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Profitability and Capital Structure as Determinants of Firm Value: An Empirical Study in The Pharmaceutical Industry

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ABSTRACT

This study investigates the influence of profitability and capital structure on firm value in pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) during 2021–2024. Firm value, proxied by Price to Book Value (PBV), reflects investor perception of a company's performance and sustainability. Profitability, measured by Return on Assets (ROA), represents managerial efficiency in utilizing assets, while capital structure, measured by Debt to Equity Ratio (DER), reflects the level of financial leverage. Using a quantitative approach with panel data regression, secondary financial data from nine purposively selected pharmaceutical firms were analyzed. Model selection procedures, including the Chow, Hausman, and Lagrange Multiplier tests, confirmed that the Random Effect Model was the most appropriate estimator. The regression results demonstrate that profitability has a positive and significant effect on firm value, indicating that firms with higher earnings performance are more highly valued by investors. Conversely, capital structure shows an insignificant effect on firm value, suggesting that leverage was not a primary consideration in investor assessments of pharmaceutical firms during the study period. Nevertheless, the simultaneous test revealed that profitability and capital structure jointly affect firm value, although profitability plays the dominant role. These findings underscore that the valuation of pharmaceutical firms in Indonesia is more strongly driven by internal financial performance than by financing structure. The study contributes updated empirical evidence by focusing on a strategically important sector in the post-pandemic context and provides practical implications for managers, investors, and regulators in enhancing profitability and ensuring sustainable growth.

Keywords: profitability, capital structure, firm value, pharmaceutical industry

INTRODUCTION

Firm value is a crucial indicator that reflects market perceptions of a company's performance, risk, and long-term prospects (1). A higher firm value signals strong investor confidence and sustainable value creation, which are particularly vital for industries with high public interest (2), such as pharmaceuticals. However, recent evidence shows that several Indonesian pharmaceutical companies have struggled to maintain stable firm value. For instance, PT Kimia Farma Tbk recorded a loss of IDR 1.82 trillion in 2023, while PT Indofarma Tbk faced accounting fraud cases that damaged investor trust and market credibility. These conditions illustrate that firm value in the pharmaceutical sector remains vulnerable to financial performance and governance practices.

Two financial indicators frequently associated with firm value are profitability and capital structure. Profitability demonstrates a company's efficiency in utilizing assets to generate income, thereby enhancing internal financing capacity and reducing reliance on external funds(3–5). Meanwhile, capital structure reflects the balance between debt and equity, which directly affects financial risk, cost of capital, and ultimately market valuation (6). In theory, both profitability and capital structure should influence firm value.

Nevertheless, empirical findings remain inconclusive. Studies such as (7), (8), (6) reported significant effects of profitability and capital structure on firm value, whereas found

no significant relationships (9). These inconsistencies highlight a research gap that requires further investigation, especially within the pharmaceutical industry, which is strategically important in Indonesia's economy and has experienced unique challenges during 2021–2024.

The novelty of this study lies in its focus on the pharmaceutical sector during a period marked by post-pandemic recovery and governance challenges. Unlike previous studies that examined broader manufacturing or multi-sector samples, this research specifically targets pharmaceutical companies listed on the IDX from 2021 to 2024, thereby capturing the most recent dynamics of financial performance, capital structure decisions, and market valuation in a sector that plays a critical role in public health and national resilience.

Research on the determinants of firm value has been widely conducted in various sectors, including manufacturing, consumer goods, and finance. However, findings remain inconsistent, particularly regarding the role of profitability and capital structure.

For example, (7) and (6) found that profitability and capital structure significantly increase firm value, suggesting that efficient asset management and optimal debt-equity mix are key to market valuation. Conversely, (8) and (9) reported no significant relationship, indicating that firm value may be more influenced by non-financial factors such as governance, market sentiment, or industry-specific conditions. Similarly, (10) found that profitability positively affects firm value, while capital structure does not, reinforcing the inconsistency across studies.

Most of the prior research also used multi-sector samples or broader manufacturing subsectors. This creates a gap in understanding the pharmaceutical industry, which plays a strategic role in Indonesia's public health and economic resilience. The pharmaceutical sector has recently faced governance scandals, financial fraud, and post-pandemic recovery challenges that make its firm value dynamics unique.

Therefore, the novelty of this study lies in its exclusive focus on pharmaceutical companies listed on the IDX during 2021–2024, capturing the latest industry-specific dynamics. By re-examining the roles of profitability and capital structure in this context, the study not only contributes updated empirical evidence but also provides sector-specific insights for investors, regulators, and corporate managers.

Literature Review

Theoretical Background

This study is grounded in Agency Theory and Stakeholder Theory. Agency Theory explains the conflict of interest between principals (shareholders) and agents (managers), where managers may prioritize short-term goals that do not necessarily maximize shareholder wealth (11). Firm value, therefore, becomes a key indicator in aligning managerial actions with shareholder interests. Meanwhile, Stakeholder Theory emphasizes that companies must create value not only for

shareholders but also for all stakeholders, including employees, creditors, customers, and the wider community (12). These perspectives highlight that firm value is influenced by both internal financial decisions and external stakeholder perceptions.

Firm Value

Firm value reflects investors' perceptions of a company's performance and future prospects, generally measured by market ratios such as Price to Book Value (PBV). A high PBV indicates that the market values the company above its book value, signaling investor confidence and long-term sustainability (13,14)(15).

Profitability

Profitability represents a company's ability to generate profits relative to its assets, equity, or sales. Return on Assets (ROA) is frequently used to measure profitability, as it indicates how efficiently management utilizes total assets to produce net income. Higher profitability is expected to increase firm value by signaling financial health and internal financing capacity (6,10).

Capital Structure

Capital structure refers to the composition of debt and equity used to finance a company's operations and growth. The Debt to Equity Ratio (DER) is commonly used to assess capital structure, with a higher DER reflecting greater reliance on debt. An optimal capital structure balances financial risk and return, thereby enhancing firm value. However, excessive leverage may increase financial distress and reduce investor confidence (1,16).

Previous Studies

Empirical research on profitability, capital structure, and firm value has produced mixed results. Studies by (7), (6, 8) reported significant positive effects of profitability and capital structure on firm value. In contrast, (9), and (10) found no significant influence. These inconsistencies suggest that the relationship may be context-dependent, influenced by industry characteristics, economic conditions, and corporate governance practices.

Research Gap and Hypotheses

The inconsistencies in prior findings, combined with the strategic importance of the pharmaceutical industry in Indonesia, present an opportunity to re-examine these relationships in a more focused context. This study, therefore, proposes the following hypotheses:

H1: Profitability has a positive effect on firm value.

H2: Capital structure has a positive effect on firm value.

H3: Profitability and capital structure simultaneously affect firm value.

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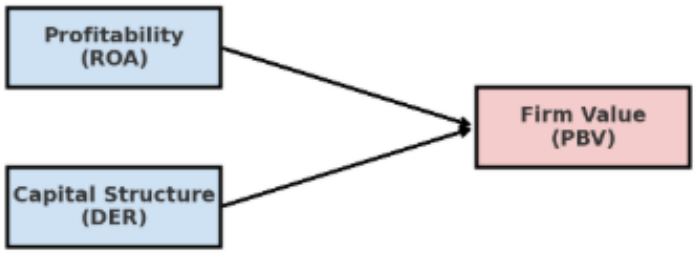

Figure 1: Conceptual Framework

METHODS

This study uses a quantitative research method with an associative descriptive approach, as the objective is to test the relationship between financial performance variables and firm value. The population comprises 15 pharmaceutical companies listed on the Indonesia Stock Exchange (IDX), chosen because the pharmaceutical industry plays a strategic role in supporting public health and has faced unique challenges in the post-pandemic period. From this population, 9 companies were selected through purposive sampling, with criteria including: [1] continuously listed on the IDX during the 2021–2024 period, [2] published complete annual financial statements during the observation period, and [3] provided consistent data for the variables used in this study.

The research uses secondary data obtained from official company publications and the IDX database (www.idx.co.id). The unit of analysis is the company-year, producing a panel dataset that combines cross-sectional and time-series data.

The dependent variable is firm value, proxied by the Price to Book Value (PBV), calculated as the ratio of market price per share to book value per share. PBV is used because it reflects investor perception and the company's ability to create value for shareholders (17). The independent variables are profitability and capital structure. Profitability is measured using the Return on Assets (ROA) ratio, which indicates how efficiently a company utilizes its assets to generate net income. Capital structure is measured using the Debt to Equity Ratio (DER), which describes the proportion of debt financing compared to equity and reflects the level of financial leverage (18).

The data analysis technique is panel data regression using EViews 13, as it allows for more efficient estimation by combining time-series and cross-sectional data. The analysis steps include: [1] conducting descriptive statistical analysis to understand the characteristics of the data; [2] testing classical assumptions such as normality, multicollinearity, heteroscedasticity, and autocorrelation to ensure the reliability of the regression model; [3] selecting the most suitable regression model pooled least square, fixed effect, or random effect using the Chow test, Hausman test, and Lagrange Multiplier test; and [4] performing hypothesis testing to examine the effect of ROA and DER on PBV, both individually and simultaneously. The

strength of the model is assessed using the coefficient of determination (R^2) to measure the explanatory power of the independent variables on firm value (19,20).

Operational Definition of Variables

The variables used in this study consist of one dependent variable and two independent variables.

The dependent variable **is** firm value, which reflects investors' assessment of the company's performance and long-term prospects. Firm value is proxied by the Price to Book Value (PBV), calculated as the ratio of the company's market price per share to its book value per share. A PBV greater than one indicates that the market values the company higher than its accounting value, signaling strong investor confidence.

The first independent variable is profitability, which describes the company's ability to generate profit relative to its resources (21). Profitability in this study is measured using the Return on Assets (ROA) ratio. ROA is obtained by dividing net income after tax by total assets. A higher ROA indicates more efficient utilization of assets and is expected to positively influence firm value.

The second independent variable is capital structure, which represents the composition of debt and equity used to finance the company's operations. Capital structure is measured using the Debt to Equity Ratio (DER), calculated by dividing total liabilities by total equity. A higher DER reflects greater reliance on debt financing, which may either increase firm value through tax shields or decrease it if excessive leverage raises financial risk.

Thus, the operational definitions of the variables in this study are summarized as follows:

- Firm Value (Y)**:** Price to Book Value (PBV) = Market Price per Share / Book Value per Share.
- Profitability (X1): Return on Assets (ROA) = Net Income / Total Assets.
- Capital Structure (X2): Debt to Equity Ratio (DER) = Total Liabilities / Total Equity.

RESULTS AND DISCUSSION

Results

Descriptive Statistics

The descriptive statistics provide an overview of the data distribution for each variable. During the observation period 2021–2024, the average firm value (PBV) of pharmaceutical companies remained relatively volatile, reflecting fluctuations in investor confidence. Some firms recorded PBV values above 1, indicating positive market expectations, while others fell below 1, suggesting undervaluation by the market. The profitability (ROA) levels varied widely across firms, with certain companies able to generate stable returns, while others reported declining or even negative profitability due to operational inefficiencies. Meanwhile, the capital structure (DER) of the sampled companies showed a diverse pattern, where some firms relied heavily on debt financing, while others maintained conservative leverage.

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Date: 06/25/25
Time: 16:08
Sample: 2021 2024

	X1	X2	Y
Mean	0.189543	1.906772	337059.5
Median	0.164289	1.472932	106.6500
Maximum	0.561721	5.590027	3663896.
Minimum	0.000135	1.129530	0.007932
Std. Dev.	0.158448	1.095019	973730.7
Skewness	1.120444	2.021518	2.564920
Kurtosis	3.291750	6.243295	7.787421
Jarque-Bera	7.660049	40.29764	73.85199
Probability	0.021709	0.000000	0.000000
Sum	6.823539	68.64378	12134142
Sum Sq. Dev.	0.878698	41.96732	3.32E+13
Observations	36	36	36

Figure 2: Descriptive Statistical Analysis
Source: output eviews (2025)

Model Selection

Panel data regression analysis required the selection of an appropriate model. The Chow test, Hausman test, and Lagrange Multiplier test were performed sequentially to determine whether the pooled OLS, fixed effect, or random effect model best fitted the data. The test results indicated that the random effect model was the most suitable, ensuring more reliable estimation for hypothesis testing.

Chow Test

Based on the test results, the *Cross-section Chi-square Statistic* was obtained at 144.483119 with a probability value of 0.0000. Since the probability is lower than 0.05 (0.0000 < 0.05), the alternative hypothesis (H1) is accepted, while the null hypothesis (H0) is rejected. Accordingly, the Chow test provides statistical evidence that the most appropriate model to be employed in this study is the *Fixed Effect Model* (FEM). The selection of FEM indicates the presence of significant individual heterogeneity across cross-sectional units, suggesting that this approach is more capable of representing the data compared to alternative models.

Hausman Test

Based on the test results, the *Cross-Section Random* value was obtained at 0.375197 with a probability of 0.8289, which is greater than the 0.05 significance level. This indicates that the more appropriate model to be applied in this test is the *Random Effect Model* (REM). Following the selection of REM, the analysis was continued with the *Lagrange Multiplier* (LM) test to determine whether the *Common Effect Model* (CEM) or REM is the most suitable model to employ.

Lagrange Multiplier Test

Based on the results of the *Lagrange Multiplier* (LM) test, the *Breusch-Pagan* value was obtained at 49.49380 with a probability of 0.0000. According to the testing criteria, if the probability value of the *Breusch-Pagan* statistic is less than 0.05, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. Therefore, the LM test results indicate that the

Random Effect Model (REM) is more appropriate to use compared to the *Fixed Effect Model* (FEM).

Regression Results

The results of the panel data regression analysis in this study are presented as follows:

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 06/27/25 Time: 10:11
Sample: 2021 2024
Periods included: 4
Cross-sections included: 9
Total panel (balanced) observations: 36
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	349127.5	407531.4	0.856689	0.3978
X1	134204.8	268809.0	0.499257	0.6209
X2	-19669.65	75475.81	-0.260609	0.7960

Figure 3 Hasil Regresi Data Panel

Based on the panel data regression results, the following regression equation is obtained:

Y = 349127.5 + 134204.8X1 - 19669.65X2

The interpretation of the regression equation is as follows: The constant value (α) of 349127.5 indicates that when the independent variables Return on Assets (ROA/X1) and Debt to Equity Ratio (DER/X2) are equal to zero or do not exert any influence, the dependent variable Price to Book Value (PBV/Y) is projected to be 349127.5.

The regression coefficient of ROA (X1) is 134204.8, which implies that, ceteris paribus, an increase in ROA by 1% will lead to an increase in PBV by 134204.8. Conversely, a decrease in ROA by 1% will result in a reduction of PBV by 134204.8.

The regression coefficient of DER (X2) is –19669.65, which means that, ceteris paribus, an increase in DER by 1% will reduce PBV by 19669.65. Conversely, a decrease in DER by 1% will increase PBV by 19669.65.

The regression analysis revealed that profitability (ROA) has a positive and significant effect on firm value (PBV). This implies that higher profitability enhances investor confidence, as companies with strong earnings are perceived to have better growth prospects and financial stability. Conversely, capital structure (DER) showed a weaker and statistically insignificant relationship with firm value, suggesting that variations in leverage were not a primary determinant of market valuation within the pharmaceutical sector during the study period. Nevertheless, the simultaneous test (F-test) demonstrated that profitability and capital structure jointly influence firm value, although profitability remains the dominant factor.

Discussion

The findings confirm the relevance of Agency Theory, which posits that managers are expected to act in the best interest of shareholders by improving profitability, thereby increasing firm value. High ROA signals efficient asset utilization, which reduces agency conflict and enhances shareholder wealth. The significant role of profitability aligns with prior research by (7)

and (6), who also reported that profitability is a strong determinant of firm value.

However, the insignificant effect of capital structure on firm value diverges from the traditional Trade-Off Theory of Capital Structure, which suggests that firms balance debt and equity to maximize value. Instead, the results are consistent with studies by (9) and (10), who found that leverage does not always play a decisive role in firm valuation. In the context of the Indonesian pharmaceutical sector, this may be attributed to the industry's high reliance on innovation, research and development, and regulatory compliance, which tend to weigh more heavily in investor assessments compared to financial leverage alone.

Overall, the study highlights that firm value in the pharmaceutical industry during 2021–2024 is primarily driven by profitability rather than capital structure. This indicates that investors place greater emphasis on earnings performance as a reflection of managerial efficiency and long-term competitiveness, especially in the post-pandemic recovery era where the industry faced both growth opportunities and governance challenges.

CONCLUSION

This study concludes that firm value in pharmaceutical companies listed on the IDX during 2021–2024 is primarily driven by profitability rather than capital structure. Profitability (ROA) significantly increases firm value by enhancing investor confidence, while capital structure (DER) shows no significant effect, indicating that leverage is not a key determinant for investors. Together, profitability and capital structure influence firm value, but profitability plays a dominant role, underscoring the importance of managerial efficiency and sustainable earnings in strengthening long-term market trust.

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