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The Effect of Capital Structure on Performance in Pharmaceutical Companies in Indonesia

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ABSTRACT

Capital structure has been a long-standing topic of discussion, representing the proportional arrangement of debt, preferred shares, and common shares in a firm. It holds a vital role in maximizing the effective use of resources and improving cash flow for stakeholders. To examine this relationship in depth, panel data from 2018 to 2022 was gathered for eight pharmaceutical companies listed on the Indonesia Stock Exchange (IDX). The study assessed several primary indicators of capital structure, including the debt-to-equity ratio, short-term leverage ratio, long-term leverage ratio, and the total debt ratio. Company performance was evaluated using Return on Assets (ROA) and Return on Equity (ROE), while variables such as inflation, liquidity, growth rate, tax rate, and firm size were controlled to strengthen the analysis. The results indicate that all categories of debt ratios—whether short-term, long-term, or total—tend to have a considerable negative effect on ROA. On the other hand, some debt measures, notably short-term total debt, are positively associated with ROE. The long-term debt ratio, however, shows a negative but statistically insignificant relationship with ROE. Furthermore, among the various determinants of company performance, liquidity ratios are found to be insignificant, underscoring the characteristics of the link between capital structure and performance.

1. Introduction

For decades, capital structure has been a central topic in finance because of its profound impact on corporate financial strategies. It describes the proportionate use of debt and equity in funding a company's activities and investments, aiming to optimize firm value and enhance shareholder prosperity (Boh et al., 2020). This subject remains critical since financing choices influence a firm's capital cost, exposure to financial risk, and investment returns. Given the constantly evolving financial markets and shifting regulatory landscapes, companies must regularly review and adapt their financing strategies to maintain sustainable growth and remain competitive.

Various financial theories, including trade-off theory and pecking order theory, explain how firms determine their preference between debt and equity financing, considering factors such as funding costs, risk exposure, and managerial control. The trade-off theory, for example, posits that companies aim for a balance where the tax advantages from debt are counterbalanced

by the potential risk of financial distress (Dimitropaulos, 2020). Thus, identifying an optimal capital structure extends beyond achieving a simple financial equilibrium—it serves as a strategic mechanism for creating long-term firm value. Although research results vary, many empirical studies demonstrate a notable impact of capital structure on a company's financial outcomes (Coleman, 2017; Anowar, 2016; Joghee et al., 2017).

1.1 Background

Amid growing global demands for financial efficiency and sustainable expansion, businesses must determine the most advantageous capital structure configuration. Debt and equity each have unique risk-return profiles, requiring thorough evaluation. Debt may provide tax benefits, but it also heightens bankruptcy risk when cash flows are unstable (Vatavu, 2020). In contrast, equity financing avoids fixed repayment obligations yet may dilute ownership stakes and incur higher costs over time. Understanding the influence of capital structure on key performance metrics such as ROI, ROE, EPS, and dividend yield is therefore critical (Barbosa & Lauri, 2005).

1.2 Problem Statement

Although extensively researched, the link between capital structure and corporate profitability remains unresolved. Some investigations report a positive correlation, while others identify negative or negligible effects, influenced by variables such as industry type, company scale, and prevailing market conditions. These conflicting results prompt the core question: To what extent does capital structure affect a firm's financial performance? The divergence in findings suggests a gap in both scholarly insight and managerial application concerning the optimal management of capital structure.

1.3 Objectives and Scope

This research is conducted to evaluate how capital structure influences corporate financial performance. The specific objectives include:

- Measuring the degree to which debt and equity contribute to a company's profitability.
- Determining the most effective capital structure that can optimize firm value.
- Providing strategic recommendations for financing decisions based on empirical findings.

The scope of the study is confined to companies operating in selected industries—such as manufacturing, finance, or technology—within a specified timeframe to ensure analytical clarity and relevance. The analysis concentrates on the quantitative dimensions of capital structure and financial performance, without extensively exploring psychological decision-making factors or broader macroeconomic influences.

2. Literature Review

Miller expanded Modigliani and Miller's (MM) theory by formulating the trade-off theory, which suggests that firms aim to balance the benefits of debt-related tax savings against the costs of potential bankruptcy. Under the assumption of perfect MM markets, higher debt usage increases the risk of financial distress. Stiglitz (1972) asserted that a firm's value peaks when the marginal cost of bankruptcy equals the marginal benefit from the tax shield. Similar conclusions were reached in the work of Warner (1977) and Altman (1984), who observed that surpassing a certain debt level raises the probability of financial difficulties. The expenses linked to bankruptcy processes diminish company value. Based on these considerations, the optimal capital structure is achieved when the value of interest tax benefits equals the present value of anticipated bankruptcy costs (Kim, 1978). Accordingly, the trade-off theory advocates finding an equilibrium between debt and equity to maximize firm value (Meng et al., 2013).

Research by Aggarwal & Gupta (2019) and Lukytawati (2015) reports a notable negative association between capital structure and profitability. These studies reveal that increasing debt initially raises firm value up to an optimal level, beyond which additional debt begins to reduce value (Rehman, 2023). This pattern has also been observed in the context of Indonesian financial institutions.

On Ramachandran's study on Indian IT firms segmented the industry into low-, medium-, and high-income groups to examine the effect of capital structure on performance. The results indicated that the debt-to-equity ratio has a significant negative impact on ROA for medium- and high-income firms, with higher debt levels substantially reducing net profitability. This inverse relationship between debt and ROA is consistent with findings by Aliasghar (2022) and Zeitun (2014), though it contrasts with the results reported by Sayeed (2011).

Musah (2018) and Strebulaev (2018) identified a negative influence of liquidity on profitability, aligning with the trade-off theory that suggests profitability and liquidity move inversely. Anowar (2016) further discovered a unidirectional causal link between liquidity and capital structure, indicating that firms with higher liquidity tend to rely less on external debt. Moreover, Chada & Sharma (2015) contend that rapidly growing firms may prefer short-term debt or equity over long-term debt to mitigate agency costs, a strategy that ultimately enhances profitability (Geng, 2022).

Khanna & Puri highlight inflation as a macroeconomic variable affecting corporate performance, given its capacity to erode monetary value. Their analysis shows a strongly positive effect of inflation on ROA. Conversely, Roberts et al. (2015) documented a negative link between inflation and firm performance. Martis (2013) also reported that inflation significantly impacts ROA, though taxes did not influence ROA for U.S. companies. He emphasized that declining purchasing power diminishes the real value of returns received by stakeholders (Schmidt, 2022).

Firm size influences profitability through the scale of capital resources available for operational expansion (Roberts, 2015). Larger firms often have more avenues for growth and can leverage stronger bargaining power with suppliers to secure materials at lower costs, thereby creating opportunities to enhance profitability (Mishra & Padhi, 2021).

Dong et al. (2021) build on Modigliani and Miller's second proposition, suggesting that debt use yields tax shield benefits, which in turn fosters a positive relationship between taxation and profitability. Similarly, Serfling (2016) found a strong positive correlation between tax levels and ROE, noting that higher tax rates can lower debt interest costs, potentially boosting profits. Cheng and Tzeng (2011) caution that increased corporate taxes can also raise shareholders' personal tax burdens, thereby offsetting interest-related tax savings at the individual level. Marti (2020) examined S&P 500 firms to evaluate the substantial influence of capital structure on performance.

3. Methodology

This research focuses on all pharmaceutical firms that are publicly listed on the Indonesia Stock Exchange (IDX). Information regarding these companies was sourced from the official IDX website (www.idx.co.id), including financial and annual reports available on the IDX portal, complemented by data from company websites and relevant mass media publications.

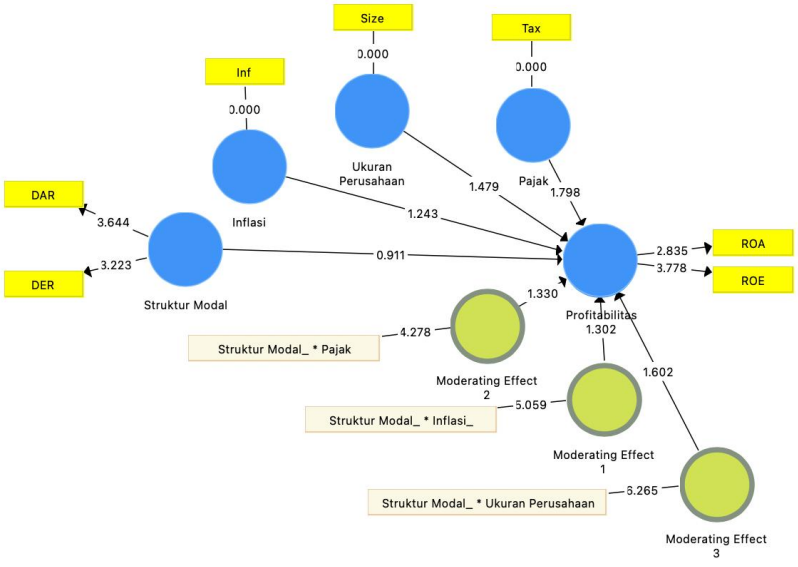
This study adopts a quantitative descriptive and explanatory approach, aiming to explain the relationships between variables through hypothesis testing (Solimun, 2010). The population

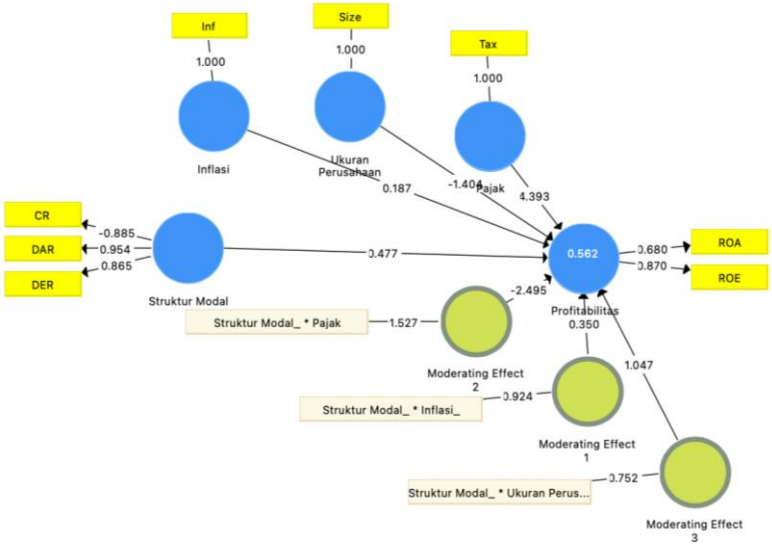
consists of publicly listed companies on the IDX that released annual financial statements between 2018 and 2022. The purposive sampling method was applied, focusing on (1) companies that consistently published complete financial data during the research period, and (2) firms involved in product innovation, identified by the launch of new products or enhancements to existing offerings within the study timeframe.type of research is quantitative descriptive and explanatory descriptive, aiming to obtain an explanation of the relationship between variables through hypothesis testing (Solimun, 2010). The population of this study consists of all mining companies listed on the Indonesia Stock Exchange that published annual financial reports on the Indonesia Stock Exchange (BEI) for the period from 2018 to 2022. The sampling technique used in this study is purposive sampling, which involves (1) companies that publish financial reports and provide the required data consecutively during the period, and (2) companies that engage in product innovation, marked by the introduction of new products or innovations to existing products during the study period.

4. Results and Discussion

The Return on Assets (ROA) for the sample companies recorded an average of 0.13, with a minimum of 0.06 and a maximum of 0.921. As a primary measure of firm performance, a higher ROA indicates stronger operational efficiency and profitability. The Return on Equity (ROE) averaged 0.166, ranging from a low of 0.015 to a high of 0.623, with a standard deviation of 0.104. These figures suggest that Indonesian pharmaceutical firms are generally generating positive returns for their shareholders, as all recorded ROE values remain above zero.

Variabel	Mean	Median	Min	Max	Standard Deviation
DAR	0,351	0,310	0,130	0,793	0,172
CR	2,921	2, 890	0,943	5,942	1,142
DER	0,749	0,450	0,150	3,825	0,756
Size	28,558	28, 281	25,955	30,936	1,231
Inf	2,982	2,720	1,680	5,510	1,372
Tax	1,113	1,130	0,169	1,254	0,167
ROA	0,130	0,97	0,06	0,921	0,143
ROE	0,166	0,152	0,015	0,623	0,104





	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Inflation -> Profitability	0,245	0,142	0,175	1,396	0,163
Capital Structure*Inflation -> Profitability	0,446	0,255	0,297	1,500	0,134
Capital Structure*Taxes -> Profitability	-2,278	-2,226	1,546	1,473	0,141
Capital Structure*Company Size -> Profitability	1,124	0,949	0,682	1,646	0,100**
Taxes -> Profitability	3,464	3,792	1,682	2,059	0,040*
Capital Structure -> Profitability	0,403	0,486	0,378	1,065	0,287
Company Size -> Profitability	-1,006	-1,384	0,697	1,443	0,150

5. Discussion

The analysis indicates that capital structure has a measurable influence on profitability, with company size serving as a moderating factor, while taxation also plays a role in profitability outcomes. Correlation tests reveal a moderate association between the total debt ratio and most independent variables, excluding liquidity. Both ROA and ROE demonstrate a strong positive correlation, mirroring the results reported by Islam et al. (2016) in studies of Pakistani manufacturing firms. The regression model incorporated three dependent variables, four independent variables, and five control variables. Findings show that equity and short-term debt (STD) exert a significant positive effect on ROE at the 1% significance level, whereas long-term debt (LTD) has a negative but statistically insignificant impact, consistent with the observations of Saputra, Noer, Lukytawati, and Vatavu (2015) regarding the adverse effect of high long-term debt levels on profitability.

In relation to ROA, the debt-to-equity ratio, short-term debt (STD), long-term debt (LTD), and total debt to total assets (TDTA) demonstrated a negative and statistically significant impact at the 1% level. This suggests that higher debt levels may lead to a reduction

in net income and asset returns. Nonetheless, these results contrast with the conclusions reached in Sayeed's study.

(2011) and Rub (2012), highlighting the varying perspectives on how debt influences profitability. When examining EPS, short-term debt (STD) was found to have a statistically significant positive effect at the 1% level, whereas long-term debt (LTD) demonstrated a negative significance at the 10% level, which contradicts the initial hypothesis. Interestingly, the debt-to-equity ratio indicated a positive coefficient but was not statistically significant, aligning with the observations of Akhter et al. (2016) that EPS is more closely linked to net income than to liquidity. Overall, the analysis reveals several notable insights, including the positive association between variables like STD and ROE, alongside the adverse impact of rising debt levels on both ROA and EPS. Furthermore, factors such as sales growth, inflation rate, tax rate (Ln Tax), and firm size were shown to significantly affect ROA and ROE, supporting the conclusions of Anowar's (2020) study.

6. Conclusion

This research explored how selected factors influence the capital structure and profitability of pharmaceutical firms listed on the Indonesia Stock Exchange (IDX). Utilizing panel data from eight IDX-listed pharmaceutical companies spanning 2018 to 2022, the study considered determinants of capital structure such as the debt-to-equity ratio, short- and long-term leverage ratios, liquidity ratio, and total debt ratio. Profitability was assessed using Return on Assets (ROA) and Return on Equity (ROE), while control variables included inflation, taxation, and firm size. The descriptive findings indicate that these companies tend to favor short-term debt over long-term financing, aligning with strategies aimed at maximizing shareholder wealth.

7. Recommendation

This research analyzed the link between capital structure and corporate financial performance, driven by the need to address conflicting results in prior studies and to highlight the strategic importance of financing decisions in enhancing shareholder value. Employing [insert methodology, e.g., panel data regression, case studies, etc.], the study assessed the effects of debt and equity financing on performance measures including Return on Equity (ROE), Earnings per Share (EPS), and overall profitability.

The results demonstrate a significant association between capital structure and firm performance, implying that businesses should implement a strategic approach when determining the balance between debt and equity to maximize returns while minimizing financial risk. These findings align with the trade-off theory, which promotes achieving an optimal equilibrium between the advantages of debt—such as tax benefits—and the drawbacks, including the possibility of financial distress.

Appendix

- Return on Equity (ROE)
  Formula: Net income divided by total shareholders' equity.
  Purpose: Measures how effectively a company generates profit from shareholders' equity.
- Earnings per Share (EPS)
  Formula: Net income divided by the total number of shares currently outstanding.
  Purpose: Shows the portion of a company's profit that is allocated to each individual share of common stock.
- Debt-to-Equity Ratio (DER)
  Formula: Total liabilities divided by total shareholders' equity.

Purpose: Indicates the extent to which a company is financing its operations through debt compared to equity.

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