (Milasari & Noeraini, 2024).

The Effect of Environmental Performance on Stock Returns

The results of this study show that environmental performance has a negative and insignificant effect on stock returns with a coefficient value of -0.014560 and insignificance with a probability value of 0.8668. Therefore, it can be concluded that environmental performance (KL) has a negative and insignificant effect on the Company's stock return (RS) in the Indonesian Energy Sector. These findings showing H1 in this study is accepted which means the findings in this study support the hypothesis. Companies with good environmental performance generally require operational costs and additional investment for the application of environmentally friendly technology and waste management. This cost burden can reduce short-term profitability, potentially reducing investor attractiveness and negatively impacting stock returns (Torre et al, 2020).

CONCLUSION

Carbon emission disclosure has a positive and significant effect on the return of company shares in the Indonesian energy sector. This shows that the higher the disclosure of carbon emissions, the higher the return on the stock. Return on investment has a positive and significant effect on the return of company shares in the Indonesian energy sector. This shows that the higher the return on investment, the higher the stock return. Environmental performance has a negative and insignificant effect on the company's stock returns in the Indonesian energy sector. This shows that the higher the environmental performance, the lower the stock return.

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