

Profitability and Liquidity Effects on Capital Structure: The Moderating Role of Crude Palm Oil Prices in Indonesian Plantation Firms

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ABSTRACT

This study examines the effect of profitability and liquidity on capital structure, with crude palm oil (CPO) prices as a moderating variable, in Indonesian palm oil plantation companies listed on the Indonesia Stock Exchange during 2016–2025. Using a quantitative approach and moderated regression analysis (MRA) on 100 firm-year observations from 10 companies, the research evaluates how return on assets (ROA) and current ratio (CR) influence debt-to-asset ratio (DAR) under fluctuating CPO prices. Findings indicate that profitability and liquidity significantly reduce leverage, while CPO prices do not directly affect capital structure but moderate these relationships. The study highlights the combined impact of internal financial performance and external commodity prices on financing decisions, providing implications for managerial strategy and investment risk assessment.

INTRODUCTION

Decisions regarding capital structure are fundamental for firms operating in capital-intensive sectors, such as palm oil plantations, because they influence financial stability, investment capacity, and operational performance. Indonesian palm oil companies listed on the Indonesia Stock Exchange face a complex environment where they must balance long-term investment needs with the risks of financial leverage. Profitability, commonly measured by return on assets (ROA), and liquidity, measured by current ratio (CR), are key internal factors shaping the extent to which firms rely on debt financing. External factors, particularly the fluctuating price of crude palm oil (CPO), may further influence these relationships.

Empirical observations from 2016 to 2025 show that the debt-to-asset ratio (DAR) of palm oil companies generally increased until 2022 during periods of high CPO prices, before stabilizing in subsequent years. During the same period, ROA and CR exhibited variable trends, indicating that internal financial performance responds dynamically to both operational management and global market conditions. These patterns highlight the interplay between internal financial health and external commodity market fluctuations, which can affect decisions regarding debt utilization and overall capital strategy.

Previous research has established that profitability tends to reduce leverage, aligning with Pecking Order Theory. Studies by Mardani et al., (2023), Yilmaz & Alghazali, (2024), and Jaworski & Czerwinka, (2021) consistently found negative associations between ROA and debt levels, while research by Yusuf & Dyarini, (2025), Nguyen & Nguyen, (2024), and Lehenchuk et al., (2022), demonstrated that liquidity significantly impacts capital structure. However, results remain inconsistent across different industries and markets, and few studies have considered how commodity price fluctuations, such as changes in CPO prices, may moderate these effects in agribusiness sectors.

The moderating role of CPO prices is especially relevant for palm oil firms, given their dependence on global commodity markets for revenue. Prior studies in other resource-based industries, such as Barrachina-Fernández & Sogorb-Mira, (2024) and Narayan & Nasiri, (2020) have shown that oil and gas prices can influence corporate debt policies. Nonetheless, empirical research focusing on the Indonesian palm oil sector, specifically examining CPO price as a moderating variable between profitability, liquidity, and capital structure, remains scarce.

This study addresses this gap by investigating how profitability and liquidity influence capital structure and how CPO prices moderate these relationships. Using 100 firm-year observations from 10 Indonesian palm oil companies and employing moderated regression analysis (MRA), the research captures the interactions between internal financial performance and external market conditions. The study contributes to theory by extending capital structure literature to commodity-based industries and provides practical insights for managers and investors on financing strategies under volatile market conditions.

By integrating internal financial indicators with external commodity market dynamics, this research provides a more comprehensive understanding of capital structure decisions in agribusiness. It emphasizes the importance of

considering both firm-specific factors and market conditions when making financing choices, highlighting the nuanced ways in which profitability, liquidity, and commodity prices interact to shape debt management strategies.

THEORETICAL REVIEW

Pecking Order Theory

Pecking Order Theory is one of the main theories in capital structure studies that explains firms' preferences in choosing funding sources based on the level of information asymmetry between management and outside investors. The basic principle of this theory states that companies do not have a single optimal capital structure but tend to follow a financing hierarchy when facing funding needs Myers & Majluf, (1984). In this context, companies will first utilize internal funding (e.g., retained earnings) because this source does not incur transaction costs or require additional disclosure. When internal sources are insufficient, companies then use debt because the cost of information and negative signals are lower than issuing new equity. Finally, equity issuance is the last resort because it may send negative signals to the market that the company's stock may be overvalued Afrizal & Suhardi, (2019).

Trade-Off Theory

Trade-Off Theory explains that companies will strive to achieve an optimal capital structure by balancing the benefits and costs of debt usage. This theory argues that debt usage can increase firm value, but only up to a certain point. If debt usage is too high, the financial risk borne by the company also increases. The benefits of debt include tax shields from interest expense deductions, relatively lower cost of capital compared to equity issuance, and potential increase in firm value. However, the costs include financial distress, bankruptcy risk, agency costs, and increasing interest expenses Wagisuwari & Sitorus (2024) and Ricca et al., (2021)

Capital Structure

Capital structure represents one of the fundamental concepts in financial management that describes the combination of various financing sources used by a company to fund its operations and assets. In this study, capital structure is measured using the Debt to Asset Ratio (DAR), which compares total debt to total assets. DAR was chosen because it reflects the extent to which a company's assets are financed by total debt, both short-term and long-term, which is relevant to the characteristics of palm oil companies that are capital-intensive and utilize a combination of short-term and long-term financing Febrianti & Erma, (2025).

Profitability

Return on Assets (ROA) is the most commonly used profitability measure to assess the efficiency of total asset utilization in generating profit. ROA is calculated by comparing a company's net income to its total assets. A higher ROA indicates greater efficiency in utilizing assets to generate profit Kalbuana et al., (2022). In the context of commodity-based companies, ROA becomes an

important measure because these companies possess large physical assets that need to be efficiently utilized Akpadaka et al., (2024)

Liquidity

Company liquidity refers to the ability to meet short-term obligations without experiencing financial difficulties. Current Ratio (CR) is calculated by dividing current assets by current liabilities, assessing whether the most easily convertible assets are sufficient to pay short-term debts. A higher CR indicates greater ability to meet short-term obligations Radu et al., (2023). Furthermore, companies with strong liquidity often possess greater financial flexibility, enabling them to maintain operations while exploiting opportunities without relying on expensive external financing Khoza, (2025)

CPO Commodity Prices as Moderating Variable

Commodity prices represent the market value of primary goods traded in domestic and international markets based on supply and demand mechanisms. Crude Palm Oil (CPO) is a strategic plantation commodity that plays an important role in Indonesia's economy as a major contributor to foreign exchange through export activities. CPO price movements are influenced by various factors including global consumption levels, weather conditions, government policies, crude oil price movements, exchange rates, and global geopolitical conditions.

As a moderating variable, CPO commodity prices are hypothesized to strengthen or weaken the relationship between internal financial conditions (profitability and liquidity) and capital structure decisions. When CPO prices increase, companies tend to obtain higher revenue and profitability, enabling internal financing and reducing debt dependence. Conversely, when CPO prices decline, revenue and profit decrease, potentially requiring external financing. Several previous studies support this reasoning. Barrachina-Fernández & Sogorb-Mira, (2024) found that commodity prices influence capital structure decisions in the energy sector, while Marimuthu et al., (2023) demonstrated that earnings volatility can moderate the relationship between firm-specific factors and capital structure.

Hypothesis Development

Profitability and Capital Structure

Based on Pecking Order Theory, companies will prioritize internal funding from retained earnings over external debt financing. Therefore, the higher the profitability level, the greater the company's ability to finance operational and investment needs from internal funds, leading to decreased debt usage. This indicates a negative relationship between ROA and DAR. In palm oil plantation companies, when ROA increases, companies have greater profit accumulation capacity, strengthening the equity component and directly reducing DAR. Prior studies support this relationship, including Ahmed & Sabah, (2021); Rahman et al., (2023); Mardani et al., (2023); and Dewi & Fachrurrozie, (2021). Based on this theoretical and empirical support, the following hypothesis is proposed.

H1: Profitability negatively influences capital structure.

Liquidity and Capital Structure

Liquidity, proxied by Current Ratio (CR), reflects a company's ability to meet short-term obligations using current assets. Companies with high liquidity tend to have better financial flexibility and lower default risk, which can reduce the need for additional debt. In palm oil companies, liquidity is significantly influenced by production cycles and export policy dynamics. When companies maintain strong cash positions amid CPO price volatility, the need for additional borrowing can be reduced. Previous studies support this negative relationship, including Jaworski & Czerwonka, (2021); Khaki & Akin, (2020); and Mardani et al., (2023).

H2: Liquidity negatively influences capital structure.

CPO Prices Moderate Profitability and Capital Structure

In the relationship between profitability (ROA) and capital structure (DAR), CPO prices serve as an external factor affecting the magnitude of profit generated. When CPO prices increase, the impact of rising ROA on decreasing DAR tends to become stronger because high operational cash flows enable companies to repay debt or reduce dependence on external financing. Conversely, when CPO prices decline, even if a company records relatively stable ROA, the ability to reduce DAR may weaken due to profit margin pressures.

H3: CPO commodity prices moderate the effect of profitability on capital structure.

CPO Prices Moderate Liquidity and Capital Structure

In the relationship between liquidity (CR) and capital structure (DAR), CPO prices also function as a contextual factor determining the effectiveness of liquidity in controlling debt levels. When CPO prices are high, healthy liquidity becomes more effective in maintaining stable capital structure because companies have strong cash inflows. However, when CPO prices decline or show high volatility, companies may still require additional debt despite having relatively good liquidity levels, potentially weakening the negative relationship between CR and DAR.

H4: CPO commodity prices moderate the effect of liquidity on capital structure.

METHODOLOGY

Research Method

This study employed a quantitative approach with a causal associative research design. This design was chosen because the study aims to examine the causal relationships among profitability, liquidity, commodity prices, and capital structure. The analytical method used is multiple linear regression analysis developed through Moderated Regression Analysis (MRA). Data processing and analysis were conducted using STATA 17 software.

Population and Sample

The population consisted of all oil palm plantation sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the observation period of 2016–2025. Purposive sampling was applied based on the following criteria: (1) palm oil plantation companies consistently listed on the IDX during 2016–2025; (2) companies publishing complete audited annual financial statements (ending December 31) during the research period; (3) companies that did not experience delisting or trading suspension during 2016–2025; and (4) companies with complete data for calculating DAR, ROA, and CR consecutively. From 32 population companies, 10 companies met the criteria, resulting in 100 total observations (10 companies × 10 years).

Table 1. Sample Companies

No	Code	Company Name
1	AALI	Astra Agro Lestari Tbk
2	BWPT	Eagle High Plantations Tbk.
3	DSNG	Dharma Satya Nusantara Tbk.
4	GZCO	Gozco Plantations Tbk.
5	GOLL	PT Golden Plantation Tbk
6	JAWA	Jaya Agra Wattie Tbk.
7	LSIP	PP London Sumatra Indonesia Tbk
8	SGRO	Sampoerna Agro Tbk.
9	SIMP	Salim Ivomas Pratama Tbk.
10	SSMS	Sawit Sumbermas Sarana Tbk.

Source: *idx.co.id*.

Data Collection

Data were collected using secondary data from financial statements of oil palm plantation sub-sector companies listed on the IDX for the period 2016–2025. The variables used include Return on Assets (ROA) for profitability, Current Ratio (CR) for liquidity, Debt to Asset Ratio (DAR) for capital structure, and CPO commodity prices. Data sources include the Indonesia Stock Exchange website, company websites providing financial statements, and the World Bank (The Pink Sheet) for commodity prices.

Data Analysis

Data was analyzed using Moderated Regression Analysis (MRA), a technique used to test the influence of independent variables on the dependent variable while involving moderating variables. The MRA regression equation used is $DAR = \alpha + \beta_1 ROA + \beta_2 CR + \beta_3 HCPO + \beta_4 (ROA \times HCPO) + \beta_5 (CR \times HCPO) + \varepsilon$. The analysis stages include descriptive statistics, classical assumption tests (normality using Shapiro-Wilk, multicollinearity using VIF, heteroscedasticity using Breusch-Pagan, and autocorrelation using Durbin-Watson), MRA regression analysis, hypothesis testing (t-test and F-test), and coefficient of determination (R^2). Hypotheses were tested at the significance level of $p < 0.05$.

RESULTS

Descriptive Statistics

The descriptive analysis shows that the number of observations in this study is 100 data points. Profitability proxied by ROA (X1) has a minimum value of -0.436, a maximum value of 0.174, a mean of 0.014, and a standard deviation of 0.083. The mean value indicates that the overall profitability level of palm oil plantation companies during the research period is relatively low. The negative minimum value indicates that some companies experienced losses in certain years.

Liquidity proxied by CR (X2) has a minimum value of 0.153, a maximum of 10.498, a mean of 1.660, and a standard deviation of 1.942. This result shows that the companies' ability to meet short-term obligations varies considerably. Capital structure proxied by DAR (Y) has a minimum of 0.093, a maximum of 0.967, a mean of 0.541, and a standard deviation of 0.231. The mean value indicates that approximately 54.1% of company assets are financed by debt. CPO commodity prices (Z) have a minimum of 41.300, a maximum of 80.800, a mean of 64.130, and a standard deviation of 13.734, showing considerable fluctuation in CPO prices during the research period. The descriptive statistics are presented in Table 2.

Table 2. Descriptive Statistics

Variable	Obs	Min	Max	Mean	Std. Dev
ROA (X1)	100	-0.436	0.174	0.014	0.083
CR (X2)	100	0.153	10.498	1.660	1.942
DAR (Y)	100	0.093	0.967	0.541	0.231
HCPO (Z)	100	41.300	80.800	64.130	13.734

Source: STATA 17 Output.

Classical Assumption Tests

Before hypothesis testing, classical assumption tests were conducted to ensure the validity of the regression model. The normality test using the Shapiro-Wilk test on the transformed residuals (resid_sqrt) yielded a W value of 0.97893 with a probability of 0.10971. Since the probability value is greater than 0.05, it can be concluded that the residuals are normally distributed.

The multicollinearity test results show that all independent variables and interaction terms have VIF values below 10, with a mean VIF of 1.40. This indicates no significant multicollinearity problems among the research variables. The results of the classical assumption tests confirm that the regression model satisfies the required assumptions, providing a valid foundation for hypothesis testing.

Table 3. Multicollinearity Test Results (VIF)

Variable	VIF	1/VIF
ROA	1.49	0.668943
CR	1.55	0.646238
HCPO	1.05	0.950099

ROA×HCPO	1.43	0.701472
CR×HCPO	1.48	0.674962
Mean VIF	1.40	

Source: STATA 17 Output.

Moderated Regression Analysis (MRA)

Moderated Regression Analysis was conducted to test the influence of independent variables on the dependent variable while simultaneously assessing the moderating role of CPO commodity prices. All independent variables and interaction terms were centered to reduce multicollinearity and facilitate interpretation of interaction coefficients. The results of the MRA are presented in Table 4.

Table 4. Moderated Regression Analysis Results

Variable	Coefficient	Std. Err.	z	P> z
ROA	-0.7433976	0.2395864	-3.10	0.003
CR	-0.0811614	0.0101564	-7.99	0.000
HCPO	0.0013086	0.0012090	1.08	0.282
ROA×HCPO	-0.0329874	0.0150315	-2.19	0.031
CR×HCPO	0.0018522	0.0007774	2.38	0.019
_cons	0.5399661	0.0163711	32.94	0.000

Source: STATA 17 Output.

Based on Table 4, the regression equation with moderating variable is obtained as follows: $DAR = 0.5399661 - 0.7433976(ROA) - 0.0811614(CR) + 0.0013086(HCPO) - 0.0329874(ROA \times HCPO) + 0.0018522(CR \times HCPO) + \epsilon_{it}$.

The F-test results show an F-value of 21.98 with a probability of 0.000, indicating that the overall regression model is significant. The coefficient of determination (R^2) is 0.5390 and the adjusted R^2 is 0.5145, meaning that 53.9% of the variation in capital structure (DAR) can be explained by the combination of profitability (ROA), liquidity (CR), CPO prices, and their interaction terms. The remaining 46.1% is explained by other factors not included in the model. The Root MSE of 0.16103 reflects a relatively small average prediction error, indicating good model accuracy.

Table 5. F-Test and Coefficient of Determination

	Value
F-statistic	21.98
Prob > F	0.0000
R-squared	0.5390
Adjusted R-squared	0.5145
Root MSE	0.16103
Number of obs	100

Source: STATA 17 Output.

Hypothesis Testing

Profitability (ROA) has a coefficient of -0.7433976 with a probability of 0.003, which is less than 0.05. Therefore, H1 is supported. This indicates that profitability has a negative and significant effect on capital structure (DAR). The higher the company's profitability, the lower the proportion of debt used in financing, reflecting more optimal utilization of internal capital.

Liquidity (CR) has a coefficient of -0.0811614 with a probability of 0.000. Therefore, H2 is supported. This result shows that liquidity also has a negative and significant effect on capital structure, indicating that companies with higher liquidity tend to reduce debt usage because their ability to meet short-term obligations enables more dominant internal financing.

CPO commodity prices (HCPO) have a coefficient of 0.0013086 with a probability of 0.282, which is greater than 0.05. This means that changes in CPO prices do not directly cause changes in corporate capital structure. Capital structure decisions in palm oil plantation companies tend to be more influenced by internal financial conditions than direct commodity price fluctuations.

The interaction between ROA and HCPO shows a coefficient of -0.0329874 with a probability of 0.031. Therefore, H3 is supported. This indicates that CPO prices strengthen the negative effect of profitability on capital structure. When CPO prices increase, the effect of profitability in reducing DAR becomes even stronger.

The interaction between CR and HCPO shows a coefficient of 0.0018522 with a probability of 0.019. Therefore, H4 is supported. This indicates that CPO prices moderate the relationship between liquidity and capital structure. However, the positive coefficient direction suggests that under certain CPO price conditions, the negative effect of liquidity on capital structure may weaken.

DISCUSSION

Profitability and Capital Structure

The findings indicate that profitability (ROA) has a negative and significant effect on capital structure (DAR). This result supports the Pecking Order Theory, which states that companies tend to prioritize internal funding sources over external debt. Companies with high profitability typically have larger retained earnings, allowing them to obtain financing from internal sources, thereby reducing dependence on debt. In palm oil companies, profits from operational activities can be used to finance working capital, plant maintenance, fertilizer purchases, replanting, and business expansion without increasing debt.

This finding is consistent with research by Ahmed & Sabah, (2021); Rahman et al., (2023); Jaworski & Czerwonka, (2021); Khaki & Akin, (2020); Mardani et al., (2023); and Dewi & Fachrurrozie, (2021), who found that profitability negatively affects capital structure. The similarity of findings indicates that companies with high profitability generally tend to reduce dependence on debt.

Liquidity and Capital Structure

The results show that liquidity (CR) has a negative and significant effect on capital structure. This finding also supports the Pecking Order Theory. Companies

with high liquidity have sufficient current assets to meet short-term obligations and fund operational needs, increasing financial flexibility and reducing debt requirements. From the perspective of Trade-Off Theory, the results are less supportive of the notion that financially healthy companies would be more inclined to add debt for tax benefits. Instead, the results suggest that more liquid companies tend to reduce debt, indicating that palm oil plantation companies in the research sample prioritize financial prudence and cash flow stability over maximizing tax benefits from debt.

This finding is consistent with Rahman et al., (2023); Jaworski & Czerwonka, (2021); Khaki & Akin, (2020); Mardani et al., (2023); and Dewi & Fachrurrozie, (2021), who stated that liquidity negatively affects capital structure. Liquidity is particularly important in the palm oil sector, where operations are significantly influenced by production cycles, fertilizer costs, plant maintenance, labor, and export market conditions.

CPO Commodity Prices and Capital Structure

The results show that CPO commodity prices do not have a direct significant effect on capital structure. This finding indicates that CPO price increases or decreases are not necessarily directly responded to by companies through changes in debt policy. This can occur because capital structure decisions are generally long-term in nature, while commodity prices can fluctuate in the short term. Companies likely do not immediately add or reduce debt solely because CPO prices change in a single period. Although not directly influential, CPO prices remain important for palm oil plantation companies because commodity prices affect revenue, profit margins, and cash generation capacity. Thus, CPO prices are more appropriately understood as an external factor that influences the relationship between internal financial conditions and capital structure decisions.

The Moderating Role of CPO Prices on Profitability and Capital Structure

The research results show that the interaction between profitability and CPO prices has a negative and significant effect on capital structure. The interaction coefficient of $ROA \times HCPO$ at -0.0329874 with a probability of 0.031 demonstrates that CPO prices strengthen the negative effect of profitability on capital structure. This means that when CPO prices are at higher conditions, the effect of profitability in reducing DAR becomes even stronger.

This finding reinforces the Pecking Order Theory. When CPO prices increase, companies have the potential to obtain better revenue and profits. Under such conditions, profitable companies have greater ability to use internal funds, causing the need for debt financing to decrease further. This phenomenon is highly relevant to the characteristics of the palm oil industry, where CPO prices are one of the main external factors influencing company revenue. This result also contributes to the research gap in capital structure studies by incorporating CPO commodity prices as a moderating variable, demonstrating that the effect of profitability on capital structure is not only determined by internal company conditions but is also influenced by external conditions in the form of commodity prices.

The Moderating Role of CPO Prices on Liquidity and Capital Structure

The research results show that the interaction between liquidity and CPO prices has a positive and significant effect on capital structure. The coefficient of $CR \times HCPO$ at 0.0018522 with a probability of 0.019 demonstrates that CPO prices moderate the relationship between liquidity and capital structure. However, the positive coefficient direction indicates that under certain CPO price conditions, the negative effect of liquidity on capital structure may weaken.

This finding suggests that when CPO prices increase, companies with high liquidity do not always proportionally reduce debt usage. This can occur because increasing CPO prices may open opportunities for business expansion, increased production, replanting, factory construction, or other fixed asset investments. Under improving industry prospects, liquid companies may actually be bolder in using debt because they have better payment capacity. From the Pecking Order Theory perspective, liquidity still plays a role in reducing debt usage, but this effect can change when there are external pressures or opportunities from CPO prices. Meanwhile, from the Trade-Off Theory perspective, the positive interaction result may indicate that companies with good liquidity and favorable commodity price prospects have greater capacity to use debt optimally.

CONCLUSIONS AND RECOMMENDATIONS

This study examined the effect of profitability and liquidity on capital structure with CPO commodity prices as a moderating variable in oil palm plantation companies listed on the Indonesia Stock Exchange during the period 2016–2025. Based on the results of data analysis using Moderated Regression Analysis (MRA), the following conclusions can be drawn.

Profitability (ROA) has a negative and significant effect on capital structure (DAR), indicating that companies with higher profitability tend to use internal funding and reduce debt proportion. Liquidity (CR) also has a negative and significant effect on capital structure, showing that companies with better ability to meet short-term obligations tend to have lower debt levels. CPO commodity prices (HCPO) do not directly affect capital structure, suggesting that capital structure decisions are more influenced by internal financial conditions than direct commodity price fluctuations.

However, CPO commodity prices serve as an effective moderating variable. CPO prices strengthen the negative effect of profitability on capital structure (H3 supported), indicating that favorable commodity prices amplify the company's ability to rely on internal financing. CPO prices also moderate the effect of liquidity on capital structure (H4 supported), where the positive interaction coefficient suggests that under favorable commodity price conditions, liquid companies may pursue growth opportunities, potentially weakening the otherwise negative relationship between liquidity and debt usage.

Overall, this study finds that internal company factors—profitability and liquidity—are the primary determinants of capital structure in palm oil plantation companies. Meanwhile, CPO commodity prices play the role of an external factor that strengthens or modifies the relationship between company financial conditions and financing decisions. These findings reinforce the relevance of

Pecking Order Theory and demonstrate that external commodity market conditions should also be considered in explaining capital structure decisions of palm oil plantation companies.

Recommendations

For the management of palm oil plantation companies, it is recommended to continue improving profitability and maintaining liquidity levels, as both factors have proven important in reducing dependence on debt. Strengthening internal funding sources can improve financial flexibility and reduce risks arising from debt obligations. Companies should also consider CPO commodity price developments in formulating financing policies, as this research shows that commodity prices can influence the relationship between financial conditions and debt usage decisions.

For investors and potential investors, profitability, liquidity, and CPO price developments can serve as indicators for assessing the financial health of palm oil plantation companies. Companies with good profitability and liquidity tend to have lower financial risks because they are not overly dependent on debt financing.

For future research, it is recommended to incorporate other variables that theoretically affect capital structure, such as firm size, asset structure (asset tangibility), business risk, non-debt tax shields, and dividend policy. Researchers could also test the model in different industries or cultural contexts to enhance generalizability.

FURTHER STUDY

This study has several limitations. First, the research was conducted only on oil palm plantation companies listed on the IDX, so the findings may not be fully generalized to other companies, industries, or organizational contexts. Second, the study used only three main variables; profitability, liquidity, and CPO commodity prices. Third, the data was limited to 10 companies over a 10-year period (100 observations), and the results should be interpreted within this scope. Future studies are recommended to test this model in different companies or industries, use broader samples, and include additional variables to obtain a more comprehensive understanding of capital structure determinants.

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REFERENCES

- Afrizal, & Suhardi. (2019). HOW DOES THE PECKING-ORDER THEORY EXPLAIN THE BANK'S CAPITAL STRUCTURE IN INDONESIA? *Econos: Jurnal Ekonomi Dan Sosial*, Vol 10, No(93963). file:///C:/Users/kbktn/Downloads/MPRA_paper_93963.pdf
- Ahmed, I. E., & Sabah, A. (2021). The determinants of capital structure of the GCC oil and gas companies. *International Journal of Energy Economics and Policy*, 11(2), 30–39. <https://doi.org/10.32479/ijeep.10570>
- Akpadaka, O. S., Farouk, M. A., Dang, D. Y., & Fodio, M. I. (2024). Does Profitability Moderate the Relationship Between the Leverage and Dividend Policy of Manufacturing Firms in Nigeria and South Africa? *Journal of Risk and Financial Management*, 17(12), 1–18. <https://doi.org/10.3390/jrfm17120563>
- Barrachina-Fernández, L., & Sogorb-Mira, F. (2024). The influence of peer effects, commodity prices and its hedging on corporate capital structure: Evidence from the oil and gas industry. *Energy Economics*, 140. <https://doi.org/10.1016/j.eneco.2024.108007>
- Dewi, C., & Fachrurrozie, F. (2021). The Effect of Profitability, Liquidity, and Asset Structure on Capital Structure with Firm Size as Moderating Variable. *Accounting Analysis Journal*, 10, 32–38. <https://doi.org/10.15294/aaj.v10i1.44516>
- Febrianti, A. R., & Erma, S. (2025). Determinasi Faktor-Faktor Yang Mempengaruhi Struktur Modal. *Jurnal Akuntansi Dan Pajak*, 25(02), 1–9. file:///C:/Users/kbktn/Downloads/admin,+16499-50592-2-ED.pdf
- Jaworski, J., & Czerwonka, L. (2021). Determinants of Enterprises' Capital Structure in Energy Industry: Evidence from European Union. *Energies*, 14(7), 1–21. file:///C:/Users/kbktn/Downloads/LAPSE-2023.30525-1v1.pdf
- Kalbuana, N., Taqi, M., Uzliawati, L., & Ramdhani, D. (2022). The Effect of Profitability, Board Size, Woman on Boards, and Political Connection on Financial Distress Conditions. *Cogent Business and Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2142997>
- Khaki, A. R., & Akin, A. (2020). Factors affecting the capital structure: New evidence from GCC countries. *Journal of International Studies*, 13(1), 9–27. <https://doi.org/10.14254/2071-8330.2020/13-1/1>
- Khoza, F. (2025). The Impact of Liquidity and Leverage on the Financial Performance of the Johannesburg Stock Exchange-Listed Consumer Goods Firms. *Journal of Risk and Financial Management*, 18(9). <https://doi.org/10.3390/jrfm18090510>
- Lehenchuk, S., Raboshuk, A., Valinkevych, N., Polishchuk, I., & Khodakyvskyy, V. (2022). Analysis of Financial Performance Determinants: Evidence From Slovak Agricultural Companies. *Agricultural and Resource Economics*, 8(4), 66–85. <https://doi.org/10.51599/are.2022.08.04.03>
- Mardani, R. M., Moeljadi, Sumiati, & Indrawati, N. K. (2023). The Determinants of Capital Structure: Evidence from Indonesia. *International Journal of*

- Professional Business Review*, 8(5), e0878–e0878.
<https://doi.org/10.26668/businessreview/2023.v8i5.878>
- Marimuthu, M., Hamzah, H. H., & Bangash, R. (2023). Determinants of the Capital Structure of the Oil and Gas Industry in Malaysia: The Moderating Role of Earnings Volatility. *Sustainability (Switzerland)*, 15(24).
<https://doi.org/10.3390/su152416568>
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)
- Narayan, P. K., & Nasiri, M. A. (2020). Understanding corporate debt from the oil market perspective. *Energy Economics*, 92, 104946.
<https://doi.org/10.1016/j.eneco.2020.104946>
- Nguyen, T. P. T., & Nguyen, T. Q. A. (2024). Factors affecting the profitability of listed agricultural companies in the Vietnamese stock market. *Multidisciplinary Science Journal*, 6(7).
<https://doi.org/10.31893/multiscience.2024125>
- Radu, O. M., Dragomir, V. D., & Hao, N. (2023). Company-Level Factors of Non-Financial Reporting Quality under a Mandatory Regime: A Systematic Review of Empirical Evidence in the European Union. In *Sustainability (Switzerland)* (Vol. 15, Issue 23). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/su152316265>
- Rahman, M. M., Saifuzzaman, & Hossain. (2023). Liquidity, Profitability and Capital Structure: Evidence from Commodity-Based Firms. *Journal of Risk and Financial Management*, 16 (4). <https://doi.org/10.3390/jrfm16040195>
- Ricca, L. T., Jucá, M. N., & Hadad Junior, E. (2021). Tax benefit and bankruptcy cost of debt. *Quarterly Review of Economics and Finance*, 81, 82–92.
<https://doi.org/10.1016/j.qref.2021.05.003>
- Wagisuwari, K. S., & Sitorus Dr. Palti MT, M. M. (2024). Analisis Trade-Off Theory dan Pecking Order Theory Terhadap Struktur Modal. *Owner*, 8(3), 2380–2392. <https://doi.org/10.33395/owner.v8i3.2091>
- Yilmaz, I., & Alghazali, A. (2024). DETERMINANTS OF CAPITAL STRUCTURE IN THE FINANCIAL SECTOR: EVIDENCE FROM GCC COUNTRIES. In *International Journal of Economics, Management and Accounting* (Vol. 32, Issue 2). file:///C:/Users/kbktn/AppData/Local/Mendeley Ltd./Mendeley Desktop/Downloaded/Yilmaz, Alghazali - 2024 - DETERMINANTS OF CAPITAL STRUCTURE IN THE FINANCIAL SECTOR EVIDENCE FROM GCC COUNTRIES.pdf
- Yusuf, M., & Dyarini, D. (2025). Liquidity and Company Size Impact on Capital Structure with Profitability Mediation. *International Journal of Law Policy and Governance*, 4(2), 150–165. <https://doi.org/10.54099/ijlpg.v4i2.1339>