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Empirical Testing of Capital Structure and Profitability as Mechanisms to Enhance Firm Value

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ABSTRACT

This study examines the effect of capital structure and profitability on the firm value in Mining Companies that have been listed on the Indonesia Stock Exchange (IDX). The sample selection technique was carried out using the purposive sampling method so that 12 companies were obtained as samples. This research uses quantitative methods and multiple linear regression analysis was utilized to examine the relationship between the variables under consideration. From the research results, it was found that capital structure has a positive effect on firm value, indicating that an increase in capital structure will enhance the value of mining companies listed on the Indonesia Stock Exchange. The research results align with the trade-off theory, which suggests that judicious use of debt financing can increase firm value. The research results also found that profitability has a positive effect on firm value, as higher profitability enhances firm value. The results of this study align with the signaling theory, the level of company profitability can be a positive signal for investors to invest. The implications of this research are aimed at three different groups: investors, companies, and future researchers. The research concludes that increasing capital structure and profitability can enhance firm value. This study provides new insights into the relationship between capital structure, profitability and firm value in the context of mining companies listed on the Indonesian Stock Exchange (IDX).

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1. INTRODUCTION

Basically, a company was founded with two main objectives, namely to obtain the maximum profit and maintain a *going concern* or the survival of the company. The company's survival is a crucial long-term goal, while maximizing profit is a more immediate objective. To achieve these goals, one approach is to focus on maximizing the firm value. A higher firm value indicates increased prosperity for owners and shareholders, reflecting how the capital market perceives the company. When the firm value is high, it boosts investor confidence in the company's current and future performance. Additionally, a high firm value attracts creditors who are more inclined to provide loans to the company. This is because creditors assess a company's ability to fulfill its obligations after receiving a loan. As the company's value increases, the owner's welfare is also expected to improve (Karmudiandri and Chandra, 2021).

Firm value refers to the monetary amount that potential buyers are required to pay to acquire a company (Thaib and Dewantoro, 2017). In the case of publicly traded companies, the firm value can be determined by examining the price of the company's shares that are available in the market. A stable and increasing stock value indicates the company has a good performance in managing its resources. In this study, the value of the company is assessed by utilizing the price-to-book value (PBV) ratio because this ratio will give an idea of how many times an investor has to pay for a stock with its book value. While numerous factors can influence the value of a firm, this study specifically focuses on analyzing the effect of two elements: capital structure and profitability.

Capital structure compares the use of debt and equity as a source of corporate funding (Ulbert *et al*., 2022). The utilization of debt as a means of corporate financing can influence the firm value. By employing debt, the company can potentially lower its tax obligations, thereby impacting its overall value (Myers, 2001). In the *trade-off theory*, is explained that the larger a company fills funding with debt, the greater the risk of experiencing losses because it has to pay a considerable interest expense every year to creditors with uncertain financial conditions (Rahayu and Sari, 2018). Profitability is a metric to assess the company's proficiency in generating profits from its sales, assets, and equity (Husnan and Pudjiastuti, 2015). If the company's profitability increases, this will make the value of the company increase as well. If a company is always in a *profitable position,* this will attract the attention of investors because of the good value of the company. In addition, high profits will also allow the company to continue to develop and operate (Manoppo and Arie, 2016). The higher the profit earned by the company, the company’s value will continue to increase.

Mining companies are one of the most important corporate sectors, because of their duties in terms of providing the energy resources needed for a country. Mining companies listed on the Indonesia Stock Exchange (IDX) encompass four sub-sectors: coal mining, crude petroleum and natural gas production, metal and mineral mining, and land/stone quarrying. Presently, individuals can invest in mining companies through the official website *www.idx.co.id* to make investments, it is necessary to do some analysis first to sort out and choose which companies are suitable for investing. From here, investors need to know which companies have high values so that their investment goals can be achieved. Previous research regarding capital structure and profitability on firm value has been widely carried out. However, there are still inconsistencies in the results, so researchers are interested in conducting this research. This research is different from previous research because its focus is specifically on mining companies listed on the Indonesia Stock Exchange (IDX) during the 2016-2020 period.

This study aimed to investigate the effect of capital structure and profitability on firm value. The findings of this study are anticipated to provide valuable insights for future researchers and

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companies, enabling them to enhance firm value through effective debt management and improved profit generation. Additionally, the research findings are expected to support stakeholders in making informed and efficient decisions.

2. METHODS

The population for this study consists of 47 mining companies were listed on the Indonesia Stock Exchange (IDX) from 2016 to 2020. The researchers used a purposive sampling method, which involved selecting participants based on specific criteria, to obtain a representative sample for the study (see **Table 1**).

Table 1. Sample selection procedure

No.	Criteria	Number of Companies
1.	Mining companies listed on the Indonesia Stock Exchange (IDX) until 2020	47
2.	Companies that do not publish clear financial statements in a row from 2016 to 2020	(8)
3.	Mining companies that suffered losses in the period 2016 to 2020	(27)
	Number of Samples	**12**

Source: www.idx.co.id

Based on the sample selection procedure above, there are 12 companies meet the criteria as samples in this study. This study relies on secondary data, which is obtained through intermediary or indirect sources. The secondary data utilized in this study includes the annual reports of the companies from 2016 to 2020, which were acquired from both the IDX website (http://www.idx.co.id) and the individual company websites. Additionally, historical stock market price data was collected from the Yahoo Finance website (http://www.finance.yahoo.com).

The objective of this study is to assess the effect of capital structure and profitability on firm value. The research design employed in this study is descriptive quantitative, focusing on analyzing the relationship between the independent variables (capital structure and profitability) and the dependent variable (firm value).

This study examines two independent variables: capital structure and profitability. Capital structure refers to the comparison between the total debt and total equity of the company. In this research, the capital structure is measured using the debt-equity ratio (DER). The debt-equity ratio is a capital structure ratio that quantifies the company's capital structure. This ratio is chosen as it demonstrates the company's ability to repay its debts using its equity. The formula for calculating the debt-to-equity ratio is as follows (Husnan and Pudjiastuti, 2015):

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \text{ x } 100\%$$

The second independent variable in this research is profitability, which refers to the company's ability to generate profits from its sales, assets, and capital. In this study, profitability is measured using the return on equity (ROE) ratio. ROE is a profitability ratio that assesses the company's ability to generate earnings based on its equity. This ratio serves as a measure of capital efficiency in achieving profits and also influences the company's value. The formula used to calculate profitability in this study is as follows (Husnan and Pudjiastuti, 2015):

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$$\text{Return On Equity} = \frac{\text{Net Income After Tax}}{\text{Total Equity}} \text{ x } 100\%$$

The dependent variable in this study is firm value, which represents the price an individual or entity is willing to pay to acquire a company. Firm value in this research is conceptualized using the book value approach. Precisely, firm value is measured using the price-to-book value (PBV) ratio. PBV is a ratio that compares the market price of shares with the book value of shares. This ratio is chosen because it reflects the company's value through its share price. The formula for calculating the price-to-book value (PBV) ratio is as follows (Husnan and Pudjiastuti, 2015):

$$\text{Price to book value} = \frac{\text{Market Price Per Share}}{\text{Book Value per Share}} \text{ x } 100\%$$

This study employs multiple linear regression analysis to examine the effect of capital structure and profitability on firm value. Therefore, the analysis model used in this study can be described as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Information:

Y = Firm Value
α = Constant
β = Regression Coefficient
X_1 = Capital Structure
X_2 = Profitability
ε = error of estimation

Before hypothesis testing, a descriptive statistical analysis was performed to examine and describe the characteristics of the sample under study. Subsequently, the classical assumption test was conducted to assess the suitability of the regression model to be used in this study. The classical assumption test encompassed various assessments, including normality testing, multicollinearity testing, heteroscedasticity testing, and autocorrelation testing. The hypothesis testing methods employed in this study consist of the coefficient of determination test (Adjusted R^2), the F-statistical test, and the t-statistical test.

3. RESULTS AND DISCUSSION

Based on data processing with the help of the IBM SPSS 22 program, the following descriptive statistical results were obtained in **Table 2**:

Table 2. Descriptive statistical analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DER	60	,10	3.38	,7952	,56831
ROE	60	,00	,77	,1933	,16329
PBV	60	,26	7.91	1.7412	1.65669
Valid N (listwise)	60				

Source: Processed by the author

The table presents the highest, lowest, and mean values for all variables analyzed in this study. The standard deviation of each variable studied is smaller than the average (mean), which shows good data because the variation is more minor.

The firm value of the sample, as measured by PBV for the period 2016 to 2016. 2020 is between the range of 0.26 and 7.91. The average value (mean) is 1.7412, and the standard deviation is 1.65669. The company with the lowest score was PT TBS Energy Utama Tbk in 2018, with a score of 0.26. Meanwhile, the highest firm value was PT Bayan Resources Tbk, which was 7.91 in 2016. The standard deviation of the firm value was 1.65669, which was greater than the average value of 1.7412. This means that the mean value can be used as a representation of all 60 data.

The capital structure of the sample companies, as measured by DER for the 2016 to 2020 period, is between 0.10 and 3.38. The average value (mean) is 0.7952, and the standard deviation is 0.56831. The company with the lowest level of debt used in company funding is PT Harum Energy Tbk, namely 0.10 in 2020. Meanwhile, the company with the highest level of debt use was PT Bayan Resources in 2016, namely 3.38. The standard deviation of the capital structure is 0.56831, which is smaller than the average value of 0.7952. This means that the mean value can be used as a representation of all 60 data.

The profitability of the sample companies, as measured by ROE for the 2016 to 2020 period, is between 0.00 and 0.77. The average value (mean) is 0.1933, and the standard deviation is 0.16329. This means that the lowest level of profitability was at the company PT Darma Henwa Tbk in 2016 at 0.00, and the highest level of profitability was at the company PT Bayan Resources Tbk in 2018 at 0.77. The standard deviation of profitability is 0.16329, which is smaller than the average value of 0.1933. This means that the mean value can be used as a representation of all 60 data.

The effect of capital structure and profitability variables on firm value was assessed using multiple linear regression analysis. The outcomes of the regression equations are presented in the following **Table 3**:

Table 3. Regression test result

	B	t	Sig.
(Constant)	-,344	-1.007	,318
DER	,916	3,346	.001
ROE	7,021	7,369	,000
F-Test	29,625		
R Square (R^2)	,510		

Source: Processed by the author

Based on the outcomes of the multiple linear regression analysis mentioned earlier, the model for the regression equation in this study can be expressed as follows:

$$Y = - 0.344 + 0.916X1 + 7.021X2$$

Information :

Y = Firm Value

X1 = Capital Structure (DER)

X2 = Profitability (ROE)

The analysis of the table above reveals that the R Square value is 0.510, indicating that the independent variables examined in this study (capital structure and profitability) can explain 51% of the variance in the dependent variable (firm value). The remaining 49% of the variance can be attributed to other variables not included in the research model. Furthermore, the table indicates that the capital structure variable (DER) exhibits a significance level of 0.001, lower than the predetermined threshold of 0.05. This implies that the capital structure variable has a statistically

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significant positive impact on firm value, thus supporting the acceptance of hypothesis H1. Similarly, the profitability variable (ROE) demonstrates a significance level of 0.000, indicating a significant positive effect on firm value. These findings provide further evidence for the acceptance of hypothesis H2 in this study.

The results of the hypothesis testing in this study lead to the conclusion that there is a positive effect capital structure on firm value. In other words, an increase in capital structure positively impacts the company's value, while a decrease in capital structure diminishes the firm value. This can be attributed to the fact that the mining company's debt utilization has not yet reached its optimal level. If the company effectively manages its debt and increases its reliance on debt as a source of funding, it has the potential to enhance the overall value of the company.

The findings of this study align with the trade-off theory, which suggests that companies make decisions regarding the use of debt as a source of funding. This theory posits that relying solely on 100% equity capital is not the optimal choice. In other words, utilizing debt can potentially increase the company's value if managed effectively. According to the trade-off theory, using debt as a funding source can enhance firm value as long as it has not reached its optimal level. Once the use of debt reaches its optimal point, it can have a detrimental effect on the firm value. Given that the use of debt in mining companies has not yet reached its optimal level, incorporating debt can still positively affect firm value.

These results are in line with research conducted by Israel *et al*. (2018), Satria Andhika *et al*. (2018), Rachmat *et al*. (2019), Ifada *et al*. (2021), and Panjaitan *et al*. (2023), which concludes that good capital structure management will increase firm value. Consequently, the company has the potential to further utilize debt as a financing source, provided that it is effectively managed. However, the results of this study are not in line with the research conducted by Vo and Ellis (2017), which suggests a negative association between financial leverage and shareholder value for Vietnamese firms, implying that the costs of debt financing outweigh the benefits. Similarly, the findings of Le and Phan (2017) support the notion that all debt ratios exhibit a statistically significant negative relationship with firm performance.

The results of the hypothesis testing in this study lead to the conclusion that profitability has a positive impact on firm value. This implies that an increase in profitability enhances the firm's value, while a decrease in profitability diminishes its value. Investors tend to assess a company's profitability as it directly affects their prosperity. Companies that generate higher profits are perceived as attractive investment options. Increased investor interest in a company consequently enhances its value in the capital market.

The results of this study are in line with the signaling theory (Spence, 1973), where the level of company profitability can be a positive signal for investors to invest. This is because, in general, every investor who will invest in a company will consider the company's ability to earn a profit, which will then be distributed to them in the form of dividends. Therefore, if the company can make large profits, the company will pay greater dividends. Companies with a high level of profitability will also have a high value in the capital market. A high level of profitability can be a good signal for investors to invest.

The results of this study are in line with the results of research conducted by Dewi and Sudiartha (2017), Hapsari (2017), Malik *et al*. (2023), Satria Andhika *et al*. (2018), Rachmat *et al*. (2019), Akhmadi and Januarsi (2021), Sudiyatno *et al*. (2021), Maulana and Mediawati (2022) and Panjaitan *et al*. (2023) support the notion that profitability positively influences firm value. Companies whith higher profitability levels tend to establish a competitive advantage in the capital market, while those with lower profitability experience lower firm value. However, it is

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worth noting that these findings contrast with the research conducted by Manoppo and Arie (2016).

4. CONCLUSION

Based on the testing results and the discussion in the previous chapter, it can be concluded as follows: (1) The capital structure has a positive effect on firm value. These results indicate that an increase in capital structure will enhance the value of mining companies listed on the Indonesia Stock Exchange from 2016 to 2020; (2) Profitability has a positive effect on firm value. These results indicate that increased profitability will enhance the value of mining companies listed on the Indonesia Stock Exchange from 2016 to 2020.

The implications of this research are: (1) The research findings and subsequent discussions indicate that capital structure and profitability significantly affect firm value. These results serve as empirical evidence supporting the trade-off theory and signaling theory. They can serve as a valuable reference for future researchers investigating the influence of capital structure and profitability on firm value; (2) Companies are anticipated to take the findings of this study into consideration when making decisions related to funding and managing earnings. Furthermore, this research is expected to be an informational resource for investors and creditors to inform their investment decisions.

A limitation of this study is the reliance on a single indicator to measure each variable. To enhance the comprehensiveness of future research, it is recommended to incorporate additional indicators to measure capital structure, profitability, and firm value. Exploring alternative indicators such as net profit margin and return on assets to evaluate profitability may yield more diverse and nuanced findings. Similarly, considering alternative indicators like the debt-to-asset ratio to assess capital structure can provide a more comprehensive understanding of its impact on firm value.

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