



The Effect of Return on Assets (ROA) and Debt to Equity Ratio (DER) on Stock Prices of Technology Sector Companies Listed on the Indonesia Stock Exchange (IDX) for the Period 2021–2023

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Abstract

Keywords:

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This study examines the effect of Return on Assets (ROA) and Debt to Equity Ratio (DER) on stock prices of technology sector companies listed on the Indonesia Stock Exchange (IDX) during 2021–2023. The research uses a quantitative explanatory method, analyzing 87 firm-year observations obtained from 29 technology companies listed continuously on the IDX. Multiple linear regression was employed to test both partial and simultaneous effects, preceded by classical assumption tests to ensure data reliability. The results demonstrate that ROA and DER have a positive and statistically significant effect on stock prices both individually and jointly. Firms with higher profitability and optimal leverage tend to achieve stronger stock performance and higher investor confidence. The findings underline the importance of efficient asset utilization, balanced capital structures, and transparent communication with investors in stabilizing stock prices and enhancing corporate value.

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INTRODUCTION

Economic development is closely associated with investment activity, where efficient capital allocation in financial markets drives both corporate and national growth (Ardhiyanti et al., 2021). Indonesia, the growing participation in the stock market indicates increasing financial literacy and evolving investor behavior. The technology sector has recently become a focal point due to its rapid innovation and scalability. However, between 2021 and 2023, this sector experienced high volatility in stock prices

caused by fluctuating earnings, rapid digital transformation, and post-pandemic adjustments in consumer behavior.

Stock prices reflect investor expectations and company performance. According to fundamental analysis, financial indicators such as profitability (ROA) and leverage (DER) are key determinants of market valuation. A company's efficiency in utilizing assets (ROA) and its ability to balance debt and equity (DER) offer insights into financial health and risk. Therefore, fluctuations in these ratios can directly influence investor perceptions and stock price movements.

Prior empirical findings have been inconsistent. (Dewi & Suwarno, 2022) found that ROA and DER significantly increase stock prices, while (Rizal, 2022) reported that DER has no significant effect. (Aprilyanto R & Meirisa F, 2016) also found ROA insignificant, contrasting with (Wijaya & Elizabeth, 2023) who discovered the opposite. These inconsistencies underscore the need to reexamine the relationship, particularly in technology firms, where profitability and leverage structures differ significantly from traditional industries.

Accordingly, this research aims to examine the effect of Return on Assets (ROA) and Debt to Equity Ratio (DER) on the stock prices of technology companies listed on the Indonesia Stock Exchange (IDX) during 2021–2023. Theoretically, this study enriches the understanding of profitability and leverage as determinants of firm value. Practically, it provides insights for investors and managers in assessing performance and valuation within Indonesia's growing tech industry.

LITERATURE REVIEW

The Return on Assets (ROA) measures how effectively a company uses its assets to generate profit. A higher ROA indicates efficient resource management and improved profitability, which can positively influence investor confidence. According to the Signaling Theory, consistent increases in ROA signal operational strength and managerial competence, reducing information asymmetry and investment risk.

Debt to Equity Ratio (DER) measures the proportion of debt financing relative to shareholders' equity (Ang et al., 1997). DER reflects a company's capital structure and financial risk. In line with the Trade-Off Theory (Modigliani and Miller), optimal leverage can increase firm value by lowering the cost of capital through tax advantages. However, excessive debt increases financial distress risk. For technology firms, moderate leverage is often used to support innovation and business expansion, but it must be managed carefully to maintain financial stability.

In the technology sector, firms tend to have high R&D intensity and volatile earnings. According to the Signaling Theory, profitability (ROA) acts as a credible signal of operational strength, while DER represents management's financing decisions and confidence. The Trade-Off Theory supports the balance between the benefits of debt and its risks. Therefore, both ROA and DER are expected to affect stock price performance in the technology sector.

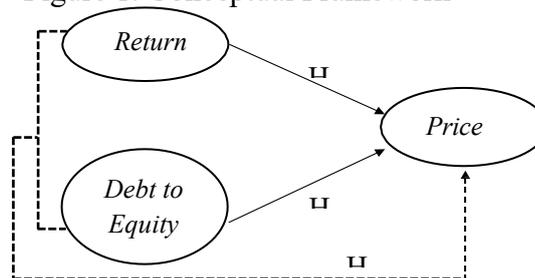
Several studies provide empirical evidence of the relationship between ROA, DER, and stock prices. Dewi & Suwarno, (2022) as well as Geraldine & Elizabeth, (2024) found that both ratios have a significant effect on stock prices. In contrast, Rizal, (2022) and Aprilyanto R & Meirisa F, (2016) found mixed results. These differences highlight the need for further empirical testing, especially across different sectors. Based on the theoretical foundation and previous research, the following hypotheses are formulated:

ROA has a positive and significant effect on stock prices, DER has a positive and significant effect on stock prices, and ROA and DER jointly have a positive and significant effect on stock prices.

Based on theoretical foundations and empirical evidence, the research hypotheses are formulated as follows:

- H1: Return on Assets (ROA) has a positive and significant effect on stock prices.
- H2: Debt to Equity Ratio (DER) has a positive and significant effect on stock prices.
- H3: ROA and DER simultaneously have a positive and significant effect on stock prices.

Figure 1. Conceptual Framework



Source: Theoretical review and previous research results

RESEARCH METHODS

This study uses a quantitative explanatory research design to examine causal relationships between financial ratios and stock prices. The population consists of 47 technology sector companies listed on the IDX between 2021 and 2023. Using purposive sampling, 29 companies that consistently published financial statements during this period were selected, resulting in 87 firm-year observations. This sampling technique ensures consistency and relevance of the data.

Data were collected from secondary sources, particularly annual financial statements published on the IDX official website (www.idx.co.id). ROA was calculated as $Net\ Income / Total\ Assets \times 100\%$, while DER was measured as $Total\ Liabilities / Total\ Equity \times 100\%$. Stock price data were taken from the closing prices at year-end.

Before conducting regression analysis, the classical assumption tests (normality, multicollinearity, autocorrelation, and heteroskedasticity) were performed using SPSS 26 to ensure model validity. The analytical model used is as follows:

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

where Y = Stock Price, X_1 = ROA, and X_2 = DER.

Hypothesis testing included:

- t-test: to assess the partial effect of ROA and DER on stock prices.
 - F-test: to assess their joint (simultaneous) effect.
 - R^2 (Coefficient of Determination): to measure the model's explanatory power.
- Significance was determined at a 5% (0.05) confidence level.

RESULT AND DISCUSSION

Contains the results of diagnostic tests confirmed that the regression model met the necessary assumptions:

- Normality: Kolmogorov–Smirnov significance = 0.088 (>0.05), indicating normally distributed residuals.
- Multicollinearity: tolerance values >0.10 and VIF <10 (ROA = 1.005; DER = 1.005), confirming no multicollinearity.
- Autocorrelation: Durbin-Watson = 1.748, within acceptable limits ($1.698 < DW < 2.395$), indicating no autocorrelation.
- Heteroskedasticity: Glejser test significance values >0.05 , confirming homoscedasticity.

Table 1. Result

		Unstandardized Residual
N		87
Normal	Mean	0,0000000
Parameters ^{a,b}	Std. Deviation	178,04615757
Most Extreme Differences	Absolute	0,089
	Positive	0,086
	Negative	-0,089
Test Statistic		0,089
Asymp. Sig. (2-tailed)		0,088 ^c

Source: Processed data, 2025

The results in Table 1 show that the Asymp. Sig. (2-tailed) value is 0.088, which exceeds the threshold of 0.05. This indicates that the data is normally distributed, so it can be concluded that the model meets the assumption of normality. Source: Processed data, 2025

Multicollinearity testing was performed by examining tolerance values ≥ 0.10 and VIF ≤ 10 for the three independent variables. If these requirements are met, the data is declared free of multicollinearity (Ghozali, 2019). The results of the multicollinearity test are presented in Table 2 below.

Table 2. Result

Variabel Bebas	Collinearity Statistics	
	Tolerance	VIF
<i>Return on Asset (ROA) (X1)</i>	0,995	1,005
<i>Debt to Equity Ratio (DER) (X2)</i>	0,995	1,005

Source: Processed data, 2025

The calculations listed in Table 2 show that all independent variables have a tolerance value above 0.10 and a variance inflation factor (VIF) value below 10. Thus, it can be concluded that there is no multicollinearity among the independent variables in the regression model.

If a correlation exists, this indicates an autocorrelation problem. In this study, the testing method used was the Durbin-Watson (DW) test. The results of the autocorrelation test are presented in Table 3.

Table 3. Result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,380 ^a	0,145	0,124	180,15329	1,748

Source: Processed data, 2025

The test results show that the Durbin-Watson (DW) value is 1.748. In this study, the Durbin Upper (dU) value is 1.6985, while (4 - dL) is 2.3954. Thus, the test results indicate that $1.6985 < 1.748 < 2.3954$ ($dU < DW < 4 - dL$). These results demonstrate that the regression model does not experience autocorrelation.

In this study, the statistical test used was the Glejser test. The Glejser test is performed by regressing the absolute value of the residual against the independent variable. The results of the heteroscedasticity test are presented in Table 4 below.

Table 4. Result

Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
	(Constant)	127,259	14,359		
<i>Return on Asset</i> (ROA) (X1)	37,201	30,413	0,131	1,223	0,225
<i>Debt to Equity Ratio</i> (DER) (X2)	16,120	10,773	0,160	1,496	0,138

Source: Processed data, 2025

Table 4 shows that each model has a significance value (Sig.) greater than 0.05. This means that in this regression model, there is no similarity in variance from the residuals of one observation to another, or heteroscedasticity does not occur.

Multiple linear regression analysis was used to analyze the effect of the independent variables, namely return on assets (ROA) and debt-to-equity ratio (DER), on the dependent variable, namely stock price. The results of the multiple linear regression analysis are presented below.

Tabel 5. Result

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
	(Constant)	146,394	23,029		6,357
<i>Return on Asset</i> (ROA) (X1)	113,090	48,774	0,235	2,319	0,023
<i>Debt to Equity Ratio</i> (DER) (X2)	48,441	17,277	0,284	2,804	0,006

Source: Processed data, 2025

Table 5 shows the multiple linear regression equation as follows:

$$Y = \alpha + b_1 X_1 + b_2 X_2$$

Stock Price = 146.394 + 113.090 ROA + 48.441 DER. The regression equation can be explained as follows:

- The constant value is 146.394, meaning that if the return on assets (ROA) (X1) and the debt to equity ratio (DER) (X2) are both unchanged or equal to zero (0), the stock price (Y) will remain at 146.394.
- The regression coefficient for ROA (X1) is 113.090, meaning that if the return on assets (ROA) (X1) increases, the stock price (Y) will increase, assuming other variables remain constant. This means that the return on assets (ROA) variable has a positive effect on the stock price.
- The regression coefficient for DER (X2) is 48.441, meaning that if the debt-to-equity ratio (DER) (X2) increases, the stock price (Y) will increase, assuming other variables remain constant. This means that the debt-to-equity ratio (DER) has a positive effect on stock prices.

Tabel 6. Result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,380 ^a	0,145	0,124	180,15329

Source: Processed data, 2025

In Table 6 above, the R Square value is 0.145. This means that the effect of return on assets (ROA) and debt to equity ratio (DER) on stock prices is 14.5% (0.145 × 100), while the remaining 85.5% (100 – 14.5) is influenced by other factors outside this study, such as market conditions, investor sentiment, and government policies.

The t-test is used to partially test whether the influence between the independent variable and the dependent variable is significant or simply due to chance. The results of the t-test can be seen in Table 7.

Table 7. Result

Independent Variable	T-count value	Significance Value
<i>Return on Asset (ROA) (X1)</i>	2,319	0,023
<i>Debt to Equity Ratio (DER) (X2)</i>	2,804	0,006

Source: Processed data, 2025

Tabel 8. Result

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	461033.842	2	230516.921	7.103	0.001
Residual	2726237.343	84	32455.206		
Total	3187271.185	86			

Source: Processed data, 2025

Based on the calculation results, the F-calculation value of 7.103 is greater than the F-table value (3.11) which is in the Ho rejection area with a significance level of 0.000, less than 0.05. This means that Ho is rejected and Ha is accepted. This means that there is a positive and significant influence between the return on assets (ROA) and debt to equity ratio (DER) variables on stock prices.

Discussion

The findings confirm that ROA significantly and positively influences stock prices, aligning with Sahri & Mokhlas (2024). High ROA indicates that technology firms effectively manage assets to generate profit, signaling efficiency and growth potential to investors. This fosters market optimism, stimulating demand for shares. Similarly, DER positively affects stock prices, reflecting the notion that moderate leverage can be beneficial when managed prudently. Investors may interpret efficient debt utilization as a sign of strategic expansion, consistent with the trade-off theory which posits an optimal debt-equity balance to enhance firm value (Geraldine & Elizabeth, 2024).

The combined effect of ROA and DER reinforces the principle that both profitability and capital structure interactively determine investor confidence. Firms that exhibit high profitability while maintaining manageable leverage are more likely to achieve higher market valuations. From a managerial standpoint, this indicates that corporate strategies should balance profitability improvement and debt control. Investment in asset productivity, operational efficiency, and transparency can attract long-term investors and stabilize market performance.

CONCLUSION

This study concludes that ROA and DER both have positive and significant effects, individually and jointly, on the stock prices of technology sector companies listed on the IDX during 2021–2023. Companies that demonstrate higher profitability and maintain balanced leverage tend to achieve stronger stock performance and higher investor confidence.

Implications:

1. Firms should optimize asset use to enhance ROA through innovation and efficiency.

2. Maintaining a balanced debt-to-equity ratio ensures financial stability and strengthens investor trust.
3. Continuous transparency in financial communication can sustain positive investor sentiment and long-term stock performance.

Limitations and Future Research:

The study focuses solely on technology sector companies, limiting generalizability. Future research should extend the model to other sectors, integrate additional variables such as EPS, ROE, and macroeconomic indicators, and adopt panel data techniques for broader temporal insights.

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