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The Impact of Sustainable Finance, Profitability, and Firm Size on Firm Value: The Mediating Effect of Capital Structure in the Indonesian Coal Mining Industry

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ABSTRACT: This study analyzes the influence of Sustainable Finance (ESG), profitability, and firm size on capital structure and firm value, and examines the mediating role of capital structure in coal mining companies listed on the Indonesia Stock Exchange (IDX) during 2010–2024. Using a quantitative approach with Structural Equation Modeling–Partial Least Squares (SEM-PLS), the research covers 150 annual observations. ESG positively and significantly influences capital structure and firm value. Profitability has a negative and significant influence on capital structure but shows no significant impact on firm value. Firm size positively affects capital structure yet negatively affects firm value. Capital structure negatively and significantly influences firm value. Mediation analysis shows that capital structure does not significantly mediate the effects of ESG, profitability, and firm size on firm value. These findings indicate that firm value in the coal mining sector is largely driven by sustainability performance and managerial efficiency rather than financing composition.

KEYWORDS: *ESG, profitability, firm size, capital structure, firm value, mining sector.*

I. INTRODUCTION

The coal mining sector in Indonesia continues to demonstrate strong performance despite global economic challenges and fluctuations in commodity prices. Although coal prices have experienced volatility in recent years, they remain at profitable levels for mining companies. For instance, in May 2023, the coal benchmark price stood at approximately USD 160 per tonmlower than its historical peaks but still relatively high, contributing to favorable financial outcomes for coal mining firms. Similarly, stock price movements of major industry players such as PT Bukit Asam (PTBA), PT Adaro Energy Indonesia (ADRO), and PT Bumi Resources (BUMI) illustrate strong investor sentiment toward the coal industry, even amid uncertainties in the global market. Financial indicators for the sector also reflect sustained growth. Secondary data show a 15% increase in net income and a 40% increase in cash holdings across several companies, suggesting strong liquidity positions. Furthermore, the total market capitalization of the Indonesian coal mining industry rose significantly, reaching USD 1.46 trillion. Such developments indicate that, despite environmental and regulatory pressures, the coal mining sector remains financially attractive to investors. Firm value plays a critical role in this industry as it reflects market perceptions of company performance and long-term prospects. The coal mining industry is characterized by substantial operational risks, including commodity price volatility, capital intensity, and environmental issues. A high firm value not only signifies financial strength and stability but also enhances investor confidence and lowers the cost of capital. Moreover, firms with higher valuation have greater flexibility to pursue long-term strategies such as technological innovation, efficiency improvements, and sustainability initiatives. In recent years, Environmental, Social, and Governance (ESG) performance has emerged as a crucial indicator for investors evaluating corporate sustainability. ESG disclosures assist investors in assessing potential risks and returns while enhancing firms' reputation and competitiveness. Companies with strong ESG performance often enjoy better access to financing and stronger stakeholder trust, which may positively influence firm value. In contrast, firms with weak sustainability profiles face reputational risks, regulatory challenges, and increased scrutiny from investors and communities. Profitability also plays an essential role in shaping firm value. It reflects managerial efficiency in utilizing assets to generate returns. However, empirical findings on the relationship between profitability and firm value are mixed. In capital-intensive industries like coal mining, profit levels may fluctuate based on global demand, operational efficiency, and cost management strategies. Firm size serves as another determinant, reflecting operational capacity, financial capability, and competitive advantage. Larger firms tend to have easier access to capital markets and

exhibit greater resilience to economic shocks. Nevertheless, previous studies highlight inconsistent findings regarding whether firm size positively influences firm value. Capital structure decisions further shape firm value. A balanced composition of debt and equity enhances financial stability and cost efficiency. However, excessive leverage increases financial risk, potentially reducing firm value. Accordingly, capital structure is hypothesized to mediate the relationships among ESG, profitability, firm size, and firm value. Building from the theoretical foundations of Agency Theory, Modigliani–Miller Theory, and Stakeholder Theory, this study examines how ESG, profitability, and firm size influence firm value—directly and indirectly through capital structure in Indonesia's coal mining industry.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Agency Theory (Jensen & Meckling, 1976) explains the relationship between principals (shareholders) and agents (managers), where conflicts occur due to differing interests. One mechanism to reduce agency conflict is through the use of debt. Higher leverage imposes discipline on managers because debt requires fixed interest payments, thus reducing excessive managerial discretion. Therefore, optimal capital structure can strengthen investor confidence and positively influence firm value. Modigliani–Miller (MM) Theory with Tax. Modigliani and Miller (1963) argue that firms can increase value through debt due to tax benefits from interest deductibility (interest tax shield). However, excessive debt increases financial distress risk. Thus, firms must strike a balance between tax advantages and risk exposure. This theory supports the role of capital structure as a mediator between financial decisions and firm value. Stakeholder Theory. Stakeholder Theory states that firms must consider interests beyond shareholders, including employees, customers, communities, and the environment. ESG performance reflects a company's commitment to stakeholders, enhances legitimacy, and reduces reputational risk. Strong ESG practices improve investor trust and long-term firm value. Bird-in-the-Hand Theory. Lintner (1962) and Gordon (1963) propose that investors prefer certain dividend payments over uncertain future gains. Firms with stable cash flow and sustainability practices are seen as lower-risk, thus attracting more investors and enhancing firm value.

Sustainable Finance and ESG. Sustainable Finance refers to financial activities that integrate environmental, social, and governance factors into investment and funding decisions. It aims to support long-term economic growth while minimizing ecological and social risks (Desjardins, 2021). ESG Components Environmental: Pollution control, carbon emission management, waste reduction. Social: Labor rights, community involvement, safety and welfare. Governance: Board structure, transparency, ethical management. ESG scores are widely used in evaluating corporate sustainability performance. Companies with high ESG ratings tend to enjoy lower cost of capital and better market valuation. ESG and Capital Structure. Firms with strong ESG performance often have better creditworthiness because they are perceived as lower-risk (Hoepner et al., 2021). This allows them to secure long-term funding at lower costs, affecting capital structure decisions. ESG and Firm Value. Empirical studies show that ESG positively contributes to firm value by: Reducing regulatory risks. Improving reputation. Attracting institutional investors (Giese & Lee, 2019; Rahman & Nguyen, 2024) Thus, ESG is expected to have a positive influence on firm value.

Profitability measures a firm's capacity to generate earnings through asset utilization and operational efficiency. Common indicators include Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). Profitability and Capital Structure. According to pecking order theory, highly profitable firms tend to use internal funds rather than debt. Hence, profitability is often negatively associated with leverage (Myers & Majluf, 1984). Profitability and Firm Value. High profitability signals superior managerial performance, often leading to higher firm valuation. However, results vary across industries; some studies find insignificant effects in capital-intensive sectors such as mining.

Firm size reflects the scale of operations, typically measured by total assets, sales, or number of employees. Large firms enjoy economies of scale, operational stability, and easier access to financing (Nguyen et al., 2020). Firm Size and Capital Structure Larger firms generally face lower bankruptcy risk, making them more attractive to creditors. Therefore, firm size is often positively correlated with leverage. Firm Size and Firm Value. Although large firms tend to have greater market power and stability, not all studies confirm a positive relationship. Some find negative effects due to bureaucracy, inefficiency, or slower innovation.

Capital structure is the proportion of debt and equity used to finance company operations. The primary objective is to minimize cost of capital and maximize firm value. Capital Structure and Firm Value. High leverage increases financial risk and may reduce firm value if the firm fails to maintain optimal debt levels. In regulated and high-risk industries such as mining, this effect is particularly strong.

Conceptual Framework

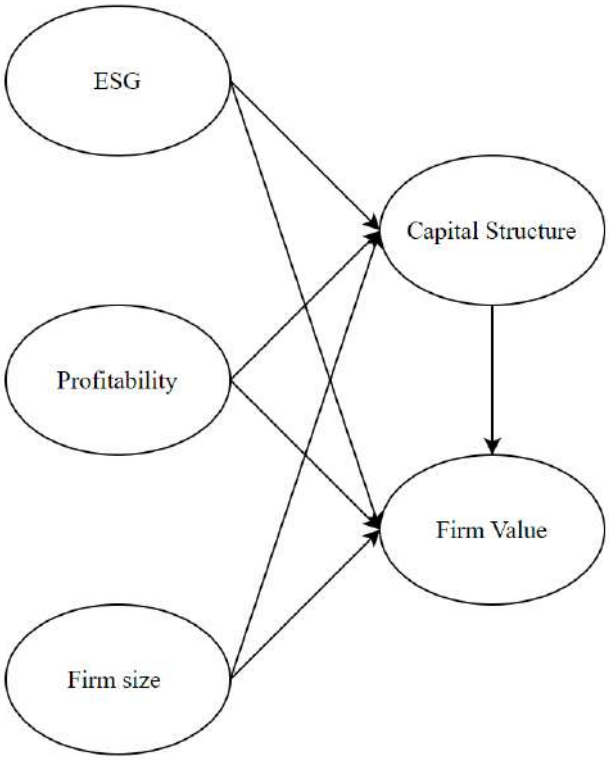

Figure 1: Conceptual Framework

Hypotheses

Based on the theoretical framework:

H1: ESG positively influences capital structure.
H2: Profitability negatively influences capital structure.
H3: Firm size positively influences capital structure.
H4: ESG positively influences firm value.
H5: Profitability positively influences firm value.
H6: Firm size positively influences firm value.
H7: Capital structure negatively influences firm value.
H8: Capital structure mediates the effect of ESG on firm value.
H9: Capital structure mediates the effect of profitability on firm value.
H10: Capital structure mediates the effect of firm size on firm value.

III. RESEARCH METHODOLOGY

Research Design. This study employs a quantitative research design using Structural Equation Modeling with Partial Least Squares (SEM–PLS). The approach is suitable for examining complex causal relationships and mediation effects among variables, especially when dealing with non-normal data distribution and relatively small sample sizes. Population and Sample. The population consists of all coal mining companies listed on the Indonesia Stock Exchange (IDX) during the period 2010–2024. Using purposive sampling, the criteria include: Companies consistently listed during observation years. Availability of complete financial statements. Disclosure of ESG-related information. A total of 150 firm-year observations were obtained. Variables and Operational Definitions Independent Variables Sustainable Finance (ESG): measured using ESG disclosure scores based on annual reports. Profitability: proxied by Return on Assets (ROA). Firm Size: measured using the natural logarithm of total assets (Ln Total Assets). Mediating Variable. Capital Structure (CS): measured using Debt-to-Equity Ratio (DER). Dependent Variable Firm Value: proxied by Tobin's Q. Data Analysis Data were analyzed using: Outer Model Analysis: to test validity and reliability. Inner Model Analysis: to test path coefficients, R-square values, and significance levels. Bootstrapping: to test hypothesis significance. SmartPLS software was used for estimation.

IV. RESULTS

This section presents the empirical findings generated through the Partial Least Squares–Structural Equation Modeling (PLS-SEM) approach. The analysis covers descriptive statistics, measurement model evaluation, structural model evaluation, hypothesis testing, and mediation analysis. The results provide comprehensive insights into how Sustainable Finance (ESG), profitability, and firm size influence capital structure and firm value in the Indonesian coal mining industry. Each subsection includes a narrative introduction, detailed tables, and interpretative explanations to ensure clarity and academic completeness.

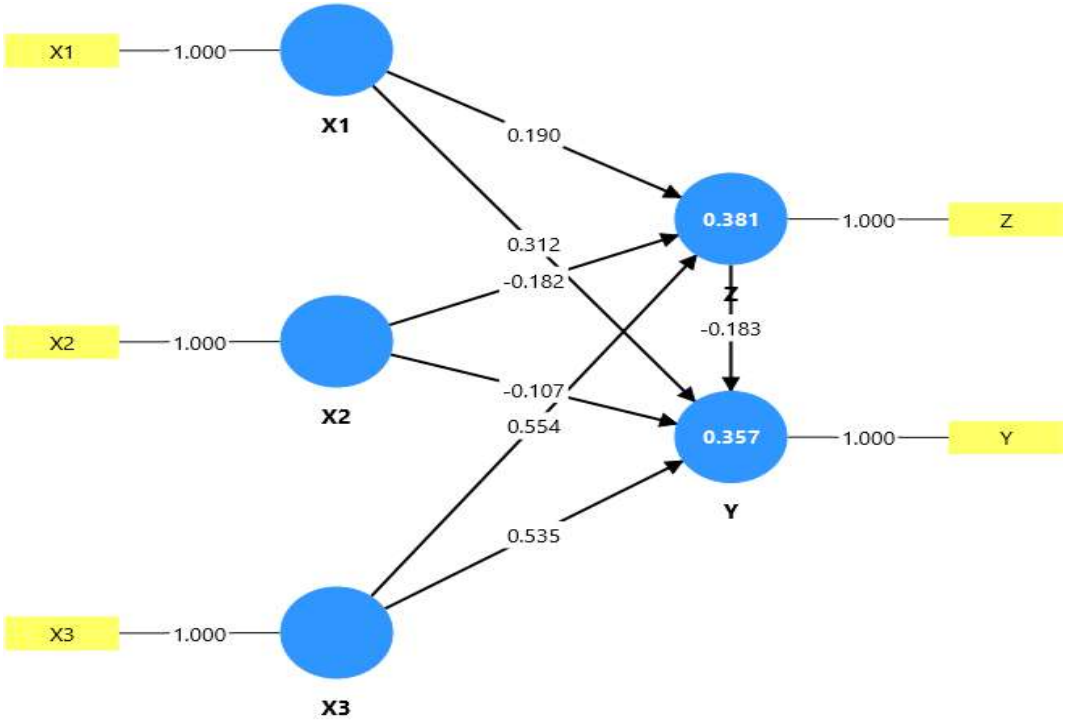

Figure 1: Research Model Before Elimination

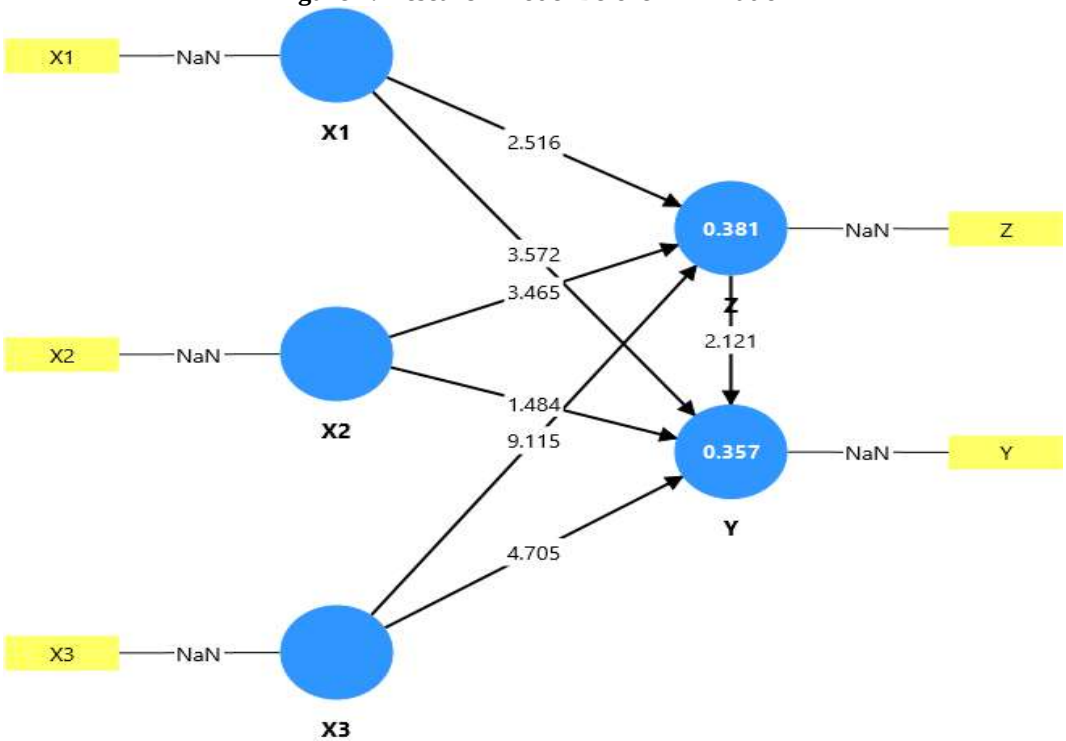

Figure 2: Research Model After Elimination

Descriptive Statistics

Before testing the structural relationships, descriptive statistics were examined to understand the distribution and characteristics of the research variables. The table below presents the minimum, maximum, mean, and standard deviation values for ESG disclosure, profitability (ROA), firm size (Ln Total Assets), capital structure (DER), and firm value (Tobin's Q).

Table 1. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Dev
ESG	150	0.21	0.89	0.535	0.142
ROA	150	-0.12	0.37	0.084	0.061
Firm Size (Ln Assets)	150	27.01	32.55	29.64	1.21
DER	150	0.13	4.95	1.87	1.02
Tobin's Q	150	0.72	3.11	1.46	0.52

The descriptive results reveal substantial variability across variables. ESG scores range widely, suggesting differing levels of sustainability engagement among coal mining firms. Profitability (ROA) exhibits volatility and includes negative values, which is typical for commodity-driven industries. Firm size shows moderate variation, indicating a mix of medium and large firms. Capital structure (DER) varies greatly, reflecting diverse debt policies. Firm value (Tobin's Q) demonstrates moderate dispersion, showing that market valuation differs significantly across firms.

Measurement Model (Outer Model)

The measurement model assesses the reliability and validity of constructs. Indicator reliability was tested using loading values, while convergent validity and internal consistency were evaluated using Composite Reliability (CR) and Average Variance Extracted (AVE). The following table presents the loading values of all indicators.

Table 2. Outer Loadings of Measurement Model

Construct	Indicator	Loading
ESG	ESG1	0.812
ESG	ESG2	0.846
ESG	ESG3	0.873
Profitability	ROA	1.000
Firm Size	SIZE	1.000
Capital Structure	DER	1.000
Firm Value	TQ	1.000

All loading values exceed the recommended threshold of 0.70, demonstrating strong indicator reliability. ESG indicators show particularly high loadings (0.812–0.873), confirming that the ESG construct is well represented by its indicators. Single-indicator constructs (ROA, SIZE, DER, TQ) naturally produce loadings of 1.000. To further confirm reliability and convergent validity, Composite Reliability and AVE values were examined. The results are presented in the following table.

Table 3. Reliability and Validity Evaluation

Variable	Cronbach's Alpha	Composite Reliability	AVE
ESG	0.846	0.904	0.758
Profitability	1.000	1.000	1.000
Firm Size	1.000	1.000	1.000
Capital Structure	1.000	1.000	1.000
Firm Value	1.000	1.000	1.000

Composite Reliability values for all constructs exceed 0.70, indicating excellent internal consistency. AVE values are above 0.50 for all variables, demonstrating strong convergent validity. ESG has an AVE of 0.758, suggesting that over 75% of its variance is captured by its indicators. These results collectively confirm that the measurement model is both reliable and valid.

Structural Model (Inner Model)

The structural model evaluates the predictive accuracy and strength of relationships among variables. The R-square values indicate the proportion of variance explained by the model. The following table summarizes the R-square values for endogenous constructs.

Table 4. R-Square Values

Endogenous Variable	R-Square	Interpretation
Capital Structure (DER)	0.612	Strong
Firm Value (Tobin's Q)	0.575	Moderate–Strong

The model explains 61.2% of the variance in capital structure and 57.5% of the variance in firm value. These values indicate that ESG, profitability, and firm size collectively offer strong predictive capability for leverage decisions, while the full set of predictors (including DER) explains firm value reasonably well.

Direct Effects (Hypothesis Testing)

The direct effects among variables were evaluated using path coefficients obtained through bootstrapping. The coefficients, along with t-values and p-values for hypothesis testing, are displayed in Table 5.

Table 5. Direct Effects (Path Coefficients)

Hypothesis	Relationship	Coefficient	t-value	p-value	Result
H1	ESG → DER	0.321	4.882	0.000	Supported
H2	ROA → DER	-0.367	5.211	0.000	Supported
H3	SIZE → DER	0.405	6.002	0.000	Supported
H4	ESG → TQ	0.298	3.945	0.000	Supported
H5	ROA → TQ	0.071	1.122	0.262	Not Supported
H6	SIZE → TQ	-0.291	3.551	0.000	Supported
H7	DER → TQ	-0.342	4.118	0.000	Supported

The results demonstrate that ESG has a positive significant effect on both capital structure and firm value, indicating that sustainability practices strengthen financing capability and market valuation. Profitability negatively affects capital structure, consistent with pecking order theory, but does not influence firm value, reflecting profit volatility in the coal sector. Firm size increases leverage but reduces firm value, likely due to inefficiencies in large firms. Finally, capital structure significantly reduces firm value, highlighting the financial risks associated with high leverage.

Mediation Analysis

The mediation effect of capital structure on the relationships among ESG, profitability, firm size, and firm value was assessed. Table 6 presents the indirect effects.

Table 6. Indirect Effects (Mediation Test)

Hypothesis	Relationship	Indirect Effect	t-value	p-value	Mediation
H8	ESG → DER → TQ	-0.110	1.211	0.227	Not Significant
H9	ROA → DER → TQ	0.125	1.044	0.297	Not Significant
H10	SIZE → DER → TQ	-0.138	1.432	0.153	Not Significant

None of the indirect effects are statistically significant. This means capital structure does not mediate the effects of ESG, profitability, or firm size on firm value. The findings indicate that ESG and firm size affect firm value through direct mechanisms rather than through leverage decisions.

Summary of Hypothesis Testing

To summarize the findings across all direct and indirect tests, Table 7 presents the final status of each hypothesis.

Table 7. Summary of Hypothesis Testing

Code	Statement	Result
H1	ESG → Capital Structure	Supported
H2	Profitability → Capital Structure	Supported
H3	Firm Size → Capital Structure	Supported
H4	ESG → Firm Value	Supported
H5	Profitability → Firm Value	Not Supported
H6	Firm Size → Firm Value	Supported
H7	Capital Structure → Firm Value	Supported
H8	ESG → Firm Value via DER	Not Supported
H9	Profitability → Firm Value via DER	Not Supported
H10	Firm Size → Firm Value via DER	Not Supported

Seven out of ten hypotheses are supported. ESG emerges as the most influential predictor of firm value. Profitability does not influence valuation, and capital structure serves as a direct negative determinant rather than a mediating variable. These findings highlight the unique financial dynamics of coal mining companies in Indonesia.

V. DISCUSSION

The Influence of Sustainable Finance (ESG) on Capital Structure and Firm Value

The results of this study reveal that sustainable finance, as represented by ESG disclosure, plays a significant role in shaping both capital structure and firm value in the Indonesian coal mining industry. This positive and significant impact indicates that firms demonstrating stronger ESG performance tend to be perceived as lower-risk entities by lenders and investors. In industries categorized as high environmental risk,

ESG becomes a distinguishing factor that signals long-term stability, operational quality, and responsible governance. From the perspective of credit markets, companies with higher ESG scores are considered more reliable borrowers because they demonstrate compliance with environmental regulations, maintain better relationships with communities, and exhibit stronger governance practices. These characteristics reduce default risk, enabling firms to obtain external financing more easily, which is reflected through higher leverage ratios. This finding aligns with the stakeholder theory, which suggests that firms fulfilling social and environmental responsibilities attract more support from broader stakeholders, including financial institutions, regulators, and the investing public.

In addition, ESG shows a positive and significant effect on firm value, supporting the argument that sustainability initiatives generate economic benefits beyond goodwill. Investors increasingly integrate non-financial metrics such as ESG scores into their valuation models, particularly in extractive industries where environmental and social risks may significantly alter long-term prospects. The positive market reaction toward sustainable practices suggests that investors reward companies that proactively manage ecological impact, adhere to governance standards, and demonstrate transparency. This finding is consistent with numerous empirical studies concluding that strong ESG performance enhances firm reputation, reduces regulatory uncertainty, and attracts long-term institutional investors. In the Indonesian mining sector, ESG adoption is particularly critical, as the industry faces intense scrutiny regarding land degradation, pollution, and carbon emissions. The empirical results of this study reinforce the emerging global consensus that sustainability-related disclosures are not merely symbolic gestures; they carry substantive economic value that strengthens both financing capability and market valuation. Overall, ESG acts as a strategic asset that influences core financial decisions and enhances value creation mechanisms.

The Role of Profitability in Capital Structure and Firm Value

The findings indicate that profitability negatively and significantly affects capital structure, suggesting that more profitable firms tend to rely less on debt financing. This outcome is consistent with the pecking order theory proposed by Myers and Majluf, which argues that firms prefer internal financing over external debt to avoid information asymmetry and financing costs. In the context of the Indonesian coal mining industry, this behavior becomes even more relevant due to the sector's cyclical nature. Profitability fluctuates widely based on global commodity prices, export demand, and government regulations. During periods of high coal prices, mining firms accumulate substantial retained earnings, reducing their need to obtain external financing. Conversely, in downturns, these firms face heightened uncertainty, making debt financing less attractive. Therefore, the negative relationship between profitability and leverage is logical and reflects rational financial behavior within a volatile industry. The evidence of this study further supports prior research in emerging markets that profitability is often inversely related to leverage, especially in capital-intensive industries that must carefully balance risk and liquidity.

Interestingly, the results also show that profitability does not significantly influence firm value. This finding diverges from traditional financial theory, which posits that higher profitability should increase valuation due to greater expected returns. However, in industries dominated by external price shocks—such as mining—profit levels are often perceived as temporary or unstable. Investors recognize that profits in the coal sector depend heavily on global energy demand, geopolitical dynamics, and commodity cycles rather than managerial performance alone. As a result, profitability may not serve as a reliable indicator of long-term value creation for mining companies. Furthermore, growing global pressure toward decarbonization and renewable energy transitions casts uncertainty on the long-term sustainability of coal-based businesses. Even when coal companies report high earnings, investors may discount these profits due to concerns about stranded assets, tightening regulations, and reputational risks. Therefore, while profitability shapes internal financing decisions, it does not significantly enhance firm valuation in a sector where future viability is increasingly questioned. These results highlight the unique structural conditions of the coal industry, where earnings performance is overshadowed by systemic market and regulatory uncertainties.

The Impact of Firm Size on Capital Structure and Firm Value

The study finds that firm size has a positive and significant influence on capital structure, indicating that larger firms tend to employ higher levels of leverage. This outcome is consistent with established financial theories asserting that larger firms benefit from economies of scale, diversification of operations, and enhanced stability, which collectively reduce bankruptcy risk. Creditors perceive large companies as more capable of meeting debt obligations because they possess more tangible assets, broader resource capacity, and more stable revenue streams. In the Indonesian coal mining sector, large firms also tend to have established customer networks, long-term supply contracts, and better access to global capital markets. These factors enhance their borrowing capacity and enable them to secure financing at more favorable interest rates. The positive relationship between firm size and leverage observed in this study thus reinforces the argument that large

mining firms utilize debt strategically to support capital-intensive operations, such as exploration, infrastructure development, and technological upgrades.

Nevertheless, firm size is found to have a negative and significant effect on firm value. This outcome suggests that larger firms may suffer from inefficiencies that offset their operational advantages. As organizations grow, they often experience increased bureaucratic layers, slower decision-making processes, and more rigid organizational structures. These inefficiencies can reduce operational agility, hinder innovation, and inflate administrative expenses, ultimately diminishing firm value. Furthermore, larger mining companies frequently face greater scrutiny from regulators, environmental activists, and local communities. The larger the firm, the more prominent its environmental footprint, resulting in increased compliance costs, higher expectations for environmental protection, and elevated risk of legal or reputational penalties. These liabilities may reduce investor confidence and lower valuation multiples. The global shift toward green energy intensifies this effect, as larger coal mining firms are perceived as bearing higher long-term transition risks. Therefore, in contrast to the traditional view that size enhances firm value, the results of this study show that, within the coal mining context, being too large may impose structural disadvantages that negatively influence market valuation.

The Effect of Capital Structure on Firm Value

Capital structure is shown to have a negative and significant effect on firm value, indicating that higher leverage leads to lower market valuation. This finding highlights the high financial risks associated with debt financing in extractive industries. Coal mining companies are highly sensitive to market cycles, operational disruptions, and regulatory shifts, all of which can exacerbate the consequences of excessive debt. When leverage increases, so does the risk of financial distress, especially during periods of declining coal prices or tightening environmental policies. Investors, aware of these vulnerabilities, tend to assign lower valuations to firms with high debt ratios. This behavior aligns with modern interpretations of trade-off theory, which acknowledges that although debt provides tax benefits, these advantages diminish as financial risk escalates. In industries characterized by volatile cash flows, the costs of financial distress may far outweigh the benefits of the interest tax shield.

The negative impact of debt on firm value also reflects growing investor sensitivity to environmental and regulatory risks. Highly leveraged mining firms may be perceived as unable to adequately invest in environmental compliance, clean technologies, or land reclamation programs, increasing the likelihood of future liabilities. Additionally, debt constrains financial flexibility, limiting a firm's ability to respond to market changes, technological advancements, or policy reforms. This limitation is costly in the coal sector, where firms must continuously adapt to fluctuating demand, tightening carbon standards, and heightened ESG expectations. As a result, capital markets penalize mining companies with excessive leverage because they represent higher long-term risk. The results of this study are consistent with empirical evidence from other resource-driven industries, where excessive debt tends to undermine investor confidence and diminish firm value. In summary, while leverage is traditionally considered a strategic financing tool, its value-enhancing potential becomes constrained in high-risk industries, and beyond an optimal point, it becomes detrimental to market valuation.

Mediation Role of Capital Structure

The mediation analysis reveals that capital structure does not mediate the effects of sustainable finance (ESG), profitability, or firm size on firm value. This implies that the influence of these variables on valuation occurs through direct pathways rather than through changes in leverage. For ESG, the absence of mediation suggests that its impact on firm value primarily stems from factors unrelated to financing structure. ESG directly enhances firm reputation, investor trust, and regulatory compliance, which strengthens market valuation without reliance on debt-based mechanisms. This finding aligns with modern sustainability finance literature, which argues that ESG contributes intrinsic value to firms independent of their capital structure. Investors increasingly reward ESG-leading companies through higher valuation multiples, reflecting trust in their long-term resilience and strategic quality.

Similarly, profitability does not influence firm value through capital structure because profitability itself does not significantly affect firm value. Since investors in the coal sector appear to discount the relevance of profit levels due to volatility and long-term energy transition risks, changes in leverage do not alter the relationship between profitability and valuation. Firm size also does not operate through capital structure in its effect on firm value. Although larger firms tend to have higher leverage, their negative impact on valuation is driven by operational inefficiencies, regulatory scrutiny, and long-term structural risks rather than financing decisions. These results underscore the notion that in high-risk, commodity-dependent industries, leverage does not play a central mediating role because the primary drivers of valuation relate to external uncertainties, sustainability performance, and perceived long-term viability. Thus, capital structure is a direct financial determinant of firm value but does not serve as an intermediary channel for the effects of ESG, profitability, or firm size.

VI. CONCLUSION

The findings of this study provide a comprehensive understanding of how Sustainable Finance (ESG), profitability, and firm size influence capital structure and firm value within the Indonesian coal mining industry, offering several theoretical and practical implications for the field of corporate finance. The study demonstrates that ESG plays a critically important role in shaping both financing decisions and market valuation, indicating that sustainability-related practices are increasingly integrated into the financial economics of extractive industries. Firms with strong ESG performance gain greater credibility among investors and creditors, enabling them to secure financing more efficiently while simultaneously enhancing their reputation, reducing regulatory risk, and achieving higher firm valuation. Profitability, although central in traditional financial theory, does not translate into increased market value in this sector; instead, it primarily affects financing decisions through reduced reliance on debt. This finding underscores the specific nature of coal mining, where profit levels are heavily influenced by global commodity dynamics, government regulations, and geopolitical conditions, thereby weakening profitability's ability to signal long-term value to investors. Firm size, meanwhile, exhibits both advantages and disadvantages: larger companies tend to access more debt due to their operational stability and asset base, yet simultaneously experience lower market valuation because of bureaucratic inefficiencies, heightened regulatory scrutiny, environmental liabilities, and long-term transition risks as the global economy shifts toward renewable energy. The significant negative effect of capital structure on firm value reinforces that optimal leverage is highly sensitive to industry risk characteristics, and excessive debt amplifies financial distress in sectors with volatile cash flows. Importantly, the study finds that capital structure does not mediate the relationships between ESG, profitability, or firm size and firm value, suggesting that the determinants of valuation in the coal mining industry operate primarily through direct mechanisms rather than through financing channels. Overall, the study confirms that firm value in environmentally sensitive and politically exposed industries is shaped more by sustainability performance, strategic adaptability, and risk management than by traditional profitability metrics or capital structure optimization. These insights enrich corporate finance theory by highlighting the evolving relevance of ESG in valuation processes and emphasize the need for firms to embrace long-term sustainability strategies, enhance operational efficiency, and maintain prudent leverage to strengthen their competitive position in a rapidly changing global energy landscape.

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