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The Effect of Debt-to-Equity Ratio and Return on Assets on Stock Returns of Mining Companies on the IDX

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Abstract

This study aims to analyze the effect of Debt-to-Equity Ratio (DER) and Return on Assets (ROA) on stock returns of mining companies listed on the Indonesia Stock Exchange (IDX). This study uses a quantitative approach and involves 15 mining companies during the period 2020–2024. Panel regression analysis is used to determine the effect of leverage and profitability on stock performance. The results show that DER has a negative and significant effect on stock returns, indicating that higher leverage increases risk and reduces investor confidence. Conversely, ROA shows a positive and significant effect on stock returns, indicating that profitable companies tend to generate higher returns for investors. These findings demonstrate the importance of financial performance in shaping investor decisions in the mining sector.

Keywords: *Debt to Equity Ratio, Return on Assets, Stock Returns and Panel Regression*.

I. INTRODUCTION

Public financial management is crucial. The mining sector plays a critical role in Indonesia's economic structure, contributing significantly to national income, export performance, and employment. As a capital-intensive industry with high exposure to global commodity price fluctuations, mining companies face substantial financial risks that directly influence investor behavior in the capital market. The dynamic nature of this industry creates uncertainty for investors, making the assessment of company performance through financial ratios increasingly important. In this context, investors rely on indicators such as Debt to Equity Ratio (DER) and Return on Assets (ROA) to predict the company's ability to manage risks and generate returns (Kurniawan, 2021).

In recent years, the volatility of global commodity prices—particularly coal, nickel, and gold—has created instability in the performance of mining companies listed on the Indonesia Stock Exchange (IDX). This volatility has led to fluctuating stock returns, raising concerns among investors about the reliability of financial ratio indicators. At the same time, mining companies have been increasing debt financing to expand operations and adopt new extraction technologies. Consequently, leverage levels among mining issuers have risen, intensifying financial risk. Simultaneously, profitability indicated by ROA varies widely due to differing cost structures, production capacities, and commodity exposure. These conditions make it urgent to re-examine whether DER and ROA remain consistent predictors of stock returns in the current mining environment (Susilawati et.al, 2022).

The capital market landscape shows that several mining companies with high profitability exhibit declining stock returns, while some firms with high leverage surprisingly achieve rising stock prices. For instance, companies with increased debt reportedly demonstrate improved production capacity and operational expansion, generating positive investor sentiment despite higher leverage. Conversely, firms with strong profitability sometimes fail to translate operational success into proportional stock performance. These contradictory market behaviors raise important questions regarding the true influence of DER and ROA on stock returns within Indonesia's mining sector. The inconsistency also highlights that investor perceptions may have shifted, with non-financial factors (e.g., commodity prices, environmental considerations, or market speculation) potentially weakening the explanatory power of traditional financial ratios (Ojo & Albertus, 2021).

This study is grounded in several financial and investment theories. First, Signaling Theory explains that financial ratios act as signals to investors regarding the company's future prospects. Profitability (ROA) should serve as a positive signal, while excessive leverage (DER) may signal financial distress. Second, Trade-Off Theory suggests that firms balance the benefit of debt (tax shield) with bankruptcy risk; thus, the relationship between DER and stock performance may not always be linear. Third, Efficient Market Hypothesis (EMH) posits that financial information, including DER and ROA, is reflected in stock prices. However, deviations from EMH may occur in emerging markets like Indonesia, where investor

behavior can be speculative (Desmon & Meirinaldi, 2022).

Previous studies examining the effect of DER and ROA on stock returns have produced diverse and conflicting results. Some researchers found that DER negatively affects stock returns due to increased financial risk, while others reported no significant effect**,** arguing that investors prioritize growth potential over leverage. Research on ROA also shows mixed findings—some studies concluded that ROA significantly increases stock returns, whereas others found the opposite due to external commodity price influences. Moreover, most existing studies focus on non-mining sectors or mixed samples across industries, resulting in limited insights specific to the mining industry, which has unique risk characteristics and financial structures. There is also a lack of recent studies that incorporate data from the post-pandemic recovery era, during which significant shifts occurred in commodity prices, capital structures, and investor behavior (Hasyim & Nuraeni, 2022).

In summary, the combination of industry volatility, theoretical inconsistency, and empirical contradictions makes this study both timely and essential. By re-examining the effects of Debt to Equity Ratio and Return on Assets on stock returns of mining companies listed on the IDX, this research contributes to the refinement of financial analysis practices and enhances investor understanding of risk–return dynamics in Indonesia's mining sector.

II. RESEARCH METHODOLOGY

2.1. Stock Return

Stock return refers to the level of profit earned by investors from investing in a company's shares over a certain period. Jogiyanto (2017) defines stock return as the total gain received by investors consisting of **capital gains/losses** and **dividend yield**, which collectively reflect investment performance. Stock return is an essential indicator for evaluating the attractiveness of a stock in the capital market. Stock return is the income an investor receives from a stock investment, which can be in the form of a price gain (capital gain) or dividends, calculated from the difference between the purchase and sale prices or from the company's cash flow; it is a key metric of investment performance that can be historical (realized) or estimated (expected), with a historical market average of around 10% per year, but varies widely depending on the stock and market conditions. Stock returns are influenced by Corporate financial performance (e.g., ROA, ROE, DER, EPS); Industry conditions; Commodity price fluctuations (particularly important for the mining sector); Dividend policies and Investor sentiment and macroeconomic factors (inflation, interest rates).

2.2. Debt to Equity Ratio (DER)

Debt to Equity Ratio (DER) is a leverage ratio that measures the extent to which a company finances its operations using debt compared to shareholders' equity. Brigham & Houston (2020) state that DER reflects the company's financial structure and risk exposure. The debt-to-equity ratio (DER) is a ratio that shows the portion of each rupiah of equity that is used as collateral for total debt. The balance between assets funded by creditors and those funded by company owners is measured by the debt-to-equity ratio (DER). Syamsuddin (2000:54) states that "this ratio shows the relationship between the amount of debt and the amount of long-term loans provided by company owners. It is usually used to measure a company's financial leverage. Meanwhile, according to Irawan & Pramono (2017), "the debt-to-equity ratio is a ratio used to assess debt versus equity." Mining companies typically exhibit higher DER because the sector is **capital-intensive**, requiring significant investments in exploration, equipment, and production facilities. While debt financing is common, excessive leverage can reduce firm value if not supported by increased operating performance.

2.3. Return on Assets (ROA)

Return on Assets (ROA) measures a company's ability to generate profit from its total assets. Kasmir (2018) defines ROA as a primary profitability indicator that reflects managerial efficiency in managing assets. According to Tandelilin (2001:240), "return on assets (ROA) describes the extent to which the assets owned by the company can generate profits." Harahap (2008:305) said that "this ratio shows how much net profit the company obtains when measured from the value of assets." Sutrisno (2000:266) said that "Return on Assets is also often called economic profitability is a measure of the company's ability to generate profits with all the assets owned by the company." Since commodity prices fluctuate sharply, ROA can swing significantly, affecting investors' evaluation of mining stocks.

2.4. Conseptual Framework

Signaling Theory explains how managers send information signals to the market through financial reports. Ratios such as DER and ROA act as signals of company performance and financial health. Investors interpret these signals to make investment decisions that affect stock prices and returns. This Trade off theory suggests that companies balance the tax benefits of debt with the costs of potential financial distress. Therefore, the effect of DER on stock return depends on whether the firm's leverage level is considered optimal by the market. Efficient Market Hypothesis posits that all publicly available information, including

DER and ROA, is reflected in stock prices. In a semi-strong market form, investors react quickly to financial information, and stock returns adjust accordingly. However, emerging markets like Indonesia often show deviations, leading to mixed empirical results. The following is a summary of several previous studies related to the problems in this study.

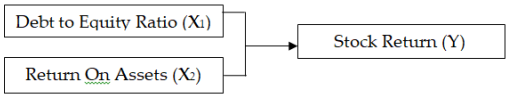

Figure 1. Conceptual Framework

This study employs a quantitative research design using causal explanatory analysis to examine the effect of Debt to Equity Ratio (DER) and Return on Assets (ROA) on stock returns of mining companies listed on the Indonesia Stock Exchange (IDX). The study uses secondary financial data and applies panel data regression to identify the relationship between variables across companies and time. The population consists of all mining companies listed on the Indonesia Stock Exchange (IDX) during the period 2020–2024. Based on these criteria, the sample is expected to include 15–20 mining companies**,** depending on data availability.

Table 1. Variable and Scale

Variable	Conceptual Definition	Indicators	Scale
DER (X_1)	DER measures the proportion of total debt relative to shareholders' equity	$DER_{it} = \frac{\text{Total Debt}}{\text{Total Equity}}$	Ratio
ROA (X_2)	ROA measures profitability relative to company assets	$ROA_{it} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$	Ratio
Stock return (Y)	Stock return is calculated as the percentage change in stock price from one period	$\text{Stock Return}_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{i(t-1)}}$	Ratio

Since the dataset consists of cross-sectional and time-series dimensions, panel data regression is employed using the following steps (Irawan & Arifin, 2023):

a. Model Selection Tests :

1) Chow Test : Determines whether the Common Effect Model (CEM) or Fixed Effect Model (FEM) is more appropriate.
2) Hausman Test : Determines whether FEM or Random Effect Model (REM) is preferable.
3) Lagrange Multiplier (LM) Test : Confirms the choice between CEM and REM

b. Regression Equation

The panel regression model is expressed as:

$$SRit=\alpha+\beta1DERit+\beta2ROAit+\epsilon it$$

Where:
SRit = stock return of company *i* in year *t*
DER = Debt to Equity Ratio
ROA = Return on Assets
α\alpha = constant
β1,β2\beta = coefficients
ϵit\epsilon = error term

c. Hypothesis Testing

1). t-Test (Partial Test), Tests whether DER and ROA individually affect stock returns.
2). F-Test (Simultaneous Test), Tests whether DER and ROA jointly influence stock returns.
3). Coefficient of Determination (R^2), Measures how much the independent variables explain the variation in stock returns.

III.RESULTS AND DISCUSSION

3.1. Result

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Results

Table 2. Panel Data Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C (Constant)	−0.142	0.058	−2.448	0.017
DER	−0.061	0.023	−2.648	0.010
ROA	0.487	0.091	5.342	0.000

Model Fit:

R^2 = **0.572**
F-statistic = **9.41** (p-value = 0.000)
Adjusted R^2 = **0.511**

The analysis shows that DER has a significance level of 0.001, which is less than 0.05, indicating that DER partially influences stock returns. Based on the variables above, ROA also has a significance level of 0.000, which is greater than 0.05, indicating that ROA partially does not influence stock returns. Based on the ANOVA or F-test, the calculated F value was 9.41, which is greater than the F-Table value of 2.946, with a significance level of 0.000, which is less than 0.05. This means that Ha is accepted and H0 is rejected. Based on these results, it can be concluded that the DER and ROA variables simultaneously have a significant effect on stock returns. The Adjusted R-Square coefficient of determination is 0.511. This means that 51.1% of the variation or change in stock returns can be explained by the variance in DER and ROA. The remaining 48.9% is explained by other variables not examined.

Based on Table 2, the t-test values are:
a = -0.142
β1 = -0.061
β2 = 0.487
Therefore, the multiple linear regression is:

$$Y = -0.142 - 0.061X_1 + 0.487X_2$$

Based on the regression equation above, it can be seen that the higher leverage decreases stock returns. Investors perceive highly leveraged mining firms as riskier because the industry is vulnerable to commodity cycles and debt repayment pressure. Thus, market responds negatively to increases in DER. ROA strongly enhances stock returns. Investors reward firms with strong profitability because they reflect efficient asset utilization, better earnings potential, and healthy operations. Profitability is a key driver of stock performance in the mining sector.

3.2. Discussion

The empirical findings of this study provide important insights into the relationship between leverage, profitability, and stock returns in mining companies listed on the Indonesia Stock Exchange. The mining sector is characterized by large capital requirements, high exposure to commodity price fluctuations, and substantial financial risk. Therefore, understanding how financial indicators such as the Debt to Equity Ratio (DER) and Return on Assets (ROA) affect stock performance is highly relevant for both investors and corporate management. The results indicate that DER has a negative and significant effect on stock returns. This finding suggests that higher leverage increases the company's financial risk, which ultimately reduces investor confidence. Investors perceive companies with high DER as having a greater probability of facing financial distress, especially in the mining sector, where revenues are heavily influenced by volatile global commodity prices. As a result, investors tend to demand a risk premium or shift their capital toward firms with lower leverage. This outcome is consistent with signaling theory, which posits that high debt signals weaker financial health, discouraging investment. It also aligns with trade-off theory, where excessive debt increases bankruptcy costs and reduces firm value. Empirical studies such as those by Wahyudi & Pawestri (2018) and Sutrisno (2019) similarly report that high leverage reduces market performance. Thus, the negative coefficient of DER suggests that mining companies should carefully manage their capital structure to maintain investor trust and mitigate the negative perception associated with high leverage.

The study also finds that ROA has a positive and significant effect on stock returns. This indicates that profitability remains a key driver of market valuation. Investors tend to reward firms that demonstrate efficient asset utilization, as reflected in higher ROA, with increased demand for their shares, leading to higher stock returns. This result is strongly supported by signaling theory, where higher profits serve as a positive signal about managerial competence and future cash flow prospects. It is also consistent with resource-based theory, which argues that firms capable of utilizing internal resources efficiently can generate competitive advantage and superior financial performance. Furthermore, the results are in line with previous empirical findings (e.g., Ardiansyah, 2020; Hermawan & Sari, 2021), which show that ROA significantly enhances stock performance in capital-intensive industries.

IV. CONCLUSION

This study examined the effect of the Debt to Equity Ratio (DER) and Return on Assets (ROA) on stock returns of mining companies listed on the Indonesia Stock Exchange during 2020–2024. Based on the empirical analysis, several key conclusions can be drawn. First, DER has a negative and significant effect on stock returns, indicating that higher leverage increases financial risk and reduces investor confidence. This finding suggests that investors perceive highly leveraged mining companies as more vulnerable to financial distress, particularly given the sector's sensitivity to global commodity price fluctuations. Thus, maintaining an optimal capital structure is essential for sustaining market trust. Second, ROA has a positive and significant effect on stock returns, demonstrating that profitability remains a strong determinant of investor valuation. Companies with efficient asset utilization and better profit-generating capability tend to be rewarded by the market with higher stock returns. ROA therefore serves as a reliable performance signal in capital-intensive industries such as mining.

V. RECOMMENDATIONS

Based on the findings, several recommendations can be proposed. Mining companies listed on the IDX are advised to strengthen operational efficiency to improve profitability, as ROA has been shown to influence stock returns, making effective asset management and cost optimization essential. Although DER may not always exhibit a significant impact, companies should still manage their debt levels prudently to maintain financial stability and investor confidence. For investors, ROA should be considered a key indicator when evaluating mining stocks, alongside

close monitoring of global commodity price movements and sector-specific risks. Future researchers are encouraged to expand the model by including additional variables such as PBV, EPS, firm size, or commodity price volatility, as well as extending the study period or comparing different sectors to provide broader empirical insights.

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