

CAPITAL STRUCTURE AS A STRATEGIC MODERATOR OF THE FINANCIAL PERFORMANCE–FIRM VALUE RELATIONSHIP: EVIDENCE FROM IDX-IC EXTRACTIVE ENERGY COMPANIES IN INDONESIA

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Abstract: *This study investigates the effect of financial performance on firm value, with capital structure serving as a moderating variable, in mining and extractive energy companies classified under the Indonesia Stock Exchange Industrial Classification (IDX-IC) during the 2020–2024 period. The research aims to address the existing literature gap regarding the moderating role of capital structure in the relationship between financial performance and firm value within capital-intensive industries characterized by commodity price volatility and global economic uncertainty. A quantitative research approach was employed using a purposive sampling technique, resulting in a final sample of 16 companies or 80 firm-year observations. The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25, including classical assumption tests, t-test, F-test, coefficient of determination (Adjusted R²), and Moderated Regression Analysis (MRA). The findings reveal that financial performance, measured by Return on Assets (ROA), has a positive and significant effect on firm value, measured by Tobin's Q. Furthermore, capital structure, proxied by the Debt-to-Equity Ratio (DER), significantly strengthens the relationship between financial performance and firm value. These findings indicate that an optimal capital structure enhances the positive impact of profitability on firm value by improving investor confidence in the company's financial performance and financing decisions.*

Keyword: *Capital structure; Financial performance; Firm value;*

INTRODUCTION

Enterprise value is an indicator that reflects investors' perceptions of a company's ability to create economic value and maintain business sustainability. From the perspective of Signaling Theory, information regarding financial performance serves as a signal that investors use to assess a company's prospects; thus, companies with strong performance tend to receive a positive response from the market in the form of rising stock prices and enterprise value (Spence, 1973; Ross, 1977; Nguyen et al., 2022; Pham & Thanh, 2024).

Therefore, increasing firm values is management's primary objective, as it is directly linked to shareholder welfare.

According to Agency Theory, a firm value is influenced by the quality of management's decisions in managing resources and determining financial policies. Decisions that are not aligned with shareholders' interests can increase agency costs and reduce investor confidence (Jensen & Meckling, 1976; Harjoto & Wang, 2022). Consequently, companies are required not only to improve profitability but also to implement financing policies that maximize firm values.

In the mining and extractive energy sector, firm values creation is more complex due to the industry's capital-intensive, high-risk nature and its strong susceptibility to fluctuations in global commodity prices. According to Resource Dependence Theory, dependence on natural resources, energy policies, and geopolitical dynamics causes firm values in this sector to be more volatile than in other sectors (Pfeffer & Salancik, 1978; Buallay, 2022). During the 2020-2024 period, the COVID-19 pandemic, the Russia-Ukraine conflict, and the normalization of energy prices brought about significant changes in the profitability of mining companies. Although profits increased when commodity prices surged, these increases were not always accompanied by an increase in firm values, as investors also considered the risks associated with profit sustainability and the companies' leverage ratios (World Bank, 2024; IEA, 2024).

One factor believed to influence firm value is financial performance, which reflects a firm's ability to generate profits through the efficient use of assets. According to Signaling Theory, improved financial performance sends a positive signal regarding the firm's prospects, thereby driving an increase in firm value. However, previous research has yielded inconsistent findings. Some studies have shown that financial performance has a positive effect on firm value, while others have found that this effect is not significant, particularly in industries heavily influenced by commodity price fluctuations (Nguyen et al., 2022; Zhang & Chen, 2023; Pham & Thanh, 2024).

This inconsistency indicates the presence of other factors influencing the relationship between profitability and firm value, one of which is capital structure. According to the Trade-off Theory, the use of debt at an optimal level can increase firm value through the tax shield benefit, whereas excessive debt increases the risk of financial distress and reduces investor confidence. Meanwhile, the Pecking Order Theory explains that more

profitable companies tend to prioritize internal financing over debt (Myers & Majluf, 1984; Widyakto et al., 2024). In the mining industry, which requires large investments, the level of leverage is believed to influence how investors respond to information about a company's profitability.

A number of studies indicate that capital structure can amplify the impact of profitability on firm value because the use of debt at an optimal level enhances financing efficiency, provides a tax shield, and reinforces positive signals about the firm's performance to investors (Gautama et al., 2024; Dewi et al., 2025). Conversely, other studies have found that high leverage actually weakens the impact of profitability on firm value because it increases financial distress and creates negative investor perceptions regarding the sustainability of firm performance (Januar et al., 2025; Tripathi et al., 2024). Furthermore, there is a theoretical gap because most studies rely solely on Signaling Theory to explain the relationship between profitability and firm value, while Trade-off Theory and Pecking Order Theory are more frequently used to explain the direct effects of capital structure. The integration of these three theories as a foundation for explaining the moderating role of capital structure remains relatively limited.

Given these circumstances, this study offers a novel contribution by treating capital structure as a moderating variable in the relationship between financial performance and firm value. Unlike previous studies, which generally treat capital structure as an independent variable (Evelyne et al., 2024; Widyakto et al., 2024; Liong & Uluputty, 2024; Haerunnisah et al., 2025), this study examines whether the level of leverage strengthens or weakens the effect of profitability on firm value. Furthermore, the study focuses on companies in the mining and extractive energy sectors listed on the IDX-IC (oil & gas production, coal production, oil & gas drilling, and oil, gas & coal equipment and services) during the 2020-2024 period, with the aim of providing more relevant empirical evidence regarding post-pandemic industry dynamics and commodity price volatility.

Hypotheses in this study:

H1: Financial performance has a positive effect on firm value

H2: Capital structure moderates the effect of financial performance on firm value

METODE

This study employs a quantitative approach with an associative research design, aiming to analyze the causal relationship between independent variables, dependent variables, and moderating variables within an empirical model (Sugiyono, 2019; Sekaran & Bougie, 2020). The data used are secondary data sourced from companies' annual reports and audited financial statements, obtained through the official website of the Indonesia Stock Exchange (IDX) and the official websites of the respective companies for the period 2020-2024. All data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25, applying Moderated Regression Analysis (MRA) to test the moderating role of capital structure on the relationship between financial performance and firm value (Ghozali, 2021).

The study population included all energy sector companies listed on the Indonesia Stock Exchange based on the 2024 Indonesia Stock Exchange Industrial Classification (IDX-IC). The sample was selected using purposive sampling based on specific criteria. Out of a total of 92 energy sector companies, 54 were selected from the Oil & Gas Production, Coal Production, Oil & Gas Drilling, and Oil, Gas & Coal Equipment & Services subsectors. Next, companies that were consistently listed on the IDX during the 2020–2024 period and were not delisted were selected, resulting in a sample of 36 companies. The subsequent stage considered only companies that reported positive profits during the observation period, reducing the sample size to 22 companies. After adjusting for the availability of data for all research variables, 16 companies were selected as the final sample. With a five-year observation period, the total data analyzed amounted to 80 observations.

This study uses firm value as the dependent variable, proxied by Tobin's Q, as this indicator is able to represent the market's assessment of firm value more comprehensively than accounting-based ratios (Tobin, 1969; Chung & Pruitt, 1994; Brigham & Houston, 2021). The independent variable is financial performance, measured using Return on Assets (ROA) as an indicator of a company's ability to generate profits through the utilization of total assets (Brigham & Houston, 2021; Ross et al., 2022). The moderating variable is capital structure, proxied by the Debt to Equity Ratio (DER) to describe the proportion of a company's funding derived from debt relative to equity. The use of the DER is based on its ability to reflect a company's leverage level in accordance with the

concepts of the Trade-off Theory and the Pecking Order Theory (Myers & Majluf, 1984; Brigham & Houston, 2021).

Before hypothesis testing was conducted, the research model was first tested using classical assumption tests, which includes a normality test using the Kolmogorov–Smirnov test, a multicollinearity test based on the Tolerance and Variance Inflation Factor (VIF) values, a heteroscedasticity test using the Glejser test, and an autocorrelation test using the Durbin–Watson approach. The regression model was deemed suitable for analysis if all classical assumptions were met in accordance with the guidelines outlined by (Ghozali, 2021).

The analysis began with descriptive statistics to characterize the research data, followed by Pearson’s correlation analysis to identify the strength of relationships among variables. Next, the coefficient of determination (Adjusted R^2) was tested to measure the model’s ability to explain variations in firm value, the F-test was conducted to determine the simultaneous effects of the variables, and the t-test was used to examine the partial effects of each variable on firm value at a 5% significance level.

Moderation effect testing was conducted using Moderated Regression Analysis (MRA) by forming an interaction term between financial performance and capital structure. This model was used to evaluate whether capital structure can strengthen or weaken the effect of financial performance on firm value.

The presence of a moderating effect is determined based on the significance of the interaction coefficient (β_3). A significant interaction coefficient indicates that capital structure can moderate the relationship between financial performance and firm value, either by strengthening or weakening that effect. Conversely, if the interaction coefficient is not significant, then capital structure does not act as a moderating variable in the research model.

RESULTS AND DISCUSSION

Results

Table 1. Results of Descriptive Statistics

	Min	Max	Average	Std. Deviation
Firm value	0.510	8.120	1.617	1.211
Financial Performance	0.840	61.26	16.31	17.17
Capital Structure	0.130	3.920	0.869	0.742

Source: 2026 data processing

Based on the descriptive statistics, the firm value variable has a minimum value of 0.510, a maximum of 8.120, a mean of 1.617, and a standard deviation of 1.211. A mean value greater than one indicates that, in general, companies in the mining and extractive energy sectors have relatively good market valuations, although the fairly wide range of values suggests differences in investor perceptions across companies. The financial performance variable has a minimum value of 0.840%, a maximum of 61.26%, a mean of 16.31%, and a standard deviation of 17.17%, indicating that companies' profitability levels are relatively good but exhibit high variation due to differences in asset management efficiency and commodity price dynamics during the 2020-2024 period. Meanwhile, the capital structure variable has a minimum value of 0.130, a maximum of 3.920, a mean of 0.869, and a standard deviation of 0.742, indicating that most companies tend to use equity rather than debt, although there are variations in financing policies among companies. Overall, the descriptive statistics reveal heterogeneity in firm value, financial performance, and capital structure. Thus, the research data are deemed adequate for testing the effect of financial performance on firm value with capital structure as a moderating variable.

Table 2. Model Fit

Evaluation Aspects	Parameter	Results	Conclusion
Classical Assumptions	Normality (Sig.)	0.200	Meets
	Multicollinearity (VIF)	1.016 – 1.024	Meets
	Heteroscedasticity (Sig.)	0.087 – 0.234	Meets
Model Fit	Adjusted R ²	0.419	moderate
	Sig. F	0.000	Model is valid

Source: Data processing 2026

The test results indicate that the research model meets all classical assumptions and is therefore suitable for regression analysis. The normality test yielded a significance value of 0.200 (>0.05), indicating that the data are normally distributed. The multicollinearity test showed that the Variance Inflation Factor (VIF) ranged from 1.016 to 1.024, which is below the 10 threshold, indicating no multicollinearity among the independent variables. Furthermore, the heteroscedasticity test using the Glejser method yielded significance values of 0.087-0.234 (>0.05), indicating that there is no heteroscedasticity. Additionally,

the Adjusted R-Square value of 0.419 indicates that the model explains 41.9% of the variation in firm value, while the remaining 58.1% is influenced by other variables outside the research model. The F-test yielded a significance value of 0.000 (<0.05), indicating that the regression model has a good simultaneous fit (goodness of fit) and can be used to test the effect of financial performance on firm value with capital structure as a moderating variable.

Table 3. Hypothesis Test Results

Test Model	β (Beta)	Sig.	Decision
Financial Performance $\rightarrow$ Firm Value	0.037	0.000	Hypothesis Accepted
Financial Performance $\times$ Capital Structure $\rightarrow$ Firm Value	0.067	0.000	Hypothesis Accepted

Source: 2026 Data Processing

The results of the hypothesis testing indicate that financial performance has a positive and significant effect on firm value, with a β coefficient of 0.037 and a p-value of 0.000 (< 0.05), thus **H1 is accepted**. These results suggest that the higher a firm's ability to generate profits from its assets, the higher its firm value as reflected in market valuation. Furthermore, the results of the interaction test between financial performance and capital structure yielded a β coefficient of 0.067 with a p-value of 0.000 (< 0.05), so **H2 is accepted**. This finding indicates that capital structure acts as a significant moderating variable in the relationship between financial performance and firm value, meaning that a firm's leverage level can influence the strength of profitability's effect on firm value growth.

Discussion

Profitability has a positive effect on firm value

The results of this study show that financial performance has a positive and significant effect on firm value in companies in the mining and extractive energy sectors listed on the IDX-IC from 2020 to 2024. These findings indicate that an increase in a company's ability to optimize its assets to generate profits will be met with a positive response from the market in the form of increased firm value. Within the framework of Signaling Theory, profitability is information that signals a company's prospects and performance quality; thus, the higher the profitability, the greater investors' confidence in

the company's ability to create value in the future (Spence, 1973; Nguyen et al., 2022; Pham & Thanh, 2024). Consequently, companies capable of maintaining high profitability tend to receive better market valuations compared to those with low profitability (Alareeni & Hamdan, 2024).

Empirically, the results of this study are closely tied to conditions in the mining and extractive energy industries during the observation period. After experiencing a slowdown, the energy sector saw a fairly strong recovery as global economic activity picked up. Rising global demand for coal and oil-particularly from Asian countries-along with disruptions to energy supplies caused by the Russia-Ukraine conflict drove a surge in commodity prices in 2021-2022. These conditions boosted the revenue and profits of mining companies, thereby improving profitability indicators and reinforcing investors' positive perceptions of the companies' prospects (World Bank, 2024; International Energy Agency, 2024). Although commodity prices began to normalize in 2023-2024, companies that were able to maintain operational efficiency continued to demonstrate stable financial performance, thereby sustaining market confidence.

This phenomenon can be observed in several sample companies, such as PT Bayan Resources Tbk (BYAN), PT Indo Tambangraya Megah Tbk (ITMG), PT Golden Energy Mines Tbk (GEMS), and PT Bukit Asam Tbk (PTBA), which successfully recorded high profitability levels during the commodity boom period. The increase in profits generated by these companies was accompanied by a rise in market valuations, indicating that investors appreciate companies capable of capitalizing on the upward momentum in commodity prices while efficiently managing their assets. This reinforces the view that profitability is one of the key indicators investors use to evaluate a company's growth prospects and its ability to create economic value in the future (Buallay, 2022; Alareeni & Hamdan, 2024).

The findings of this study are consistent with the results of research by Nguyen et al. (2022), Setiawan and Hapsari (2023), Pham and Thanh (2024), which state that profitability has a positive effect on firm value because it reflects the effectiveness of asset management and a company's ability to generate sustainable profits. However, these results differ from the studies by Chen and Mu (2021) and Zhang and Chen (2023), which concluded that the impact of profitability on firm value in commodity-based industries tends to be inconsistent. This is because investors consider not only profit levels but also

commodity price volatility, business risk, leverage levels, and the company's long-term sustainability prospects.

Based on these results, it can be understood that profitability remains a fundamental factor in the formation of firm value, particularly for companies in the mining and extractive energy sectors. A firm's ability to generate profits through the optimal utilization of assets sends a positive signal to investors regarding the quality of its performance and growth prospects, thereby driving an increase in market value. However, given the industry's characteristics-which are heavily influenced by commodity price cycles and external risks-the sustainability of a firm value growth is determined not only by high profitability but also by the company's ability to maintain financial stability, manage risks, and sustain competitiveness in the face of shifting global economic conditions.

Capital structure moderates the impact of financial performance on firm value

The research results show that capital structure can positively moderate the impact of financial performance on firm value in companies in the mining and extractive energy sectors based on the IDX-IC index for the 2020-2024 period. These findings indicate that a company's ability to generate profits will have a greater impact on increasing firm value when supported by an optimally managed capital structure. From the perspective of Trade-off Theory, the use of debt at an optimal level can increase firm value through the benefits of a tax shield without excessively increasing the risk of bankruptcy (Kraus & Litzenberger, 1973; Brigham & Houston, 2021). On the other hand, Signaling Theory explains that a combination of high profitability and appropriate financing policies serves as a positive signal regarding the quality of corporate management, thereby increasing investor confidence in the company's prospects (Spence, 1973; Ross, 1977; Pham & Thanh, 2024).

Empirically, the capital-intensive nature of the mining and extractive energy industries results in a relatively high need for long-term financing, particularly for exploration activities, reserve development, infrastructure construction, and technological modernization. Therefore, companies are not only required to generate profits but must also manage their capital structure efficiently to keep financial risk at an acceptable level. During the 2020-2024 period, rising global energy demand and higher commodity prices present opportunities for companies to achieve higher profits. However, companies that

can balance debt usage with their profit-generating capacity receive a more positive market response compared to those with excessive leverage (World Bank, 2024; International Energy Agency, 2024).

This phenomenon can be observed in several companies, such as PT Bayan Resources Tbk (BYAN), PT Bukit Asam Tbk (PTBA), and PT Indo Tambangraya Megah Tbk (ITMG), which have been able to maintain high profitability with relatively controlled leverage levels. This situation boosts investor confidence because these companies are viewed as not only capable of generating profits but also as having sound financing policies that keep financial risks in check. Conversely, companies with high debt levels tend to face a perception of greater risk, so an increase in profitability is not always accompanied by a proportional rise in the firm value.

These research findings are consistent with those of Liong and Uluputty (2024), Bui et al. (2023), Tubastuvi et al. (2024), Pham and Thanh (2024), Alareeni and Hamdan (2024), who state that an optimal capital structure can enhance the effectiveness of profitability in creating firm value through financing efficiency and increased investor confidence. However, these results differ from the studies by Zhang and Chen (2023) and Nguyen et al. (2023), which found that high leverage levels can actually weaken the impact of profitability on firm value by increasing the risk of financial distress, agency costs, and cash flow uncertainty, particularly in industries heavily influenced by commodity price volatility.

Based on these results, it can be understood that capital structure acts as a contingency factor that determines the extent to which profitability translates into an increase in firm values. High profitability does not automatically increase firm values if it is not balanced by optimal financing policies. Conversely, balanced capital structure management reinforces the positive signals derived from financial performance, thereby increasing investor confidence in the company's ability to create long-term value. These findings underscore that in the mining and extractive energy sectors, operational decisions and financing decisions are two complementary aspects in shaping firm values.

CONCLUSION

This study shows that financial performance, proxied by Return on Assets (ROA), has a positive effect on firm value, proxied by Tobin's Q, for companies in the mining and

extractive energy sectors based on the Indonesia Stock Exchange Industrial Classification (IDX-IC) for the period 2020-2024. These findings indicate that the higher a company's ability to generate profits through the utilization of its assets, the higher investors' valuation of the company. Furthermore, this study demonstrates that capital structure proxied by the Debt-to-Equity Ratio (DER) positively moderates the relationship between financial performance and firm value. This suggests that optimal capital structure management can strengthen the impact of profitability on firm value by enhancing investor confidence in the firm's financing policies.

This study has limitations because it covers only companies in the mining and extractive energy sectors listed on the IDX-IC, uses ROA as the sole proxy for financial performance and DER as the proxy for capital structure, and restricts the observation period to 2020–2024. Therefore, future research is recommended to expand the sector coverage and observation period, use a wider variety of financial performance and capital structure proxies-such as ROE, NPM, DAR, or Long-Term Debt to Equity Ratio (LDER), and to include other variables, such as firm size, corporate governance, and Environmental, Social, and Governance (ESG) factors, in order to provide a more comprehensive understanding of the factors influencing firm value.

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