PROFITABILITY AS AN INTERVENING VARIABLE IN THE EFFECT OF CAPITAL STRUCTURE AND FIRM SIZE ON FIRM VALUE

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Abstract

This study aims to examine the effect of capital structure and firm size on firm value, with profitability serving as an intervening variable. The research is motivated by inconsistencies in previous findings regarding the relationship between capital structure, firm size, and firm value. Using a quantitative approach and secondary data from selected companies, the analysis was conducted through path analysis to evaluate both direct and indirect effects. The results indicate that capital structure and firm size significantly influence firm value, both directly and indirectly through profitability. Profitability is found to play a mediating role, reinforcing the importance of internal performance metrics in enhancing firm value.

Keywords: Capital Structure, Firm Size, Profitability, Firm Value, Intervening Variable

INTRODUCTION

Firm value reflects investors' perceptions of a company's performance and future prospects, making it a primary goal to be maximized by management. In the mining sector, which plays a strategic role in Indonesia's economy, managing capital structure is crucial due to commodity price volatility and operational dynamics. An optimal capital structure can enhance capital cost efficiency and send positive signals to investors (Sartono, 2010, in Rahmawati et al., 2015), although there are differing views that capital structure has no effect on firm value (Hanafi, 2016, in Robiyanto et al., 2020; Mahendra et al, 2025). Firm size is also believed to influence firm value. Company size is often associated with the company's ability to withstand crises and gain access to funding. Larger firms tend to have easier access to external funding sources, stronger bargaining power in the market, and better operational efficiency. These factors create a positive perception of the company's sustainability and stability, thus increasing firm value. Novari & Lestari (2016) revealed that hypothesis testing results proved that firm size has a positive and significant effect on firm value. However, a study by Astuti et al. (2017) found that firm size does not affect firm value.

Nevertheless, the impact of these variables on firm value is not always straightforward. In many instances, profitability an essential indicator of financial performance serves as a mediating (intervening) factor. Profitability represents a company's capacity to generate earnings from its operations. Ideally, an efficient capital structure, larger firm size, and strong growth potential should lead to higher profitability. In turn, increased profitability signals operational efficiency and positive future prospects to investors, thereby enhancing firm value. Sartono (2017) demonstrated that both capital structure and profitability significantly affect firm value. Similarly, Darmawan et al. (2020) highlighted that firm size and growth influence profitability, which subsequently has an effect on firm value. These findings indicate that the relationship among these variables may not be purely direct but could also be mediated by profitability. Given the central role of profitability in linking capital structure, firm size, and firm growth to firm value, this study seeks to examine the effects of those three factors on firm value with profitability as a mediating variable specifically within mining companies listed on the Indonesia Stock Exchange. The study aims to contribute to financial theory and provide practical insights for corporate management and investors in formulating strategic decisions.

REVIEW OF LITERATURE

Firm Value

Firm value reflects investors' perception of a company's level of success, often represented by its market share price. According to Brigham & Houston (2019), firm value indicates the company's performance and serves as a key factor in investment decision-making. It can be measured through several indicators, one of which is Tobin's Q comparing a firm's market value with the book value of its assets. A high firm value signifies positive prospects, efficient resource management, and strong competitiveness in the market. Internal factors such as capital structure, profitability, firm size, and growth can directly or indirectly influence this value.

Capital Structure

Capital structure refers to the proportion of debt and equity used to finance a company's assets. According to Modigliani and Miller (1963) in Sibarani (2020), in a perfect

capital market, capital structure does not affect firm value. However, in practice, the use of debt can offer tax advantages (tax shield) while also increasing financial risk (financial distress). An optimal capital structure can enhance shareholder returns and firm value. However, an excessively high debt ratio can lead to bankruptcy risk. The study by Jensen and Meckling (1976) in Sujoko (2007) argues that capital structure influences firm value through agency conflicts between management and shareholders or creditors.

Firm Size

Firm size reflects the scale of operations and the resources possessed by a company. A larger firm size indicates stability, risk diversification capability, and better access to funding sources. According to Chen Li-Ju & Chen Shun-Yu (2011), larger firms tend to manage costs more efficiently, potentially enhancing profitability and firm value. Firm size is generally measured by total assets, total sales, or market capitalization. Myers (2001) also adds that large firms are more capable of accessing capital markets and financing their business growth efficiently.

Profitability

Profitability is a company's ability to generate profits from its operational activities. Common measures of profitability include Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). According to Horne & Wachowicz Jr. (2009), profitability plays an important role as an indicator of managerial performance and investment attractiveness. Profitability can also act as an intervening variable in the relationship between capital structure, firm size, and firm growth on firm value. For instance, an efficient capital structure can improve profitability, which in turn enhances firm value. Similarly, large companies with strong growth tend to generate higher profits, increasing their attractiveness to investors.

Research Hypotheses

The Effect of Capital Structure on Firm Value

Capital structure refers to the proportion of debt and equity used to finance a company's operational activities. Selecting the appropriate capital structure is a strategic financial management decision, as it affects risk, cost of capital, and return levels all of which contribute to firm value. If debt is used optimally and productively, it can reduce the company's overall cost of capital and increase net income. This sends a positive signal to investors and enhances firm value. According to Sartono (2010) in T. C. Putri & Puspitasari (2022), the right capital structure will improve company performance and eventually increase firm value. Putri & Suaryana (2016) in E. W. M. Putri (2019) also show that capital structure significantly influences firm value. Purnamasari (2017) revealed that optimally used debt provides leverage that can enhance firm value in the eyes of investors.

H1: Capital structure affects firm value

The Effect of Firm Size on Firm Value

Firm size is commonly measured based on total assets, total sales, or market capitalization. It is often seen as an indicator of a company's economic strength, competitiveness, and stability. Firm size reflects financial strength, where larger companies possess more assets to support operations and expansion. Large companies tend to have easier access to financing from banks or capital markets. The larger the company, the greater its ability to diversify risks across a broader range of products or markets. Larger firms are generally better known and more trusted by the public, which reflects a higher market-

perceived value. Chen Li-Ju & Chen Shun-Yu (2011) state that firm size has a significantly positive effect on firm value because large companies tend to be more stable and efficient. Setiawan et al. (2022) found that firm size increases firm value in Indonesian property and real estate companies. Permatasari & Lestari (2024) note that larger firms tend to have higher market valuations due to investor perception of their financial strength.

H2: Firm size affects firm value

The Effect of Capital Structure on Firm Value Through Profitability

An efficiently managed capital structure can improve a company's profitability. High profitability then becomes a key criterion for investors in evaluating firm value. Therefore, profitability acts as an important channel bridging the relationship between capital structure and firm value. The study by Mardiyati et al. (2012) shows that profitability significantly mediates the relationship between capital structure and firm value. Sartono (2010) in Rismayanti Mira et al. (2020) asserts that well-managed debt can increase profits, ultimately enhancing firm value. A'yun et al. (2022) also found that profitability significantly mediates the effect of capital structure and firm size on firm value.

H3: Profitability mediates the effect of capital structure on firm value

The Effect of Firm Size on Firm Value Through Profitability

Large firm size may increase the ability to generate profits (profitability), and high profit levels will enhance a company's market value. Hence, profitability serves as an intervening variable in the relationship between firm size and firm value. Pratama & Wiksuana (2016) found that firm size affects profitability. Pratiwi & Darmayanti (2016) in Rimawan et al. (2023) found that profitability significantly mediates the relationship between firm size and firm value. Chen Li-Ju & Chen Shun-Yu (2011) discovered that larger firms tend to generate higher profits and are valued more by the market.

H4: Profitability mediates the effect of firm size on firm value

RESEARCH METHOD

Population and Sample

The population in this study consists of all companies listed in the LQ45 Index on the Indonesia Stock Exchange (IDX) for the period 2019–2023. The sample was selected using a purposive sampling method, which involves selecting samples based on specific criteria to meet the requirements of this research. The criteria set by the researcher for selecting the sample were companies that were consistently included in the LQ45 Index from 2019 to 2023. Based on these criteria, a total of 160 samples were obtained.

Table 1.
Purposive Sampling

No.	Criteria	Total
1.	Companies listed in the LQ45 Index on the Indonesia Stock Exchange (IDX) in 2019–2023	45
2.	Companies consistently included in the LQ45 Index on the IDX from 2019 to 2023	32
3.	LQ45 Index companies eligible as research samples	(32)
4.	Total research data (32 companies × 5 years)	160

Source: Processed secondary data

Variables and Operational Definitions
Dependent Variable
Firm Value

Firm value is measured using Tobin's Q. According to Smithers and Wright (2000), Tobin's Q compares the ratio of a company's market value of equity to the book value of its equity, using the following formula:

$$Q = \frac{(EMV + D)}{(EBV + D)}$$

Where:

- **Q** = Firm Value
- **D** = Book value of total debt
- **EMV** = Equity Market Value
- **EBV** = Equity Book Value

EMV (Equity Market Value) is calculated by multiplying the closing stock price by the number of outstanding shares.
EBV (Equity Book Value) is obtained by subtracting total liabilities from total assets.
Independent Variables
Capital Structure
Capital Structure (X1) is measured using the following indicator:
Capital Structure
Capital Structure is calculated using the formula:
Capital Structure = Total Debt / Total Equity
Firm Size (Size)
Firm Size (X2) is measured using the following indicator:
Size = Natural Logarithm (Ln) of Total Assets
Intervening Variable

Profitability
Profitability is measured using the following indicator:
Z = Return on Equity (ROE)

This ratio indicates the level of return generated by management on the capital invested by shareholders, after deducting obligations to investors. The formula is as follows:

$$ROE = \frac{Net\ Income}{Total\ Equitas}$$

The conceptual framework is illustrated in Figure 1

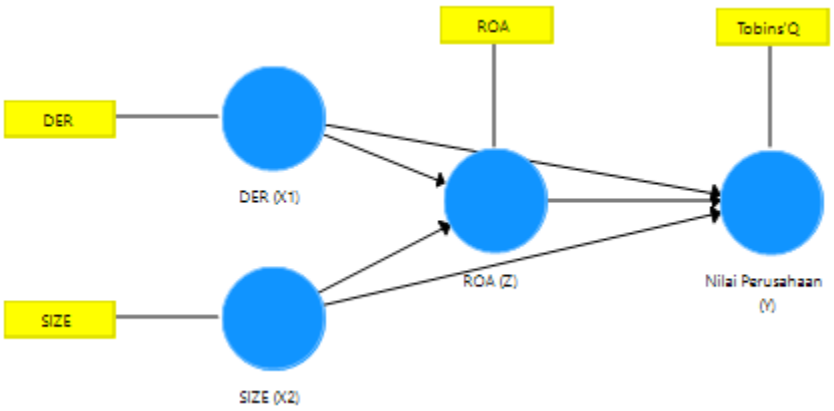

Figure 1. Conceptual Framework

RESULTS AND DISCUSSION

Results and Analysis

A total of 160 secondary data points were collected. The analysis was conducted using SmartPLS 3.0 software, considering the complexity of the model, limitations of secondary data, and the need for construct validity and reliability analysis, as highlighted by Rosli (2024). According to Alawag (2025), a Cronbach's Alpha value with a threshold of 0.9 and 0.8 indicates strong internal consistency. Values between 0.8 and 0.7 are considered acceptable, while values ranging from 0.7 to 0.6 indicate questionable reliability. Meanwhile, values below 0.6 are regarded as poor in terms of consistency.

Table 1.
Loading Factor, Cronbach's Alpha, rho_A, Composite Reliability (CR), Average Variance Extracted (AVE)

Variable	Loading Factor	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
DER (X1)	1.000	1.000	1.000	1.000	1.000
Firm Value (Y)	1.000	1.000	1.000	1.000	1.000
ROA (Z)	1.000	1.000	1.000	1.000	1.000
SIZE (X2)	1.000	1.000	1.000	1.000	1.000

In this study, the results of the construct validity and reliability tests show maximum values of 1.000 for all variable parameters in the proposed model. This indicates no issues with convergent validity or internal reliability. However, since all constructs consist of only a single indicator, these values are the result of automatic technical calculations rather than empirical validity indicators. Therefore, these findings should be interpreted with caution, and it is recommended to use more than one indicator to enhance the construct measurement strength in future research.

Table 2.
R Square and Q Predict

Variable	R^2	Adjusted R^2	Q^2_predict	Brief Interpretation
Firm Value (Y)	0.450	0.439	0.189	Can be adequately explained by the model, with sufficient predictive relevance
ROA (Z)	0.234	0.224	0.216	Variation is moderately explained, and the model has good predictive capability

Predictive Relevance

The predictive relevance of the model is assessed using R-Square and Q-Square statistics. A Q-Square value greater than 0 ($Q > 0$) indicates that the model has predictive relevance for a specific endogenous construct. Conversely, a Q-Square value of 0 ($Q = 0$) implies that the model does not offer any predictive relevance for the endogenous construct. Furthermore, a Q-Square value less than 0 ($Q < 0$) suggests that the model lacks predictive relevance. Therefore, the higher the Q value, the greater the model's predictive capability (Robina-Ramírez et al., 2023). Overall, the analysis results show that the R Square value of 45% and the Adjusted R Square of 43.9% explain the firm value model, and the Q^2_predict value greater than 0 indicates that the model has sufficiently good quality in explaining and predicting the analyzed variables. The moderately high R^2 values and the positive and adequate Q^2_predict values support the model's reliability for use in analyzing the relationships among variables in this study.

Table 3.
Hypothesis Testing

Relationship Path	Coefficient	T-Stat	P-Value	Significance	Main Interpretation
DER → Firm Value	0.273	4.432	0.000	Significant	DER increases Firm Value
DER → ROA	-0.041	0.516	0.606	Not Significant	DER has no impact on ROA
ROA → Firm Value	0.541	4.781	0.000	Significant	ROA increases Firm Value
SIZE → Firm Value	-0.323	3.847	0.000	Significant	SIZE decreases Firm Value
SIZE → ROA	-0.459	5.511	0.000	Significant	SIZE decreases ROA

The Effect of DER on Firm Value

The test results show that the Debt to Equity Ratio (DER) has a positive and significant effect on Firm Value, with a coefficient value of 0.273, a T-statistic of 4.432, and a P-value of 0.000. This finding is consistent with the research of Inda Rosari & Subardjo (2021), but not aligned with the study by Nathaniel Pamela Santosa and Apriani Dorkas Rambu Atahau (2022). The P-value well below 0.05 indicates that this effect is statistically

significant (Gozgor et al., 2024). This suggests that a higher DER tends to increase firm value. In certain contexts, this can be explained by a company's ability to leverage debt to enhance growth and market value, although financial risk must still be considered.

The Effect of DER on ROA

The effect of DER on Return on Assets (ROA) is not significant, with a coefficient of -0.041, a T-statistic of 0.516, and a P-value of 0.606. The P-value greater than 0.05 indicates that there is insufficient statistical evidence to conclude that DER affects ROA. This result is inconsistent with the findings of Inda Rosari & Subardjo (2021) and Vena Windaputri & Muharam (2022). It suggests that the use of debt does not directly impact the efficiency of asset utilization in generating profit.

The Effect of ROA on Firm Value

ROA has a positive and significant effect on Firm Value, with a coefficient of 0.541, a T-statistic of 4.781, and a P-value of 0.000. This study aligns with the findings of Nathaniel Pamela Santosa & Apriani Dorkas Rambu Atahau (2022), and Inda Rosari & Subardjo (2021). These results support the theory that companies capable of generating high returns from their assets tend to increase investor confidence and improve market perception of their firm value. Thus, ROA can be considered a relevant financial performance indicator in enhancing firm value.

The Effect of SIZE on Firm Value

Firm size (SIZE) shows a negative and significant effect on Firm Value, with a coefficient of -0.323, a T-statistic of 3.847, and a P-value of 0.000. This result contradicts the study by Nathaniel Pamela Santosa & Apriani Dorkas Rambu Atahau (2022). The findings suggest that an increase in firm size does not always correlate positively with an increase in firm value. Factors such as managerial complexity, operational inefficiency, and larger bureaucracies in big companies can reduce market value.

The Effect of SIZE on ROA

The SIZE variable also has a negative and significant effect on ROA, with a coefficient of -0.459, a T-statistic of 5.511, and a P-value of 0.000, which contradicts the findings of Inda Rosari & Subardjo (2021). This result confirms that larger-scale companies tend to experience decreased efficiency in managing their assets to generate profits. This may be due to high fixed costs or challenges in asset management within large organizations.

CONCLUSION

This study concludes that profitability plays a significant mediating role in the relationship between capital structure and firm size with firm value. While capital structure directly increases firm value, its impact on profitability is not significant. Conversely, firm size negatively affects both profitability and firm value. Furthermore, profitability significantly enhances firm value, confirming its role as an intervening variable. These findings highlight the importance of efficient financial management and operational performance in maximizing firm value, particularly through enhancing profitability.

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