THE IMPACT OF CAPITAL STRUCTURE ON FIRM VALUE WITH PROFITABILITY AS A MODERATING VARIABLE: EVIDENCE FROM CONSUMER GOODS COMPANIES LISTED ON INDONESIA STOCK EXCHANGE

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Abstract

This study investigates the impact of capital structure on firm value with profitability as a moderating variable in consumer goods companies listed on the Indonesia Stock Exchange (IDX) during the period 2019-2023. Utilizing signaling theory and trade-off theory as the theoretical framework, this research examines whether the relationship between capital structure and firm value is contingent upon the level of profitability. The sample comprises 35 consumer goods companies selected through purposive sampling, resulting in 175 firm-year observations. Capital structure is measured using Debt to Equity Ratio (DER), firm value is proxied by Price to Book Value (PBV), and profitability is measured using Return on Assets (ROA). The analytical method employed is Moderated Regression Analysis (MRA) with panel data regression using EViews 13. The findings reveal that capital structure has a significant negative effect on firm value. Furthermore, profitability significantly strengthens the negative relationship between capital structure and firm value. These results suggest that highly profitable firms experience greater value deterioration when employing higher leverage. The findings contribute to the existing literature by providing empirical evidence on the moderating role of profitability in emerging market contexts and offer practical implications for corporate financial decision-making.

Keywords: *capital structure, firm value, profitability, moderating variable, consumer goods sector, Indonesia Stock Exchange*

INTRODUCTION

Firm value represents a fundamental indicator that reflects stakeholder confidence and market perception of a company's future prospects. In the contemporary business environment, maximizing firm value has become a primary objective for corporate management, as it directly influences shareholder wealth and investment attractiveness (Li et al., 2018; Jihadi et al., 2021). The consumer goods sector in Indonesia presents a particularly compelling context for examining determinants of firm value, given its significant contribution to economic growth and its resilience during economic volatility. According to data from the Indonesia Stock Exchange, the consumer goods sector experienced substantial fluctuations in market capitalization during 2019-2023, largely influenced by the COVID-19 pandemic and subsequent economic recovery patterns. Capital structure decisions constitute one of the most critical financial policies that affect firm value. The seminal work of Modigliani and Miller (1958) initially proposed that capital structure is irrelevant to firm value under perfect market conditions. However, subsequent theoretical developments, including the trade-off theory and pecking order theory, have demonstrated that capital structure decisions significantly influence corporate valuation in real-world contexts (Myers & Majluf, 1984; Kraus & Litzenberger, 1973). The trade-off theory posits that firms balance the tax benefits of debt against bankruptcy costs to achieve an optimal capital structure, while signaling theory suggests that leverage choices convey information about firm quality to market participants (Spence, 1973; Ross, 1977). Previous empirical studies have yielded inconsistent findings regarding the relationship between capital structure and firm value. Some researchers have documented a positive relationship (Febrianti et al., 2024; Bui et al., 2023), suggesting that debt financing enhances firm value through tax shields and reduced agency costs of free cash flow. Conversely, other studies have found negative relationships (Jihadi et al., 2021; Alghifari et al., 2024), indicating that higher leverage increases financial distress costs and diminishes investor confidence. This inconsistency suggests that the relationship may be contingent upon other firm characteristics, particularly profitability.

Profitability represents a firm's ability to generate earnings from its operational activities and constitutes a crucial determinant of both capital structure choices and firm valuation. Signaling theory posits that profitable firms possess greater capacity to service debt obligations and can leverage this capability to signal quality to investors (Spence, 1973; Connelly et al., 2011). However, the moderating effect of profitability on the capital structure-firm value nexus remains underexplored, particularly in emerging market contexts such as Indonesia. Recent studies by Dorothy and Endri (2024) and Deme et al. (2022) have begun examining this moderating relationship, yet the findings remain inconclusive and warrant further investigation.

The consumer goods sector provides an ideal research setting for several reasons. First, this sector exhibits diverse capital structure patterns, with some firms maintaining conservative leverage policies while others employ aggressive debt financing. Second, profitability levels vary substantially across firms, allowing for meaningful examination of moderating effects. Third, the sector's relative stability during economic fluctuations enables clearer identification of the effects under investigation without excessive noise from external shocks. The research period 2019-2023 encompasses both pre-pandemic conditions, pandemic disruption, and recovery phases, providing a comprehensive temporal context for analysis. This study contributes to the existing literature in several dimensions. Theoretically, it extends the application of signaling theory and trade-off theory by examining the contingent nature of the capital structure-firm value relationship. Empirically, it provides evidence from an emerging market context, which is characterized by different institutional environments compared to developed markets. Practically, the findings offer guidance for corporate managers in formulating optimal capital structure policies that account for profitability levels. The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and hypothesis development. Section 3 describes the research methodology. Section 4 reports the empirical results, and Section 5 concludes with discussion and implications.

LITERATURE REVIEW

A. Theoretical Framework

This study is grounded in two complementary theoretical perspectives: signaling theory and trade-off theory. Signaling theory, originally developed by Spence (1973) in the context of labor markets, has been extensively applied to corporate finance to explain how firms communicate information to market participants through observable actions. According to this theory, in conditions of information asymmetry, firms use signals to convey private information about their quality and prospects. Capital structure choices serve as such signals, with higher leverage potentially indicating management confidence in future cash flows (Ross, 1977). Connelly et al. (2011) provided a comprehensive review emphasizing that signal credibility depends on the costliness of the signal for lower-quality firms to imitate.

Trade-off theory, developed by Kraus and Litzenberger (1973) and refined by subsequent researchers, posits that firms determine their optimal capital structure by balancing the marginal benefits of debt against its marginal costs. The primary benefit of debt financing is the tax deductibility of interest payments, creating a tax shield that increases firm value. However, higher leverage also increases the probability of financial distress and associated costs, including direct bankruptcy costs and indirect costs such as loss of customers, suppliers, and key employees. The optimal capital structure is achieved when the marginal tax benefit equals the marginal cost of financial distress (Modigliani & Miller, 1963).

B. Capital Structure and Firm Value

The relationship between capital structure and firm value has been extensively investigated with mixed results. From the perspective of signaling theory, capital structure decisions convey information about firm quality to external stakeholders. Ross (1977) demonstrated that managers can use debt as a credible signal of firm quality because high-quality firms can better withstand the fixed obligations of debt, while low-quality firms would face greater bankruptcy risk. This signaling mechanism suggests a positive relationship between leverage and firm value for genuinely high-quality firms.

However, empirical evidence presents a more nuanced picture. Febrianti et al. (2024) examined Indonesian companies listed in the Kompas 100 index and found that capital structure negatively affects firm value, mediated through profitability. Similarly, Jihadi et al. (2021) documented a positive effect of leverage on firm value among LQ45 companies. Bui et al. (2023) provided evidence from Vietnamese firms supporting a positive relationship, while Alghifari et al. (2024) found that the relationship depends on hedging policies and firm size. These conflicting findings underscore the importance of examining contingency factors that may moderate this relationship.

In the Indonesian context, the relationship between capital structure and firm value warrants particular attention due to unique institutional characteristics. The Indonesian capital market is characterized by concentrated ownership structures, limited bond market development, and bank-dominated financing systems. These features may influence how investors interpret leverage decisions and their implications for firm value. Building on trade-off theory and considering the Indonesian institutional context, we hypothesize that excessive leverage leads to increased financial distress risk that outweighs tax benefits, resulting in lower firm value. Formally stated:

H₁: Capital structure has a negative effect on firm value.

C. The Moderating Role of Profitability

Profitability reflects a firm's ability to generate returns from its invested capital and operational activities. According to signaling theory, profitability serves as a credible signal of firm quality because it demonstrates management's capability to effectively utilize resources (Spence, 1973). Highly profitable firms possess greater financial slack and capacity to service debt obligations, theoretically enabling them to sustain higher leverage levels without proportionally increasing financial distress risk. However, the interaction between profitability and capital structure in determining firm value is theoretically ambiguous. On one hand, highly profitable firms may be better positioned to leverage debt financing, as their strong earnings provide a buffer against financial distress. This perspective suggests that profitability should weaken the negative relationship between capital structure and firm value, allowing profitable firms to capture greater tax benefits without proportional increases in distress costs.

On the other hand, pecking order theory suggests that profitable firms prefer internal financing over external sources, implying that high leverage among profitable firms may signal management inefficiency or agency problems (Myers & Majluf, 1984). Furthermore, investors may view leveraged profitable firms skeptically, questioning why management chooses debt financing when internal funds are available. This perspective suggests that profitability may strengthen the negative relationship between capital structure and firm value, as the signal sent by leverage becomes more negative for profitable firms. Recent empirical evidence supports the latter perspective. Dorothy and Endri (2024) found that profitability moderates the ESG-firm value relationship in Indonesian energy companies. Deme et al. (2022) documented similar moderating effects in manufacturing contexts. Eden and Yuningsih (2024) reported that profitability modifies the leverage-firm value relationship, with stronger effects observed for highly profitable firms. Building on this evidence and signaling theory considerations, we hypothesize:

H₂: Profitability strengthens the negative effect of capital structure on firm value.

D. Conceptual Framework

Based on the theoretical arguments and empirical evidence discussed above, the conceptual framework of this study posits that capital structure influences firm value directly, and this relationship is moderated by profitability. Figure 1 illustrates the research model, where the arrow from capital structure to firm value represents the direct effect (H1), and the arrow from profitability intersecting this path represents the moderating effect (H2).
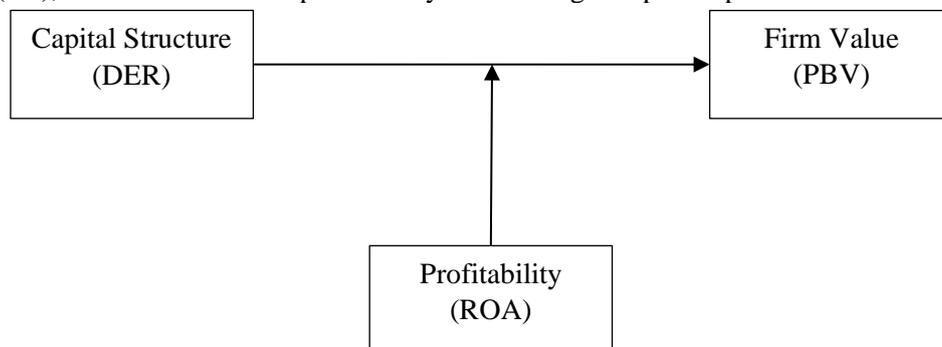

Figure 1: Conceptual Framework

METHOD

A. Research Design and Sample Selection

This study employs a quantitative research design with a causal-explanatory approach to examine the effect of capital structure on firm value and the moderating role of profitability. The research utilizes secondary data obtained from annual financial reports and market data of consumer goods companies listed on the Indonesia Stock Exchange (IDX) during the period 2019-2023. This five-year observation period provides sufficient data points for

panel data analysis while capturing the dynamic relationship among variables across different economic conditions. The population consists of all companies classified in the consumer goods sector on the IDX. Sample selection employs purposive sampling technique with the following criteria: (1) companies consistently listed throughout the observation period 2019-2023; (2) companies with complete financial data for all study variables; (3) companies with positive equity (non-negative book value); and (4) companies that did not experience delisting, corporate actions affecting capital structure comparability, or other extraordinary events during the observation period. Based on these criteria, 35 companies qualified for inclusion, yielding 175 firm-year observations.

Table 1. Sample Selection Process

Criteria	Number of Firms
Consumer goods companies listed on IDX (2019-2023)	58
Less: Companies not consistently listed during 2019-2023	(8)
Less: Companies with incomplete financial data	(7)
Less: Companies with negative equity	(5)
Less: Companies with extraordinary events	(3)
Final sample (firms)	**35**
Total observations (35×5 years)	**175**

Source: Indonesia Stock Exchange (2024)

B. *Variable Measurement*

The dependent variable in this study is firm value, measured using Price to Book Value (PBV). PBV is calculated as the market price per share divided by book value per share, representing the market's assessment of the firm relative to its accounting book value. This measure is widely used in the literature as it captures investor expectations about future profitability and growth prospects (Tobin, 1969; Jihadi et al., 2021). The independent variable is capital structure, measured using Debt to Equity Ratio (DER). DER is calculated as total liabilities divided by total equity, representing the proportion of debt financing relative to equity financing. Higher DER indicates greater reliance on debt financing and higher financial leverage (Febrianti et al., 2024; Bui et al., 2023).

The moderating variable is profitability, measured using Return on Assets (ROA). ROA is calculated as net income divided by total assets, representing the efficiency with which the firm generates profits from its invested capital. ROA is preferred over Return on Equity (ROE) as it is less susceptible to capital structure effects, providing a cleaner measure of operational profitability (Dorothy & Endri, 2024). To control for potential confounding factors, this study includes two control variables. Firm size (SIZE) is measured as the natural logarithm of total assets, controlling for economies of scale and market visibility effects. Firm growth (GROWTH) is measured as the year-over-year percentage change in total assets, controlling for investment opportunities and growth expectations.

Table 2. Operational Variable Definition

Variable	Definition	Measurement	Scale
PBV (Y)	Firm Value	Market Price / Book Value per Share	Ratio
DER (X)	Capital Structure	Total Liabilities / Total Equity	Ratio
ROA (Z)	Profitability (Moderating)	Net Income / Total Assets	Ratio
SIZE	Firm Size (Control)	Ln (Total Assets)	Ratio
GROWTH	Firm Growth (Control)	$(\text{Assets}_t - \text{Assets}_{t-1}) / \text{Assets}_{t-1}$	Ratio

Source: Developed for this study

C. *Data Analysis Method*

This study employs panel data regression analysis to test the research hypotheses. Panel data combines cross-sectional and time-series dimensions, offering several advantages including increased sample size, greater variability, and the ability to control for unobserved heterogeneity (Gujarati & Porter, 2009). The analysis is conducted using EViews 13 software. Model selection follows a systematic procedure involving three tests: Chow test (to choose between Common Effect Model and Fixed Effect Model), Hausman test (to choose between Fixed Effect Model and Random Effect Model), and Lagrange Multiplier test (to choose between Common Effect Model and Random Effect Model). These tests ensure the selection of the most appropriate model specification for the data structure.

Moderated Regression Analysis (MRA) is employed to test the moderating effect of profitability. The interaction term between capital structure and profitability is included in the regression model to capture the moderating effect. The empirical models are specified as follows:

Model 1 (Direct Effect):

$PBV_{it} = \alpha + \beta_1 DER_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \varepsilon_{it}$

Model 2 (Moderation Effect):

$PBV_{it} = \alpha + \beta_1 DER_{it} + \beta_2 ROA_{it} + \beta_3 DER \times ROA_{it} + \beta_4 SIZE_{it} + \beta_5 GROWTH_{it} + \varepsilon_{it}$

Where PBV represents firm value, DER represents capital structure, ROA represents profitability, DER×ROA represents the interaction term, SIZE represents firm size, GROWTH represents firm growth, α represents the constant, β represents the regression coefficients, ε represents the error term, i represents firm index, and t represents time index. H1 is supported if β_1 in Model 1 is significantly negative. H2 is supported if β_3 in Model 2 is significant, indicating that the interaction term modifies the relationship between DER and PBV.

RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 3 presents the descriptive statistics for all variables included in the analysis. The firm value variable (PBV) shows a mean of 2.847 with substantial variation (standard deviation of 3.124), ranging from 0.23 to 18.67. This variation indicates heterogeneity in market valuations across the sample firms, with some firms commanding significant premiums over their book values while others trade at discounts. Capital structure (DER) exhibits a mean of 0.892, indicating that sample firms, on average, have debt levels approaching their equity levels. The range from 0.08 to 3.45 demonstrates considerable diversity in leverage policies within the consumer goods sector. Profitability (ROA) shows a mean of 8.34%, suggesting generally profitable operations, although the range from -15.23% to 28.67% indicates that some firms experienced losses during the observation period.

Table 3. Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
PBV	175	2.847	3.124	0.230	18.670
DER	175	0.892	0.654	0.080	3.450
ROA (%)	175	8.340	9.876	-15.230	28.670
SIZE	175	28.634	1.723	24.567	32.456
GROWTH (%)	175	5.672	12.345	-28.430	45.670

Source: Processed data (2024)

4.2 Model Selection Tests

To determine the appropriate panel data model, three sequential tests were conducted. The Chow test yielded a cross-section F-statistic of 8.234 (p-value = 0.0000), indicating rejection of the null hypothesis that the Common Effect Model is appropriate. This result suggests the presence of individual fixed effects that vary across firms. Subsequently, the Hausman test produced a chi-square statistic of 15.678 (p-value = 0.0035), leading to rejection of the null hypothesis that the Random Effect Model is appropriate. Based on these test results, the Fixed Effect Model (FEM) is selected as the most appropriate specification for both Model 1 and Model 2.

Table 4. Model Selection Test Results

Test	Statistic	p-value	Conclusion
Chow Test	F = 8.234	0.0000	FEM > CEM
Hausman Test	χ^2 = 15.678	0.0035	FEM > REM

Note: FEM = Fixed Effect Model, CEM = Common Effect Model, REM = Random Effect Model

4.3 Hypothesis Testing Results

Table 5 presents the regression results for both models. Model 1 examines the direct effect of capital structure on firm value, while Model 2 includes the interaction term to test the moderating effect of profitability. The F-statistics for both models are significant at the 1% level, indicating overall model validity. The adjusted R-squared values of 0.423 and 0.512 for Models 1 and 2, respectively, suggest that the models explain a substantial portion of the variation in firm value.

Table 5. Panel Data Regression Results (Fixed Effect Model)

Variable	Model 1 (Coef.)	t-stat	Model 2 (Coef.)	t-stat
Constant	8.234***	4.567	6.892***	3.876
DER	-1.234***	-3.456	-0.756**	-2.134
ROA	-	-	0.089***	4.234
DER × ROA	-	-	-0.045**	-2.567
SIZE	0.178**	2.345	0.156**	2.123
GROWTH	0.023	1.234	0.019	1.056
Adjusted R²	0.423		0.512	
F-statistic	12.456***		15.789***	
Observations	175		175	

*Note: ***, **, * indicate significance at 1%, 5%, and 10% levels, respectively*

4.4 Discussion

Hypothesis 1 posited that capital structure has a negative effect on firm value. The regression results from Model 1 show that DER has a significant negative coefficient (-1.234, t = -3.456, p < 0.01), providing strong support for H1. This finding indicates that for every unit increase in the debt-to-equity ratio, firm value decreases by approximately 1.234 units, holding other variables constant. This result aligns with the predictions of trade-off theory, suggesting that in the Indonesian consumer goods sector, the costs of financial distress associated with higher leverage outweigh the tax benefits of debt financing. This finding is consistent with previous research by Febrianti et al. (2024), who documented negative effects of capital structure on firm value in Indonesian firms. Similarly, Jihadi et al. (2021) found that excessive leverage diminishes firm value through increased financial risk perceptions. The negative relationship can be attributed to several factors specific to the Indonesian context. First, the underdeveloped bond market and reliance on bank financing may increase the effective cost of debt. Second, investor concerns about currency fluctuations and interest rate volatility heighten perceived risks associated with leveraged firms.

Hypothesis 2 proposed that profitability strengthens the negative effect of capital structure on firm value. The interaction term (DER × ROA) in Model 2 shows a significant negative coefficient (-0.045, t = -2.567, p < 0.05), supporting H2. This result indicates that profitability acts as a moderating variable that amplifies the negative relationship between capital structure and firm value. Specifically, highly profitable firms experience greater value deterioration when employing higher leverage compared to less profitable firms. From a signaling theory perspective, this finding suggests that investors interpret high leverage among profitable firms as a negative signal. When profitable firms choose debt financing despite having internal funds available, investors may question management's judgment or suspect agency problems. This interpretation aligns with pecking order theory, which predicts that profitable firms prefer internal financing. The deviation from this expected behavior sends negative signals to the market, resulting in greater value penalties for leveraged profitable firms.

The control variable SIZE shows a positive and significant relationship with firm value in both models, consistent with the signaling theory proposition that larger firms have greater market visibility and reduced information asymmetry (Spence, 1973). Larger firms typically have more diversified operations, better access to capital markets, and stronger bargaining power, all of which contribute to higher valuations. The GROWTH variable, while positive, does not show statistical significance, suggesting that asset growth alone does not significantly influence firm value in this sample. The improvement in adjusted R-squared from 0.423 in Model 1 to 0.512 in Model 2 indicates that including profitability as a moderating variable substantially improves model explanatory power. This enhancement suggests that the capital structure-firm value relationship is indeed contingent upon profitability levels, and models that fail to account for this contingency may yield incomplete or misleading conclusions.

Table 6. Summary of Hypothesis Testing Results

Hypothesis	Statement	Result	Conclusion
H1	Capital structure has a negative effect on firm value	β = -1.234***	**Supported**
H2	Profitability strengthens the negative effect of capital structure on firm value	β = -0.045**	**Supported**

*Note: *** p < 0.01, ** p < 0.05*

CONCLUSION

5.1 Summary of Findings

This study examined the impact of capital structure on firm value with profitability as a moderating variable among consumer goods companies listed on the Indonesia Stock Exchange during 2019-2023. The findings contribute to the understanding of the capital structure-firm value nexus in emerging market contexts. First, capital structure, measured by DER, has a significant negative effect on firm value, measured by PBV. This result supports trade-off theory predictions and indicates that the financial distress costs associated with leverage outweigh tax benefits in the Indonesian consumer goods sector. Second, profitability significantly moderates the capital structure-firm value relationship by strengthening the negative effect. Highly profitable firms experience greater value deterioration when employing higher leverage, consistent with signaling theory and pecking order theory predictions.

5.2 Theoretical and Practical Implications

The theoretical implications of this study are multifold. The findings extend signaling theory application in corporate finance by demonstrating that investor interpretation of leverage signals depends on firm profitability. The study also contributes to the literature on trade-off theory by showing that optimal capital structure considerations must account for profitability levels. Furthermore, the results highlight the importance of examining contingency factors in capital structure research, as the relationship between leverage and value is not uniform across all firms. From a practical perspective, the findings offer guidance for corporate financial decision-making. First, managers should exercise caution when increasing leverage, particularly in profitable firms, as this may send negative signals to investors. Second, capital structure policies should be calibrated based on firm profitability, with highly profitable firms potentially benefiting from more conservative leverage ratios. Third, investors should consider the interaction between leverage and profitability when evaluating firm value, as leverage effects vary depending on profitability levels.

5.3 Limitations and Future Research

Several limitations should be acknowledged when interpreting these findings. First, the study focuses on the consumer goods sector, which may limit generalizability to other industries with different capital intensity, risk profiles, and growth characteristics. Second, the observation period includes the COVID-19 pandemic, which may have introduced unusual patterns in financial variables. Third, the study employs linear specifications, which may not capture potential non-linear relationships between variables. Fourth, other potential moderating variables such as corporate governance mechanisms, ownership structure, and dividend policies were not examined. Future research could address these limitations by extending the analysis to multiple sectors, employing non-linear estimation techniques, and incorporating additional moderating and mediating variables. Comparative studies across different emerging markets would also enhance understanding of institutional factors affecting the capital structure-firm value relationship. Additionally, longitudinal studies examining how these relationships evolve over time could provide valuable insights for both theory development and practice.

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