

THE EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY WITH MARKET VOLATILITY AS A MODERATING VARIABLE: EVIDENCE FROM INDONESIAN AUTOMOTIVE FIRMS

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Abstract

The automotive manufacturing sector in Indonesia experienced significant financial pressure during and after the COVID-19 pandemic due to declining vehicle demand, exchange rate fluctuations, and increased market uncertainty. These conditions impacted corporate capital structure decisions and financial performance. This study addresses the issue of whether capital structure affects financial performance and whether market volatility moderates this relationship. The purpose of this study is to analyze the effect of capital structure, as represented by the Debt-to-Equity Ratio (DER) and the Debt-to-Assets Ratio (DAR), on financial performance as measured by Return on Assets (ROA), and to examine the moderating role of market volatility, as represented by Beta (β). This study employs a quantitative associative approach using panel data from 13 automotive manufacturing companies listed on the Indonesia Stock Exchange during the 2019–2024 period, resulting in 78 observations. Data were collected from annual financial reports and analyzed using Moderated Regression Analysis (MRA) with EViews software. The findings indicate that DER and DAR have a negative and significant effect on ROA, indicating that higher leverage reduces corporate profitability. Furthermore, market volatility significantly moderates the relationship between capital structure and financial performance. Higher market volatility amplifies the negative effect of leverage on profitability, suggesting that excessive use of debt in volatile market conditions worsens financial performance.

Keywords: Capital Structure, Financial Performance, Market Volatility, Leverage, ROA

INTRODUCTION

The COVID-19 pandemic, which has gripped the world since early 2020, has had a significant impact on various sectors of life, including the Indonesian economy and industry. The Indonesian government officially announced the first case of COVID-19 on March 2, 2020, and then implemented various economic policies. The impact of these policies has caused widespread disruption to production, distribution, and consumption. Although the government changed the status of the pandemic to endemic in mid-2023, the long-term impact on economic stability and industrial sector performance continues to be felt.

Table 1.
Automotive Product Sales

Year	Sales	Production
2019	1.030.126 unit	1.286.848 unit
2020	532.027 unit	690.150 unit
2021	887.202 unit	1.121.967 unit
2022	1.048.040 unit	1.470.146 unit

Source: Indonesian Automotive Industry, (2025)

The table above explains that one of the sectors significantly impacted is the manufacturing sector, particularly the automotive subsector. The decline in purchasing power during the pandemic led to a sharp decline in motor vehicle sales in 2020 compared to the previous year. This decline directly impacted companies' financial performance, as reflected in declining profitability indicators such as Return on Assets (ROA). Before the pandemic, automotive companies were able to record relatively stable financial performance, but during the pandemic, many companies experienced declining profits and even losses. This indicates a significant decline in the efficiency of company asset utilization to generate profits, as shown in the following table.

Table 2.
Financial Performance of PT. Indomobil Sukses Internasional Tbk

Indicator	Year	
	2019	2020
ROA	4,48%	-3,22%

Source: Sipahutar & Haloho, (2023)

The decline in operational performance also impacted changes in the company's funding structure. To maintain operational continuity amid declining revenue, companies tended to increase their use of external funding sources, particularly debt. This situation led to increased financial burdens, particularly interest expenses, which ultimately further depressed profitability. Thus, there is a close relationship between capital structure and a company's financial performance, particularly during a crisis.

In addition to the impact of the pandemic, the development of the automotive industry is also facing various new challenges, such as the transition to electric vehicles, exchange rate fluctuations, and stock market volatility influenced by global and domestic factors (Gaikindo. 2024) The transition to electric vehicles requires significant investment in research and development and production infrastructure. Meanwhile, the weakening rupiah

against the US dollar is increasing the cost of raw material imports, while global market dynamics and domestic economic policies are creating uncertainty that is impacting investor confidence (Apindo, 2024). This shows that the company's financial performance is not only influenced by internal factors, but also by dynamic external factors.

From a financial theory perspective, capital structure is a crucial factor influencing a company's financial performance. Capital structure reflects the combination of debt and equity used to finance a company's activities. Agency theory explains that the use of debt can serve as a disciplining mechanism for management, allowing it to manage resources more efficiently (Jensen, M. C., & Meckling, W. H. 2019). However, excessive use of debt can increase financial risk and reduce profitability. Trade-off theory also emphasizes the need for a balance between the benefits of using debt and the risk of bankruptcy. (Brigham, E. F., & Houston, J, 2019). Meanwhile, the Pecking Order Theory states that companies tend to prefer internal funding over external funding, and debt is prioritized over issuing new shares (Brigham, E. F., & Houston, J, 2019).

However, the relationship between capital structure and financial performance is not always consistent. Previous research has shown varying findings, with some studies finding a negative effect of capital structure on financial performance. (Iqbal, M., & Shah, A. (2021). While other studies show a positive or even insignificant effect, this inconsistency indicates that other factors may influence the relationship.

One factor thought to play a significant role is market volatility. Market volatility reflects the level of uncertainty in stock price movements, influenced by macroeconomic conditions, government policies, and global dynamics. (Rizwan, Ahmad, and Ashraf. 2020). In financial research, market volatility is often proxied by the beta coefficient (β), which measures the sensitivity of stock returns to market movements. According to the Efficient Market Hypothesis, stock prices reflect all available information, so changes in market conditions will impact company performance. (Fama, E. F. (1970).

Several previous studies have shown that market volatility can moderate the relationship between capital structure and financial performance. In stable market conditions, the use of debt can increase profitability, but in volatile market conditions, the use of debt can actually worsen a company's financial performance. (Kumar, R., & Kaushik R. 2022). This shows that external factors have an important role in determining the effectiveness of a company's funding decisions.

However, most previous research still focuses on the direct influence of capital structure on financial performance without comprehensively considering the role of external factors. Therefore, there is a research gap that needs to be filled, particularly in examining the role of market volatility as a moderating variable in the relationship between capital structure and financial performance.

Based on this description, this study aims to analyze the influence of capital structure on the financial performance of automotive manufacturing companies listed on the Indonesia Stock Exchange and examine the role of market volatility in moderating this relationship. This research is expected to provide theoretical contributions by integrating the perspectives of Trade-off Theory, Pecking Order Theory, and the Efficient Market Hypothesis, as well as

provide practical implications for company management, investors, and stakeholders in financial decision-making amidst dynamic market conditions.

REVIEW OF LITERATURE

Theory of Capital Structure

Capital structure is a fundamental concept in financial management that explains how companies determine the optimal combination of debt and equity to finance operational and investment activities. Decisions regarding capital structure affect not only the cost of capital but also financial risk and firm value. Therefore, companies need to consider various theories as a basis for determining their financing policies.

One key theory is the Trade-off Theory, which states that companies will balance the benefits of using debt in the form of tax savings (tax shields) with the costs arising from bankruptcy risk. According to this theory, there is an optimal capital structure point, the point where the additional benefits from using debt equal the additional costs incurred (Brigham, E. F., and Houston, J. 2019). Thus, companies that achieve an optimal capital structure will maximize their value.

Furthermore, the Pecking Order Theory explains that companies have a hierarchical preference for funding sources. Companies tend to use internal funds first, such as retained earnings, before resorting to external financing. If external financing is needed, companies prefer debt over issuing new shares. (Brealey, R. A., Myers, S. C., and Franklin Allen, 2016). This is due to information asymmetry and relatively high stock issuance costs. This theory explains why companies with high profitability tend to have lower debt levels.

Furthermore, Agency Theory highlights the relationship between owners (principals) and managers (agents) in financial decision-making. Capital structure plays a crucial role in mitigating conflicts of interest between the two parties. The use of debt can act as a disciplining mechanism for management due to the obligation to pay interest and principal. However, excessive use of debt can actually create new conflicts, particularly related to the risk of bankruptcy and financial distress, (Jensen, M. C., and Meckling, W. H. 2019).

On the other hand, the Efficient Market Hypothesis (EMH) explains that stock prices in the market reflect all available information (Fama, E. F. 1970). This theory emphasizes that market conditions play a significant role in influencing company performance. The EMH consists of three forms: weak, semi-strong, and strong efficiency, each of which describes the level of information reflected in stock prices. In the context of this research, the EMH serves as a foundation for understanding how market volatility can influence the relationship between capital structure and financial performance.

Company Financial Performance

Financial performance is a key indicator reflecting a company's success in achieving its financial goals. Financial performance demonstrates a company's ability to manage resources effectively and efficiently to generate profits and maintain financial stability. Financial performance assessment is crucial for various parties, such as investors, creditors, and management, in strategic decision-making.

In general, financial performance is measured using various financial ratios. One key indicator is profitability, which reflects a company's ability to generate profits (Kusuma, M., Zuhroh, D., Assih, P., and Chandrarin, G. (2021). Commonly used profitability ratios include

Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE). In this study, ROA is used as the primary proxy because it demonstrates a company's effectiveness in utilizing assets to generate profit (Kasmir, S.E., M. 2019).

Besides profitability, liquidity is also an important indicator of a company's ability to meet short-term obligations. Liquidity ratios include the current ratio, quick ratio, and cash ratio. Furthermore, solvency is used to measure a company's ability to meet long-term obligations, which is generally measured by the Debt-to-Assets Ratio (DAR) and Debt-to-Equity Ratio (DER) (Hartato, E., & Candra, Y. T. A. 2024). Meanwhile, activity ratios are used to assess a company's efficiency in utilizing assets to generate revenue (Handayani, L. T., and Handayani, A. 2022).

Good financial performance reflects a company's health and ability to create value for stakeholders. Therefore, financial performance analysis is a crucial aspect of corporate financial research.

Factors Affecting Financial Performance (ROA)

Financial performance, particularly as measured by ROA, is influenced by various internal and external factors. One of the most dominant internal factors is capital structure. Capital structure determines how a company finances its assets, which ultimately affects the efficiency of asset utilization and profitability (Brigham, E. F., & Houston, J. 2019). Optimal use of debt can increase profitability through tax benefits, but excessive use can increase interest expenses and reduce profits.

In addition to capital structure, external factors such as market volatility also play a significant role. Market volatility reflects the level of uncertainty in stock price movements. In conditions of high volatility, investment risk increases and can impact a company's financing decisions and financial performance (Duguleana, L., and Deszke, K. (2024). Therefore, relevant market volatility is used as a moderating variable in the relationship between capital structure and financial performance.

Other factors that influence financial performance include liquidity, company size, and solvency. Understanding these factors is crucial for management in formulating effective financial strategies.

Capital Structure Concept

Capital structure is the balance between debt and equity used by a company to finance its activities. Decisions regarding capital structure are crucial because they impact the cost of capital, financial risk, and firm value. An optimal capital structure is one that minimizes the cost of capital while maximizing firm value.

Capital structure can be measured using several indicators, including the Debt to Equity Ratio (DER) and the Debt to Assets Ratio (DAR). DER indicates the ratio of debt to equity, while DAR indicates the proportion of debt to total assets. Both ratios are used to measure a company's leverage level.

Factors Influencing Capital Structure

A company's capital structure is influenced by various factors, both internal and external. One key factor is profitability, with companies with high profitability tending to use internal financing and thus have lower debt levels (Aslah, T. 2020). Liquidity also affects capital structure, where companies with high liquidity tend not to rely on debt (Mukaromah.,

and Suwarti, T. 2022). Furthermore, company size is an important factor because larger companies have easier access to external funding sources. Another equally important factor is asset structure, particularly fixed assets that can be used as collateral for loans. Furthermore, business risk also influences capital structure decisions, with high-risk companies tending to avoid excessive debt to reduce the risk of bankruptcy. (Suciati, W., Pardanawati, S. L., and Pravasanti, Y. A. (2022).

Market Volatility

Market volatility is a measure of the level of price fluctuations of financial assets over a given period. Volatility reflects the level of uncertainty and risk in the market. The higher the volatility, the greater the likelihood of significant price changes within a short period of time (Deveikyte, J., Geman, H., Piccari, C., and Proveti, A. 2022). In the investment context, volatility is an important indicator for investors in assessing risk and potential returns. Market volatility also reflects the market's response to new information, as explained in the Efficient Market Hypothesis. Therefore, market volatility is highly relevant in financial research, particularly in analyzing the relationship between capital structure and financial performance.

Market volatility can be measured using several methods, such as standard deviation, the ARCH/GARCH model, and volatility indices like the VIX. (William F. Sharpe, W. F. (1964). In this study, market volatility is proxied using the beta coefficient (β), which measures the sensitivity of stock returns to overall market movements.

RESEARCH METHOD

This study uses a quantitative approach with an associative approach, aiming to examine the causal relationship between independent, dependent, and moderating variables. A quantitative approach was chosen because it can produce objective findings through numerical data analysis and statistical testing, enabling generalizability of the research results. In this context, the study not only examines the direct effect of capital structure on financial performance but also analyzes the role of market volatility as a moderating variable that can strengthen or weaken this relationship.

The research subjects are automotive manufacturing companies listed on the Indonesia Stock Exchange (IDX). This subsector was selected based on its strategic role in the national economy and its sensitivity to changing economic conditions, particularly during the Covid-19 pandemic. The research period covers 2019–2024, representing conditions before, during, and after the pandemic, thus providing a comprehensive picture of the dynamics of capital structure and financial performance under various economic conditions.

The study population consisted of all 16 automotive manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the study period. The sampling technique used purposive sampling, with the following criteria: (1) companies consistently listed during the 2019–2024 period, (2) having complete and publicly available annual financial reports, and (3) having been operating for at least three years before and after the pandemic. Based on these criteria, a sample of 13 companies was obtained. With a six-year observation period, this study used panel data (a combination of cross-section and time series) with a total of 78 observations.

The type of data used was quantitative secondary data obtained from company financial reports and official publications of the Indonesia Stock Exchange (IDX). Data

collection was conducted through documentation, namely by collecting relevant data from financial reports, annual reports, and other official sources without direct interaction with respondents.

This study uses three main variables: (1) capital structure as the independent variable, proxied by the Debt to Equity Ratio (DER) and the Debt to Assets Ratio (DAR); (2) financial performance as the dependent variable, proxied by Return on Assets (ROA); and (3) market volatility as the moderating variable, measured using the Beta Coefficient (β). ROA is used to measure a company's ability to generate profits from its assets, while DER and DAR describe the company's level of leverage. The Beta Coefficient is used to measure the stock's sensitivity to market movements, reflecting the level of systematic risk.

The data analysis technique used in this study is Moderated Regression Analysis (MRA) with the assistance of EViews software. The analysis is conducted in several stages. First, descriptive statistical analysis is performed to describe the characteristics of the data through minimum, maximum, average, and standard deviation values. Second, classical assumption tests were conducted, including the normality test (Jarque-Bera), heteroscedasticity test (Glejser), and autocorrelation test (Durbin-Watson), to ensure that the regression model met the required assumptions. Next, a multiple linear regression analysis was conducted to examine the direct effect of capital structure (DER and DAR) on financial performance (ROA).

Research Hypothesis

Based on theoretical studies, the structure of capital affects financial performance. High leverage can increase profitability through tax benefits, but it also increases financial risk. In particular, DER and DAR are expected to affect ROA. Further, market volatility is considered to moderate this relationship, where, in volatile market conditions, the influence of capital structure on financial performance becomes weaker or even negative. The hypothesis of this study is as follows:

- H1: Debt to Equity Ratio (DER) has a negative effect on financial performance (ROA).
- H2: Debt to Assets Ratio (DAR) has a negative effect on financial performance (ROA).
- H3: Market volatility measured by the Beta Coefficient moderates by weakening the influence of capital structure (DER) on financial performance (ROA).
- H4: Market volatility, measured by *the Beta Coefficient*, moderates by weakening the influence of capital structure (DAR) on financial performance (ROA).

Research Model

The conceptual framework in this study describes the relationship between capital structure as an independent variable, financial performance as a dependent variable, and market volatility as a moderating variable. Capital structure, as measured by DER and DAR, is assumed to influence ROA, while market volatility moderates this relationship (Sugiyono, 2022).

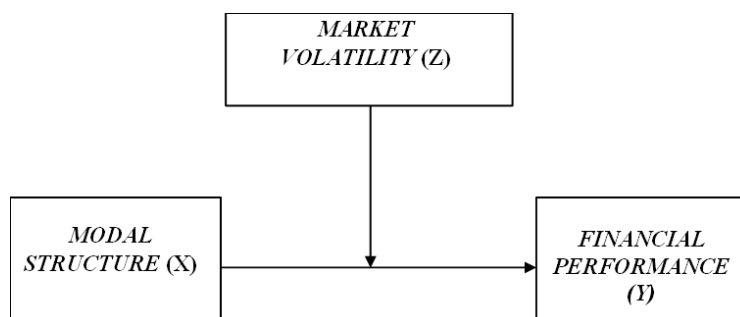


Figure 1.
Conceptual Framework

The capital structure proxied by Debt to Equity Ratio (DER) and Debt to Asset Ratio (DAR) is a company's funding policy that can affect profitability (ROA). Based on Trade-off Theory, Pecking Order Theory, and Agency Theory, optimal debt use can improve company performance, but excessive debt use has the potential to reduce profitability. The relationship is allegedly influenced by market volatility (Beta (β)). as a moderation variable. Based on the Efficient Market Hypothesis, market conditions reflected in stock beta can strengthen or weaken the influence of capital structure on profitability. Therefore, this study analyzes the influence of DER and DAR on ROA with market volatility as a moderation variable.

RESULTS AND DISCUSSION

The automotive sector was chosen based on the consideration that this sector is one of the sectors most impacted by the Covid-19 pandemic. In 2020, there was a significant decline in vehicle demand due to restrictions on economic activity. However, in the 2021–2023 period, this sector began to recover as economic conditions improved. Theoretically, this research is based on capital structure concepts, including Trade-off Theory, Pecking Order Theory, and the concept of systematic risk in the Capital Asset Pricing Model (CAPM), as measured by Beta (β).

Descriptive Variable Analysis

Descriptive analysis was conducted to provide a general overview of the characteristics of the research data. The variables analyzed included DER, DAR, ROA, and Beta.

Table 3
Descriptive Statistical Results

Variabel	Minimum	Maksimum	Mean	Std. Dev
ROA	-8,45	12,67	3,12	4,56
DER	0,25	2,85	1,34	0,72
DAR	0,18	0,74	0,49	0,15
Beta (β)	0,62	1,89	1,21	0,34

Source: Secondary data processed using SPSS (2026)

The descriptive statistics show that ROA had an average value of 3.12%, with a minimum value of -8.45% and a maximum of 12.67%. The negative minimum value indicates that during certain periods, particularly during the pandemic, some companies experienced losses. The relatively high standard deviation indicates variations in profitability between companies.

The DER variable had an average value of 1.34, indicating that companies generally have a higher level of debt than equity. Meanwhile, the DAR variable had an average value of 0.49, meaning that nearly half of the company's assets are financed by debt. This indicates that companies in the automotive sector tend to have relatively high levels of leverage. The Beta (β) variable had an average value of 1.21, indicating that automotive company stocks have higher volatility than the general market. This indicates that this sector has a relatively high level of systematic risk.

Classical Assumption Test

Before conducting the regression test, a classical assumption test was conducted to ensure that the model met the BLUE (Best Linear Unbiased Estimator) criteria.

Table 4
Normality Test Results (Kolmogorov-Smirnov)

Description	Value
N	78
Test Statistic	0,082
Asymp. Sig (2-tailed)	0,200
Conclusion	Normally Distributed Data

Source: Secondary data processed using SPSS (2026)

The normality test results indicated that the data were normally distributed with a significance value of 0.200 (>0.05).

Table 5
Results of Multicollinearity Test and Heteroscedasticity Test (Glejser Test)

Variabel	Tolerance	VIF	Sig	Description
DER	0,642	1,558	0,312	Multicollinearity does not occur, and it is free of heteroscedasticity
DAR	0,635	1,575	0,287	Multicollinearity does not occur and is free of heteroscedasticity
Beta	0,711	1,405	0,421	Multicollinearity does not occur and is free of heteroscedasticity

Source: Secondary data processed using SPSS (2026)

The multicollinearity test indicated that all variables had VIF values <10 and tolerance values >0.10 , indicating no multicollinearity. Furthermore, the heteroscedasticity

test indicated no heteroscedasticity issues because the significance values for all variables were >0.05 .

Tabel 6
Autocorrelation Test Results (Durbin-Watson)

Description	Value	Criteria	Description
Durbin-Watson	1,893	$-2 < DW < +2$	No autocorrelation occurs

Source: Secondary data processed using SPSS (2026)

The autocorrelation test using the Durbin-Watson method yielded a value of 1.893, which fell within the range of -2 to +2, thus concluding that no autocorrelation occurred. Therefore, the regression model used in this study was suitable for use in hypothesis testing.

Multiple Linear Regression Analysis

The regression analysis results indicated that DER and DAR had a negative effect on ROA.

Table 7
Multiple Linear Regression Analysis Results

Variabel	B	Std. Error	t	Sig
(Constant)	5,842	1,214	4,810	0,000
DER	-1,765	0,542	-3,256	0,002
DAR	-4,218	1,783	-2,366	0,021

Source: Secondary data processed using SPSS (2026)

Berdasarkan tabel di atas, diperoleh persamaan regresi sebagai berikut:

$$ROA = 5,842 - 1,765DER - 4,218DAR$$

Based on the regression results, the constant value was 5.842 with a significance level of $0.000 < 0.05$, indicating that when DER and DAR are assumed to be constant, ROA is estimated at 5.842. The DER variable has a coefficient of -1.765 with a significance value of $0.002 < 0.05$, indicating a negative and significant effect on ROA. This means that an increase in DER tends to reduce the company's profitability due to higher debt burden and financial risk. Likewise, DAR has a coefficient of -4.218 with a significance value of $0.021 < 0.05$, showing a negative and significant effect on ROA. These results indicate that a higher proportion of assets financed by debt can reduce the company's ability to generate profits..

F Test (Model Feasibility Test)

The F test was carried out to find out whether the variables Debt to Equity Ratio (DER) and Debt to Assets Ratio (DAR) simultaneously had an effect on Return on Assets (ROA).

Table 8
Model Feasibility Test Results

Variabel	t	Sig
ROA	9,842	0,000

Source: Secondary data processed using SPSS (2026)

The results of the F test showed a significance value of $0.000 < 0.05$, so that DER and DAR simultaneously had a significant effect on ROA. Thus, the regression model is declared feasible to explain the relationship between the capital structure and the profitability of the company.

Koefisien Determinasi (R^2)

The coefficient of determination (R^2) is used to measure the ability of independent variables to explain the variation of dependent variables.

Table 9
Determinant Coefficient Results

Variabel	R Square	Adjusted R Square	Std. Error
ROA	0,213	0,192	3,874

Source: Secondary data processed using SPSS (2026)

The R-Square value of 0.213 indicates that 21.3% of ROA variations can be explained by DER and DAR, while the remaining 78.7% are influenced by other factors outside the study model. Meanwhile, the Adjusted R Square value of 0.192 showed that the model's ability to explain the ROA variation was 19.2% after adjusting for the number of variables and research samples.

Moderation Analysis (MRA)

Moderated Regression Analysis (MRA) was used to test whether market volatility proxied with Beta (β) was able to moderate the influence of capital structure (DER and DAR) on profitability (ROA). The test was performed by adding interaction variables between DER and Beta as well as DAR and Beta into the regression model. The moderation regression model used in this study is as follows:

$$ROA = \alpha + \beta_1 DER + \beta_2 DAR + \beta_3 Beta + \beta_4 (DER \times Beta) + \beta_5 (DAR \times Beta) + \varepsilon$$

If the significance value of the interaction variable is less than 0.05, then Beta is declared to be able to moderate the relationship between capital structure and profitability.

Tabel 10
Results of Moderated Regression Analysis (MRA)

Variabel	B	Std. Error	t	Sig	Description
DER X Beta	-1,203	0,512	-2,350	0,021	Significant Moderation
DAR X Beta	-0,987	0,478	-2,065	0,043	Significant Moderation

Source: Secondary data processed using SPSS (2026)

Based on the MRA results, the $DER \times Beta$ interaction variable had a significance value of $0.021 < 0.05$, while the $DAR \times Beta$ was $0.043 < 0.05$. These results show that Beta

(β) is able to moderate the influence of capital structure on profitability (ROA). Negative interaction coefficients indicate that market volatility reinforces the negative influence of leverage on profitability. Thus, the higher the level of systematic risk reflected in the beta value of the stock, the greater the negative impact of the use of debt on ROA. This condition suggests that companies with high levels of leverage tend to experience a more significant decline in profitability when faced with highly volatile market conditions.

The Effect of Debt to Equity Ratio (DER) on Return on Assets (ROA)

Based on the results of the regression test, the Debt to Equity Ratio (DER) has a negative and significant effect on Return on Assets (ROA), so the first hypothesis (H1) is accepted. These results show that the higher the proportion of debt compared to equity, the more the company's profitability tends to decrease. This condition indicates that excessive use of debt increases interest expenses and financial risks, thereby reducing the company's ability to generate profits.

This finding is in line with the Trade-Off Theory which states that the use of debt that exceeds the optimal level can increase the risk of *financial distress* and reduce the company's profitability. In addition, the results of this study also support the Pecking Order Theory which explains that companies tend to prioritize internal funding over funding through debt. The results of this study are consistent with the research of Khan and Bibi (2021) which found that the Debt to Equity Ratio (DER) has a negative and significant effect on Return on Assets (ROA), so that the higher the level of leverage of the company, the lower the company's ability to generate profits. This finding is also supported by research Laily et al. (2022) which shows that profitability has a negative and significant effect on capital structure. These results indicate that companies with higher levels of profitability tend to rely on internal funding sources and reduce the use of debt, so excessive use of leverage has the potential to lower the company's financial performance.

The Effect of Debt to Assets Ratio (DAR) on Return on Assets (ROA)

Based on the results of the study, the Debt to Assets Ratio (DAR) has a negative and significant effect on Return on Assets (ROA), so the second hypothesis (H2) is accepted. This result shows that the greater the proportion of assets financed by debt, the more the company's ability to generate profits tends to decrease. The high use of debt leads to an increase in liability burden and financial risks which ultimately suppress the company's profitability.

This finding is in line with the Trade-off Theory which explains that the use of debt can provide tax benefits, but if it exceeds the optimal level, it will increase bankruptcy costs and financial risks so that it negatively affects profitability. In addition, the Pecking Order Theory states that companies tend to use debt when internal funds are insufficient, which can be an indication of financial pressure. The results of this study are consistent with the research of Duguleana et al. (2024) which found that the debt-to-assets ratio has a negative effect on profitability, thus strengthening the evidence that high leverage can reduce company performance.

The Role of Market Volatility Moderation Variable (Beta) on the Relationship between Debt to Equity Ratio (DER) and Return on Assets (ROA)

Based on the results of the MRA test, the $DER \times \text{Beta}$ interaction variable had a significance value of $0.021 < 0.05$ with a negative coefficient, so that the third hypothesis (H3) was accepted. These results show that Beta is able to moderate the relationship between

DER and ROA, where the higher the market volatility, the stronger the negative influence of DER on the company's profitability. This condition indicates that companies with high debt levels will be more susceptible to a decline in profits when facing unstable market conditions.

These findings are in line with the Trade-Off Theory which states that excessive use of debt can increase the risk of *financial distress*, especially in volatile market conditions. In addition, the results of this study also support the Efficient Market Hypothesis (EMH) which explains that market conditions are reflected in stock prices and can affect company performance. The results of this study are consistent with the research of Endri et al. (2021) and Kumar and Kaushik (2022) which found that high leverage tends to worsen a company's profitability in volatile market conditions.

The Role of Market Volatility Moderation Variable (Beta) on the Relationship between Debt to Assets Ratio (DAR) and Return on Assets (ROA)

Based on the results of the MRA test, the $DAR \times \text{Beta}$ interaction variable has a significance value of $0.043 < 0.05$ with a negative coefficient, so that the fourth hypothesis (H4) is accepted. These results show that Beta is able to moderate the relationship between DAR and ROA, where the higher the market volatility, the stronger the negative influence of DAR on profitability. In other words, companies that have a greater proportion of assets financed by debt will face a higher risk of declining profitability when market conditions are volatile.

These findings are in line with the Trade-Off Theory which explains that the use of debt that exceeds the optimal level can increase financial risk and decrease the profitability of companies. The results of this study are also consistent with the research of Endri et al. (2021) and Aishwarya et al. (2022) who found that debt-based leverage has a negative influence on profitability, especially in unstable economic conditions. Therefore, companies need to consider market conditions in determining capital structure policies so that financial performance is maintained.

CONCLUSION

Based on the results of the study, it can be concluded that the capital structure proxied with Debt to Equity Ratio (DER) and Debt to Assets Ratio (DAR) has a negative and significant effect on the Return on Assets (ROA) of manufacturing companies in the automotive subsector listed on the Indonesia Stock Exchange. These results show that the higher the use of debt in a company's funding structure, both measured through DER and DAR, the company's profitability tends to decrease. This condition indicates that high debt can increase interest expense and financial risk, thereby reducing the company's ability to generate profits.

In addition, the study also found that market volatility, proxied by Beta (β), was able to moderate the relationship between capital structure and profitability. The Beta variable was shown to strengthen the negative influence of DER and DAR on ROA, which suggests that in more volatile market conditions, the negative impact of debt use on the company's profitability becomes even greater. As such, companies need to maintain an optimal capital structure and consider the level of market volatility in funding decision-making so that the company's financial performance can be maintained and remain sustainable.

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