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Boosting Profitability Through Green Finance, CSR, and Capital Structure: The Moderating of The Board of Directors

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ABSTRACT: This study aims to examine the effects of implementing green finance, corporate social responsibility (CSR), and capital structure on profitability, with the board of directors as a moderating variable. The research focuses on energy sector companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023. This study's combination of green finance with corporate social responsibility (CSR) is uncommon in previous studies. Green finance is more concerned with the environment, whereas corporate social responsibility (CSR) focuses more on social issues. Conducted as a quantitative study, the sample selection employed purposive sampling. Secondary data was collected from annual and sustainability reports, accessed via www.idx.co.id and the companies' official websites. The study's findings reveal that green finance does not significantly impact profitability, while CSR positively and substantially affects profitability. On the other hand, capital structure significantly negatively impacts profitability. As a moderating variable, the board of directors does not moderate the relationship between green finance and profitability. However, it weakens the positive impact of CSR on profitability and strengthens the adverse effects of capital structure on profitability.
The implications of this study provide empirical insights into the influence of green finance, CSR, and capital structure on profitability levels. Additionally, the interaction effect analysis suggests that the board of directors plays a strategic role in decision-making related to resource allocation with a sustainability orientation.

Keywords: Green Finance, CSR, capital structure, profitability, board of director

INTRODUCTION

The Sustainable Development Goals (SDGs) are implemented to achieve sustainable environmental performance, and corporate measures to preserve the environment reflect this. Business success is measured by the revenue generated through performance and other operational activities and by tangible evidence of responsibility towards social aspects and environmental sustainability. (Khotimah & Sari, 2024). The energy sector represents one of the most impactful industries in terms of its operations' adverse effects on the environment. Specifically, activities undertaken by companies in the oil, gas, and mining industries are often associated with a high likelihood of causing substantial harm to natural ecosystems. These activities can disrupt the delicate balance of ecological systems, leading to biodiversity loss and the degradation of natural habitats. Furthermore, the extensive use of resources and the potential for pollution inherent in these industries pose a significant threat to efforts to preserve environmental sustainability and maintain ecological integrity over the long term. (Lu et al., 2024). As one of the primary industrial sectors in the global economy, this sector contributes significantly to economic growth in both developed and developing countries, including Indonesia, through global commodities like oil, natural gas, and coal. (Nur Fahmi et al., 2023)However, this sector faces numerous challenges, such as excessive exploitation and environmental pollution, not offset by recovery efforts. In 2022, the energy and transportation sectors accounted for 50.6% of total emissions in Indonesia, making them the country's primary emission contributors. (Ainun & Ayu, 2024).

A case in point is PT Adaro Energy Tbk, one of Indonesia's largest energy companies operating in oil, gas, and coal mining in South Kalimantan. In October 2022, PT Adaro Energy Tbk's PKP2B permit expired, yet at least 30 mining pits remain, only 18% of which have been reclaimed by the company. According to mining regulations, all mining pits must be reclaimed by the responsible company.

Previous research shows varied results, such as the study by (Ramadhani et al., 2022) Demonstrate a positive effect of green finance on profitability. However, this contrasts with findings by (Afifah, 2023; Aryanti et al., 2023; Hasanah & Hariyono, 2022; Lestari & Kusuma, 2022; Masliyani & Murtanto, 2022; Russell et al., 2024) Which shows no substantial impact of environmental performance on profitability. Regarding CSR disclosure, (Ardillah, 2023; Wulandari, 2020) Found a positive effect on profitability. Whereas (Pratiwi et al., 2020) reported different results. Studies by (Helda Ayuningtyas & Mawardi, 2022; Sari & Dwirandra, 2019) show that the DER positively influences profitability. While (Ritonga et al., 2021) found a negative effect. In this study, the board of directors, a component of GCG, influences the company's profitability significantly. Many studies adopt one or several GCG components as moderating variables, such as those by (AL Anssari et al., 2024; Aryanti et al., 2023; Bangun et al., 2024; Muhammad Syahroni, 2022; Septiani & Yoewono, 2023).

Currently, the pressure on companies in the energy sector to implement sustainability principles is increasing along with the growing global awareness of the impact of climate change. Indonesia, one of the countries with the highest carbon emission levels in Southeast Asia, has enacted several laws to compel businesses to practice greater environmental responsibility, such as implementing a carbon tax that began in 2022. However, the challenges in implementing these regulations remain

high, especially concerning the low compliance of companies in emission reporting and waste management. Companies also face pressure from international stakeholders, such as financing institutions and investors, who increasingly require the implementation of Environmental, Social, and Governance (ESG) as a prerequisite for accessing capital.

This study uniquely combines green finance and CSR, a rare approach in prior research. Here, green finance focuses more on the natural environment, while CSR primarily concerns social aspects. However, it also includes environmental considerations in less detail than green finance, which is tested separately with different criteria. From the standpoint of sustainable development, CSR refers to an organization's efforts to address present and future demands (Willim et al., 2020). This study examines how debt-based capital structure impacts profitability, including green finance and CSR disclosures.

This study aims to understand the effects of environmental responsibility or green finance, CSR, and capital structure on profitability, with the BOD as a moderating variable. The author is interested in analyzing how these three independent variables, which reduce corporate assets, influence profitability. Based on the purpose of the study, the authors determine hypotheses, namely: 1) Green finance has a positive effect on profitability; 2) CSR has a positive effect on profitability; 3) Capital structure has a positive effect on profitability; 4) The board of directors moderates the effect of green finance on profitability; 5) The board of directors moderates the effect of CSR on profitability; 6) The board of directors moderates the effect of capital structure on profitability.

METHOD

This study employs a quantitative approach using panel data from the annual reports of energy sector companies listed on the Indonesia Stock Exchange (IDX) for 2019-2023. Data was gathered through secondary documentation from the official IDX website (www.idx.co.id) and the official websites of the respective companies. The sample selection used purposive sampling with the following criteria: (1) energy sector companies consecutively listed on the IDX from 2019-2023, (2) energy sector companies that published complete annual reports from 2019-2023, and (3) energy sector companies that published sustainability reports from 2019-2023. The final observation yielded a sample size of 76. The regression model used was multiple linear regression, analyzed through SPSS software version 25.

This research develops three models to illustrate the relationships between variables, each represented by the following econometric equations:

$$PROF_{it} = \alpha + \beta_1 GF + \beta_2 CSR + \beta_3 SM + \varepsilon_{it}$$

$$PROF_{it} = \alpha + \beta_4 GF + \beta_5 CSR + \beta_6 SM + \beta_7 BOD + \varepsilon_{it}$$

$$PROF_{it} = \alpha + \beta_8 GF + \beta_9 CSR + \beta_{10} SM + \beta_{11} BOD + \beta_{12} GF*BOD + \beta_{13} CSR*BOD + \beta_{14} SM*BOD + \varepsilon_{it}$$

Explanations:

PROF = Profitabilty

GF = Green finance

CSR = Corporate Social Responsibility

SM = Capital Structure

BOD = Board Of Director

ε = residual

Green finance assesses how companies contribute to environmental sustainability. The Indonesian Ministry of Environment and Forestry (KLHK) rates ecological performance on a five-color scale using the PROPER index: Gold (excellent/5), Green (very good/4), Blue (good/3), Red (poor/2), and Black (very poor/1).

CSR disclosures in this study are evaluated using GRI G4 standards by reviewing the companies' sustainability reports. CSR is calculated following Haniffa (2005) as follows:

$$\mathbf{CSRIj=}\frac{\sum \boldsymbol{XIj}}{\boldsymbol{nj}}$$

Explanations:

CSRIj: Corporate Social Responsibility Indicator for Company j

∑ XIj : Total score for each company based on a dummy variable: 1 if item i is disclosed, and zero if item i is not disclosed

nj = Number of items disclosed by company j

The Debt to Equity Ratio (DER), which gauges how much debt a business employs about equity, is used to quantify capital structure. DER, as defined by Kasmir (2012), is calculated as follows:

$$\mathbf{DER =}\frac{\boldsymbol{Liability\ Total}}{\boldsymbol{Equity\ Total}}$$

One measure of a business's success is its profitability, which is determined by how well it can turn a profit with its owned assets (Nur Fahmi et al., 2023). Profitability is measured by the Return on Assets (ROA) ratio, computed according to Tandelilin (2010) as follows:

$$\mathbf{ROA =}\frac{\boldsymbol{Net\ Profit}}{\boldsymbol{Asset\ Totlal}}\ \boldsymbol{X}\ \mathbf{100\%}$$

The board of directors plays a vital role in effective corporate operations and decision-making. In implementing Good Corporate Governance (GCG), the board size should align with the complexity and needs of the company. The following formula determines the board's size:

Board Size = ∑ Members of the Board of Directors

RESULT AND DISCUSSION

The findings of the descriptive statistical analysis are shown in the following section. Data for every variable with a total sample size of 76 are provided in this section.

Table 1. Descriptif Statistic

Variable	N	Min	Max	Mean	Std. Deviation
PROFITABILITAS	76	-0,1142	0,2817	0,6437	0,08148
GF	76	0,00	1	0,04947	0,4447
CSR	76	0,0256	1	0,4889	0,03063
SM	76	0,0387	4,1143	1,19227	0,99354
BOD	76	0,1333	1	0,3263	0,13923
Valid N (listwise)	76				

Source: Processed Data, 2024

Table 1 illustrates that the minimum profitability value is -0.1142, with a maximum value of 0.2817, a mean of 0.6437, and a standard deviation of 0.08148. The minimum green finance (GF) value is 0, and the maximum is 1, with a mean of 0.04947 < 0.4447 as a standard deviation, indicating that the data are unevenly distributed and there is variability among observations. The CSR variable's minimum is 0.0256, the maximum is 1, the mean is 0.4889, and the standard deviation is 0.03063, indicating a low data dispersion and a relatively even distribution. The capital structure (SM) minimum is 0.0387, and the maximum is 4.1143, with a mean of 1.19227 and a standard deviation of 0.99354, indicating low data deviation and even distribution. The board of directors (BOD) variable has a minimum value of 0.1333, a maximum of 1, a mean of 0.3263, and a standard deviation of 0.13923, indicating low data deviation and a uniform distribution.

Sugiyono (2019) states classical assumption testing aims to ensure research validity, avoid bias and instability in theoretical data, and improve regression coefficient estimation efficiency. This test examines whether data deviations exist by assessing distributions, correlations, and variable indicator variances.

Table 2. Classical Assumption Tests

Variable	Normality test		Multikolenearity test		Heteroskedastisity test	
	***Asymp. sig* (2-tailed)**	**Alpha**	**Tolerance value**	**VIF value**	**Sig.**	**Alpha**
GF	0,098	0,05	0,595	1,680	0,716	0,05
CSR			0,683	1,464	0,681	0,05
SM			0,814	1228	0,084	0,05

Source: Processed Data, 2024

In Table 2, the Kolmogorov-Smirnov test for normalcy reveals an Asymp. A significance level of 0.098 > 0.05 indicates a normal data distribution. Tolerance values from the multicollinearity test are above 0.10, with VIF values below 10, demonstrating that the independent variables are not multicollinear. Furthermore, the independent variables' significance values are higher than 0.05, indicating no heteroscedasticity in the model.

According to Ghozali (2021), Multiple linear regression analysis is a statistical method for examining how many independent variables affect a dependent variable. Moderate Regression Analysis (MRA) indicates that the moderating variable strengthens or decreases the relationship between the independent and dependent variables. Below are the regression test results for each variable.

Table 3. Research Model Testing Results

No.	Variable	Model-1	Model-2	Model-3
1	Constant	64,695	68,325	15,203
	p-value	(0,004)**	(0,33)**	(0,599)
2	GF	0,008	0,784	-0,437
	p-value	(0,776)	(0,853)	(0,823)
3	CSR	0,081	0,086	0,114
	p-value	(0,037)**	(0,023)**	(0,013)**
4	SM	-0,033	-0,032	-0,013
	p-value	(0,004)***	(0,003)***	(0,026)**
5	BOD	-	-0,013	0,025
	p-value	-	(0,869)	(0,802)
6	GF*BOD	-	-	0,044
	p-value	-	-	(0,376)
7	CSR*BOD	-	-	-0,302

	p-value	-	-	(0,023)**
8	SM*BOD	-	-	2,126
	p-value	-	-	(0,000)***
	F	6,050	4,462	50,825
	p-value	(0,001)***	(0,003)***	(0,000)***
	Adjusted R square	0,206	0,156	0,823

*Note: Dependent variable: PROF. **Significant at 5%, ***Significant at 1%*

Source: Processed Data, 2024

The Adjusted R^2 value is 0.206 or 20.6%, showing that 20.6% of the independent variables account for a portion of the variation of the dependent variable, with the remainder, 79.4%, influenced by factors outside this study. The F-test yields a value of 7.006 with a significance level of 0.001 < 0.05, demonstrating that the dependent variable is significantly impacted by each independent variable simultaneously.

In the first regression test, the significance value of green finance is 0.776 > 0.05 with a positive coefficient ($\beta_1 = 0.008$), indicating a positive but not statistically significant impact on profitability; hence, the first hypothesis is rejected. The second regression test shows that CSR has a significance level of 0.037 < 0.05 and a positive coefficient ($\beta_2 = 0.081$), demonstrating a significant positive impact of CSR disclosure on ROA, thus supporting the second hypothesis. The third regression reveals that capital structure has a significance level of 0.004 < 0.05 with a negative coefficient ($\beta_3 = -0.033$), indicating a significant negative impact on ROA, leading to the rejection of the third hypothesis.

Table 3 also displays the results of the moderating regression analysis (MRA) moderating variable. The moderating regression for BOD on the green finance-profitability relationship shows a significance level of 0.376 > 0.05 with a positive coefficient ($\beta_5 = 0.044$), indicating that BOD does not moderate the impact of green finance on ROA, thus rejecting the fourth hypothesis. The interaction between CSR and BOD has a significance level of 0.023 < 0.05 with a negative coefficient ($\beta_6 = -0.302$), suggesting that BOD moderates the influence of CSR on profitability by weakening the relationship, thereby accepting the fifth hypothesis. The interaction between capital structure and BOD reveals a significance level of 0.000 < 0.05 with a positive coefficient ($\beta_6 = 2.126$), confirming that BOD moderates the impact of DER on ROA, hence supporting the sixth hypothesis.

While positive, the impact of green finance disclosure on ROA was statistically insignificant. This outcome is consistent with the findings of Lestari & Kusuma (2022), who observed that green finance doesn't significantly affect a company's profitability. Such results imply that disclosures related to green finance have not yet demonstrated a measurable influence on the profitability of companies operating within the energy sector in Indonesia. One possible explanation is that the PROPER ranking, a measure of environmental performance, has not captured substantial attention

or interest from investors. Moreover, achieving a high PROPER rating requires companies to bear considerable costs, which can offset potential financial gains. In addition to these challenges, the lack of sufficient external funding further limits the ability of green finance disclosures to enhance profitability and contribute to achieving societal legitimacy.

However, Corporate Social Responsibility (CSR) disclosure shows a positive and significant impact on profitability, consistent with the findings of (Kholmi & Nafiza, 2022). They emphasized that CSR has a notable and substantial effect on profitability. This outcome can be explained through the lens of stakeholder theory, which posits that a company's obligations extend beyond merely satisfying the interests of shareholders. Instead, companies bear responsibilities toward a broader array of stakeholders, including employees, customers, suppliers, regulatory bodies, and the wider community. (Chapagain, 2022)Stakeholder theory supports this regression study's favorable correlation between CSR and profitability. Companies can strengthen customer loyalty, reduce reputational risks, and improve operational efficiencies by engaging in CSR activities. Collectively, these benefits enhance overall profitability.

The capital structure hypothesis test reveals a negative and significant impact on profitability. This finding contrasts with the study by (Helda Ayuningtyas & Mawardi, 2022), which indicated that DER positively impacts profitability yet aligns with (Syahwildan & Sutrisno, 2020), who observed a significant negative impact of DER on profitability. Signaling theory explains a company's decisions regarding its capital structure, interpreted as signals to external stakeholders about its future profitability prospects. As revealed in this study, a negative association between DER and ROA is a cautionary signal to investors. It recommends that increased reliance on debt financing imposes substantial financial obligations on the company, which may elevate operational risks and erode net profits (Epong & Anom, 2019). Consequently, such findings underline the critical balance that firms must maintain in their capital structure to avoid unfavorable investor perceptions while optimizing financial performance.

The regression for the moderating variable, the BOD, in the relationship between green finance disclosure and ROA reveals a positive yet statistically insignificant outcome. This result suggests that the presence or influence of the board does not effectively regulate or enhance how green financing initiatives impact a company's profitability. This finding aligns with (Simon et al., 2023), who stated that the board of directors does not significantly strengthen the effect of green finance on profitability. An increased number of board members does not necessarily enhance profit-oriented corporate performance (Simon et al., 2023). This phenomenon may be attributed to the fact that many companies have yet to integrate or prioritize green finance practices fully, given that such initiatives' tangible financial benefits are often not immediately apparent or realizable in the short term. Moreover, this study highlights the possibility that a larger board of directors could inadvertently negatively influence corporate outcomes. This is because a larger board often results in a more fragmented decision-making process, characterized by increased task delegation and a greater diversity of inputs, which may complicate or slow down strategic decision-making (Al-Matari, 2024). Consequently, these dynamics may detract from the efficiency and effectiveness required to maximize profitability in green finance implementation.

The regression coefficient for the moderating role of the board within the connection between CSR disclosure and ROA reveals a statistically significant negative effect. This indicates that, contrary to expectations, the presence of the board does not amplify the influence of CSR disclosure on a company's profitability; instead, it diminishes this effect. Such results stand in contrast to the conclusions drawn by Akbar & Juliarto, (2023), who argued that the board's involvement can enhance the positive impact of CSR disclosure on profitability. One plausible explanation for this divergence is that the board may perceive CSR initiatives primarily as an additional financial burden, considering that these activities often lead to increased operational costs. Consequently, these heightened expenses could erode corporate profits, thereby reducing the overall effectiveness of CSR practices in enhancing financial performance.

The regression coefficient associated with the board's moderating role in the relationship between Profitability and capital structure demonstrates a positive and significant interaction. This finding underscores the board's ability to enhance the impact of DER on ROA. This result aligns with (Helda Ayuningtyas & Mawardi, 2022) and (Putri & Raflis, 2024), which affirm that the board plays a pivotal role in amplifying the effect of capital structure on profitability. Grounded in signaling theory, this phenomenon suggests that the presence of a board serves as a vital indicator to the market, signaling the company's competence in managing its debt obligations efficiently and effectively. By acting as a regulatory and balancing mechanism, the board ensures that leverage is utilized in a manner that maximizes financial benefits while mitigating associated risks (Wendy & Salim, 2019), further highlight this function, emphasizing the board's role in fostering disciplined debt management practices that enhance operational stability and convey optimism about the firm's prospects to investors. Consequently, the board's involvement contributes to a robust corporate signaling mechanism, reinforcing market confidence and fostering improved financial outcomes.

CONCLUSION

The findings of this study show that the use of a capital structure mainly composed of debt and the disclosure of green finance practices do not have a statistically significant impact on a company's profitability. Conversely, the disclosure of CSR activities demonstrates a notable and positive effect on profitability, indicating that such initiatives benefit companies' financial performance. The study emphasizes the crucial role of the BOD in shaping strategic decision-making, particularly in the allocation of resources. Their decisions ensure alignment with corporate goals, optimizing efficiency, and supporting long-term success in a dynamic business environment. Acting as a critical moderating factor, the board can amplify the positive relationship between debt and profitability by implementing effective debt management strategies. Nevertheless, the analysis also uncovers a nuanced dynamic within Indonesia's energy sector. While the board reinforces the advantageous effects of debt management on profitability, it does not have the same moderating influence on green finance practices. Moreover, instead of bolstering the relationship between CSR disclosures and profitability, the board's role diminishes this positive impact, suggesting a complex interplay between governance structures and sustainability-oriented practices.

The findings suggest that companies, especially those in the energy sector, should enhance transparency in green finance disclosures to support environmental sustainability. The energy sector has a direct environmental impact, including carbon emissions and natural resource usage. In addition to conservation efforts, green finance and CSR disclosures are critical for positively impacting both environmental and social landscapes. The board of directors has an central position in decision-making that supports long-term ecological sustainability and business viability. Thus, the board can actively contribute to managing environmental sustainability and social welfare.

Recommendations for companies include recognizing the equal importance of social responsibility (CSR) initiatives and the development of business operations that align with legal and regulatory standards. Companies are advised to allocate a dedicated annual budget for environmental performance and CSR initiatives and their reporting, which can increase stakeholder appeal. The government could also conduct regular evaluations and revisions of environmental and sustainability policies in line with current developments. Future research could explore alternative methods for measuring green finance disclosures to evaluate corporate environmental policy implementation more effectively and consider applications across various sectors for broader insights. Selecting appropriate techniques and analytical models is also essential to ensure data accuracy and generalizability.

Among the numerous limitations of this study is that many businesses do not report their environmental performance and CSR in line with the GRI G4 criteria. Additional limitations relate to data analysis techniques, specifically in determining the appropriate panel data model specification, such as CEM, FEM, and REM models, which were conducted using SPSS software.

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