

THE EFFECT OF CAPITAL STRUCTURE AND SALES GROWTH ON FINANCIAL DISTRESS WITH PROFITABILITY AS A MODERATING VARIABLE: EVIDENCE FROM INDONESIAN MANUFACTURING FIRMS

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Abstract

This study examines the impact of capital structure and sales growth on financial distress, with profitability as a moderating variable. Using 326 firm-year observations from 84 Indonesian manufacturing companies in the consumer discretionary and consumer staples sectors (2019–2023), logistic regression and moderated regression analysis were applied. The findings show that the debt-to-equity ratio and sales growth significantly increase the likelihood of financial distress, while profitability reduces it. In contrast, the debt-to-asset ratio has no significant effect, and profitability does not moderate the effects of capital structure or sales growth. These results provide evidence for the inconsistent findings in prior studies and highlight the need for managers to balance leverage, growth, and profitability to reduce financial risk.

Keywords: Capital Structure; Sales Growth; Profitability; Financial Distress; Altman Z-Score; Indonesia

1. Introduction

To Maintain financial stability is very important and crucial for publicly listed companies, because financial decline can reduce shareholder value and lead to delisting of a public firms. In Indonesia, corporate suspensions and bankruptcies have risen in recent years. The Indonesia Stock Exchange (IDX) reported in April 2024 that 41 firms faced potential delisting due to severe financial problems, with PT Nipress Tbk and PT Sri Rejeki Isman Tbk (Sritex) among the most notable cases. Sritex, once a leading textile company, was declared bankrupt in October 2024, highlighting the real threat of financial distress to large firms and the broader economy.

Financial distress refers to the weakening of a firm's financial condition prior to bankruptcy, often manifested through difficulties in servicing debt, declining profitability, or liquidity in a firm. Studies suggest that financial distress is influenced by both firm internal factors, such as capital structure and profitability, and external factors such as external shocks

which is economic downturns. The manufacturing sector, being capital-intensive and highly competitive, is particularly vulnerable to these factors.

1.1 Research Gap

Prior studies offer inconsistent evidence. Some find that leverage increases the risk of bankruptcy by raising financial obligations, while others report that debt may enhance firm credibility and reduce distress. Similarly, sales growth is often perceived positively, but when expansion is not supported by profitability, it may strain resources and increase financial risk. Although profitability is consistently linked to reduced distress, its role as a moderator in shaping the effects of leverage and growth remains unclear. The research problem is capital structure and financial performance impact financial distress.

Based on the above research gap and research problem this study has five research questions as follows:

1. How does capital structure influence financial distress in Indonesian manufacturing firms?
2. What is the impact of sales growth on the probability of financial distress among Indonesian manufacturing companies?
3. Does profitability reduce the risk of financial distress in Indonesian manufacturing firms?
4. Does profitability moderate the relationship between capital structure and financial distress in Indonesian manufacturing firms?
5. Does profitability moderate the relationship between sales growth and financial distress in Indonesian manufacturing firms?

1.2 Research Objectives

This study aims to:

1. Examine the effect of capital structure on financial distress in Indonesian manufacturing firms.
2. Assess the effect of sales growth on financial distress in Indonesian manufacturing firms.
3. Analyze the effect of profitability on financial distress in Indonesian manufacturing firms.
4. Test whether profitability moderates the capital structure and financial distress in Indonesian manufacturing firms.
5. Test whether profitability moderates the sales growth and financial distress in Indonesian manufacturing firms.

1.3 Contributions

This paper contributes by (1) offering evidence from Indonesian manufacturing firms during 2019–2023, a period marked by the COVID-19 crisis, (2) clarifying inconsistent findings on capital structure, sales growth, and financial distress, and (3) providing insights for managers, investors, and regulators on balancing growth, profitability, and capital structure to strengthen and maintain financial health of a firm.

2. Literature Review and Hypotheses Development

2.1 Theoretical Framework

2.1.1 Agency Theory

Agency theory, introduced by Jensen and Meckling (1976), explains the conflict of interest between shareholders as principals and managers as agents. Since managers often have personal goals that differ from those of shareholders, agency costs arise from monitoring, bonding, and potential mismanagement. In the context of financial management, excessive use of debt may exacerbate these conflicts because managers may undertake risky projects to pursue growth, while creditors and shareholders bear the financial consequences. This theory is relevant to financial distress analysis because firms with poor governance or misaligned incentives may misuse leverage, leading to higher risks of default and bankruptcy.

2.1.2 Pecking Order Theory

Pecking order theory, developed by Myers and Majluf (1984), proposes that firms prioritize financing sources based on information asymmetry and cost considerations. Companies prefer internal financing through retained earnings first, followed by debt, and only issue new equity as a last resort. Profitable firms with strong internal cash flows are therefore less dependent on external borrowing, which reduces their risk of financial distress. Conversely, less profitable firms tend to rely more heavily on debt financing, increasing their vulnerability to repayment difficulties. This theory underpins the expectation that profitability lowers distress risk, while leverage increases it, making it a crucial framework for analyzing capital structure decisions.

2.1.3 Financial Distress

Financial distress refers to a significant deterioration in a firm's financial condition before bankruptcy, typically manifested in cash flow problems, debt repayment difficulties, or declining performance (Hidayat et al., 2020). The Altman Z-score remains a widely used model for predicting financial distress due to its robust combination of profitability, leverage, liquidity, solvency, and efficiency ratios.

2.1.4 Capital Structure

Capital structure reflects the mix of debt and equity financing used by firms. Debt-to-equity ratio (DER) and debt-to-asset ratio (DAR) are common proxies. High leverage increases fixed obligations, which may heighten distress risk, particularly in volatile markets. However, some studies report negative or insignificant relationships, suggesting context-specific dynamics (Kusnadi et al., 2023; Indrawan & Sudarsi, 2023).

2.1.5 Sales Growth

Sales growth signals market competitiveness and revenue-generating capacity. Steady growth often reduces distress risk by strengthening cash inflows, but excessive or unstable growth may worsen risk if not matched by profitability and resource efficiency (Setyowati & Sari, 2019; Purba et al., 2024).

2.1.6 Profitability

Profitability, often measured by return on assets (ROA), reflects the firm's efficiency in generating earnings from its assets. High profitability reduces financial distress risk by enhancing internal financing capacity and investor confidence (Hidayat et al., 2020). As a moderator, profitability may strengthen or weaken the impact of leverage and sales growth on distress, but prior findings remain mixed (Wilujeng & Yulianto, 2020; Widhiastuti & Pradnyani, 2024).

Together, these concepts establish the foundation for examining the financial stability of firms. Financial distress serves as the outcome variable, reflecting a firm's overall vulnerability. Capital structure and sales growth represent critical internal drivers, where debt decisions and revenue expansion strategies can either strengthen or undermine financial health. Profitability, meanwhile, functions both as a direct determinant of distress and as a potential moderator that influences how leverage and growth affect financial outcomes. By integrating these variables into a single analytical framework, this study seeks to clarify their interrelationships and provide a comprehensive understanding of the factors shaping financial distress in Indonesian manufacturing firms.

2.3 Hypotheses Development

2.3.1 Capital Structure and Financial Distress

Firms with higher leverage face increased obligations to service debt regardless of revenue stability, which can intensify financial distress (Indrawan & Sudarsi, 2023). Excessive reliance on debt also reduces financial flexibility, raising the likelihood of default during economic downturn (Hidayat et al., 2020). However, other studies suggest leverage may reduce distress risk by signaling market confidence or providing tax benefits (Kusnadi et al., 2023).

In the Indonesian manufacturing context, where capital intensity is high, debt-heavy firms often struggle with unstable cash flows, making distress more likely.

H1: Capital structure has a positive effect on financial distress.

2.3.2 Sales Growth and Financial Distress

Sales growth reflects the ability of firms to expand revenues and maintain competitiveness. A consistent increase in sales strengthens cash inflows and reduces financial vulnerability (Setyowati & Sari, 2019). However, unstable or unsustainable growth can increase financial obligations, strain working capital, and elevate distress risk (Purba et al., 2024). Previous research also notes that sales growth alone is insufficient to guarantee stability; without efficiency and profitability, growth may even accelerate the path to distress (Oktaviani&Lisiantara,2022).

H2: Sales growth has a negative effect on financial distress.

2.3.3 Profitability and Financial Distress

Profitability indicates the efficiency of firms in generating earnings from assets and operations. Higher profitability reduces reliance on external debt, thereby mitigating distress risk (Hidayat et al., 2020). Profitability also builds investor confidence and enhances internal financing capacity, making firms more resilient to external shocks (Akmalia, 2020). Prior research consistently finds that profitability has a significant negative relationship with financial distress, making it a critical determinant of firm sustainability (Indrawan & Sudarsi, 2023).

H3: Profitability has a negative effect on financial distress.

2.3.4 Profitability, Capital Structure, and Financial Distress

Profitability may moderate the impact of leverage on financial distress. Firms with high profitability can use retained earnings to service debt obligations, thereby weakening the negative effects of high leverage (Deliana, 2023). However, when profitability is low, debt burdens exert stronger pressure on firms, raising distress risks (Dila & Ferdiansyah, 2024). Empirical evidence is mixed: some studies find profitability moderates the leverage–distress relationship (Wilujeng & Yulianto, 2020), while others report no significant moderating effect (Naibaho & Natasya, 2023).

H4: Profitability weakens the positive relationship between capital structure and financial distress.

2.3.5 Profitability, Sales Growth, and Financial Distress

Profitability can also influence how sales growth affects financial distress. While sales growth enhances revenues, its benefits depend on whether firms can convert growth into sustainable earnings. High profitability ensures that additional revenues strengthen financial resilience, thereby lowering distress risks (Widhiastuti & Pradnyani, 2024). Conversely, if profitability is low, sales growth may generate higher costs without improving financial stability (Rahmawati & Qudus, 2023). Some studies also suggest that profitability amplifies the positive effect of sales growth by supporting reinvestment in innovation and competitiveness (Oktaviani & Lisiantara, 2022).

H5: Profitability strengthens the negative relationship between sales growth and financial distress.

3. Methodology

3.1 Research Design

This study applies a quantitative design to test the effects of capital structure and sales growth on financial distress, with profitability as a moderating variable. Logistic regression and moderated regression analysis (MRA) were used to evaluate the hypotheses.

3.2 Population and Sample

The population covers manufacturing firms listed on the **Indonesia Stock Exchange (IDX)** during 2019–2023. To maintain sectoral relevance, the study focuses on **consumer discretionary** and **consumer staples** industries, which are capital-intensive and sensitive to demand fluctuations.

Sample selection followed purposive sampling with these criteria:

1. Listed on IDX throughout 2019–2023.
2. Published complete financial statements in IDR.
3. Provided data for all study variables.

This process yielded **84 firms**, resulting in **326 firm-year observations**.

3.3 Data Sources

Secondary data were collected from:

- Annual reports available on the IDX website.
- S&P Capital IQ database for financial ratios.
- Company websites for verification.

3.4 Variables and Measurement

- **Dependent Variable:**
Financial Distress (FD) measured using Altman's Z-score (Altman, 1968). A dummy variable was applied: 1 = distressed ($Z < 2.99$), 0 = non-distressed.
- **Independent Variables:**
Capital Structure proxied by debt-to-equity ratio (DER) and debt-to-asset ratio (DAR).
Sales Growth (SG) = $(\text{Sales}_t - \text{Sales}_{t-1}) \div \text{Sales}_{t-1}$.
- **Moderating Variable:**
Profitability (ROA) = Net income $\div$ Total assets.
- **Control Variables:**
Current ratio (CR), firm size (log of total assets), total asset turnover (TATO), and a COVID-19 dummy (2020–2021 = 1, otherwise = 0).

3.5 Empirical Models

Model 1: Direct Effects

$$\begin{aligned} \ln(\text{FD}/1-\text{FD}) = Z(\text{FinD}) = & \alpha_0 + \beta_1 \text{DER}_{i,t} + \beta_2 \text{DAR}_{i,t} + \beta_3 \text{SG}_{i,t} + \beta_4 \\ & \text{ROA}_{i,t} + \beta_5 \\ & \text{CR}_{i,t} + \beta_6 \text{Size}_{i,t} + \beta_7 \text{TATO}_{i,t} + \beta_8 \text{COVID}_{i,t} + \varepsilon \end{aligned}$$

Model 2: Moderating Effects

$$\begin{aligned} \ln(\text{FD}/1-\text{FD}) = Z(\text{FinD}) = & \alpha_0 + \beta_1 \text{DER}_{i,t} + \beta_2 \text{DAR}_{i,t} + \beta_3 \text{SG}_{i,t} + \beta_4 \\ & \text{ROA}_{i,t} + \beta_5 \text{ROA}_{i,t} * \text{DER}_{i,t} + \beta_6 \text{ROA}_{i,t} * \text{DAR}_{i,t} + \beta_7 \text{ROA}_{i,t} * \text{SG}_{i,t} + \\ & \beta_8 \text{CR}_{i,t} + \beta_9 \text{SIZE}_{i,t} + \beta_{10} \text{TATO}_{i,t} + \beta_{11} \text{COVID}_{i,t} + \varepsilon \end{aligned}$$

3.6 Data Analysis

Data were processed with SPSS. Steps included:

1. Descriptive statistics to summarize variables.
2. Pearson correlations to check associations and multicollinearity.
3. Logistic regression to test H1–H3.
4. Moderated regression (interaction terms) for H4–H5.
5. Model fit assessed via Nagelkerke R^2 and Hosmer–Lemeshow test.

4. Results

4.1 Descriptive Statistics

Table 4.1 Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Financial Distress (FD)	326	0.00	1.00	0.62	0.49
Debt-to-Equity Ratio (DER)	326	0.00	2.58	0.70	0.57
Debt-to-Asset Ratio (DAR)	326	0.07	0.77	0.48	0.15
Sales Growth (SG)	326	-0.52	1.06	0.09	0.22
Return on Assets (ROA)	326	-0.09	0.36	0.05	0.06
Current Ratio (CR)	326	0.32	5.92	1.76	0.93
Firm Size (SIZE, Ln Assets)	326	10.94	19.04	15.00	1.69
Total Asset Turnover (TATO)	326	0.05	3.13	0.98	0.51
COVID-19 Dummy	326	0.00	1.00	0.40	0.49

Processed by authors

The sample consists of **326 firm-year observations**. About 62% of firms were classified as financially distressed based on Altman's Z-score. On average, firms reported a DER of 0.70 and a DAR of 0.48, indicating moderate leverage levels. Sales growth averaged 9%, though the range was wide (-52% to 106%). Profitability (ROA) averaged 5%, with some firms recording negative returns. This variation highlights the different financial conditions across Indonesian manufacturing firms.

4.2 Correlation Analysis

Correlation results suggest DER is positively associated with financial distress, while ROA shows a negative association. Sales growth has a weak but positive correlation with distress. Multicollinearity was not an issue, as all VIF values were below 5

4.3 Logistic Regression Results (Model 1)

Table 4.2 Logistic Regression

Variable	Coefficient (β)	Std. Error	Sig. (p-value)
Debt-to-Equity Ratio (DER)	1.215	0.342	0.001 ***
Debt-to-Asset Ratio (DAR)	0.437	0.510	0.392

Sales Growth (SG)	0.872	0.289	0.003 ***
Return on Assets (ROA)	-2.356	0.418	0.000 ***
Current Ratio (CR)	-0.315	0.144	0.028 **
Firm Size (SIZE)	-0.214	0.097	0.031 **

Variable	Coefficient (β)	Std. Error	Sig. (p-value)
Total Asset Turnover (TATO)	-0.187	0.121	0.118
COVID-19 Dummy	0.562	0.214	0.009 ***
Constant	-1.945	0.637	0.002 ***
Processed by authors			

Model Fit: Nagelkerke $R^2 = 0.381$; Hosmer–Lemeshow Test = 0.467

Notes: *** $p < 0.01$; ** $p < 0.05$.

Logistic regression tested the direct effects of leverage, sales growth, and profitability on distress. Key findings:

- **DER** significantly increases financial distress ($p < 0.01$).
- **DAR** shows no significant relationship.
- **Sales Growth** unexpectedly increases distress risk ($p < 0.01$), opposite to the hypothesized negative effect.
- **ROA** significantly decreases distress likelihood ($p < 0.01$).
- Control variables: current ratio and firm size reduce distress, while the COVID-19 dummy increases it.

Nagelkerke $R^2 = 0.38$, suggesting a moderately strong explanatory power.

4.4 Moderated Regression Results (Model 2)

Table 4.3 Moderated Regression

Interaction Term	Coefficient (β)	Std. Error	Sig. (p-value)
DER $\times$ ROA	-0.428	0.397	0.287
DAR $\times$ ROA	0.235	0.351	0.513
SG $\times$ ROA	-0.317	0.284	0.263
Processed by authors			

Model Fit: Nagelkerke $R^2 = 0.394$; Hosmer–Lemeshow Test =

0.512 Notes: No interaction terms are significant.

To test H4 and H5, interaction terms were included. Results indicate that profitability (ROA) does not significantly moderate the effects of DER, DAR, or sales growth on distress. The coefficients for interaction terms were insignificant, suggesting that profitability's role is limited to a **direct effect** rather than a buffering or amplifying one.

4.5 Hypotheses Testing Summary

Table 4.4 Hypothesis Testing

Hypothesis	Statement	Result
H1	Capital structure (DER) positively	affects distress Supported
H2	Sales growth negatively affects distress	Not supported
H3	Profitability negatively affects distress	Supported
H4	Profitability weakens DER– distress relationship	Not supported Processed by authors
H5	Profitability strengthens SG– distress relationship	Not supported 5. Discussion supported

The findings provide several important insights into the determinants of financial distress in Indonesian manufacturing firms.

5.1 Capital Structure and Distress

The results show that **debt-to-equity ratio (DER)** significantly increases financial distress, supporting H1. This aligns with studies showing that high leverage reduces flexibility and increases vulnerability to default (Hidayat et al., 2020; Indrawan & Sudarsi, 2023). However, the **debt-to-asset ratio (DAR)** was not significant, suggesting DER is a more reliable distress indicator in Indonesia, where asset composition differs across subsectors. Similar mixed findings on DAR have been reported elsewhere (Naibaho & Natasya, 2023).

5.2 Sales Growth and Distress

Contrary to expectations, **sales growth increased distress risk**, rejecting H2. This implies that rapid growth can create financing pressures if not supported by adequate profitability. Firms expanding aggressively may incur higher costs for production, marketing, and working capital, leading to financial strain (Purba et al., 2024). This result contrasts with studies that link sales growth to stronger financial health (Setyowati & Sari, 2019) but supports research cautioning against unsustainable expansion (Rahmawati & Qudus, 2023).

5.3 Profitability and Distress

The study confirms H3: **profitability reduces financial distress**. Higher ROA indicates efficiency in asset utilization, providing internal funding and strengthening resilience. This finding is consistent with pecking order theory (Myers & Majluf, 1984) and prior studies showing that profitability lowers default risk (Akmalia, 2020; Hidayat et al., 2020). Profitability thus remains a key safeguard against distress in manufacturing firms.

5.4 Moderating Role of Profitability

The analysis found no evidence that profitability moderates the effects of leverage or sales growth on distress, rejecting H4 and H5. This suggests profitability's role is **direct**, not interactive. Previous studies also present mixed evidence: some report significant moderation (Deliana, 2023), while others find none (Widhiastuti & Pradnyani, 2024). A possible explanation is that external shocks, particularly COVID-19, weakened profitability's moderating potential by compressing margins across the industry.

5.5 Implications

For managers, the results stress the need for **careful debt management**. Excessive reliance on debt increases vulnerability, while sustainable growth must be balanced with profitability. Sales expansion should be accompanied by efficiency improvements to avoid distress.

For policymakers, monitoring leverage ratios and sales trends could serve as early warning indicators. Strengthening disclosure and governance standards can help reduce systemic risks.

For investors, profitability remains the most reliable signal of financial health. Firms with strong ROA are better positioned to withstand financial shocks, making them safer investment choices.

6. Conclusion and Implications

This study investigated how capital structure and sales growth influence financial distress, with profitability considered as a moderating factor, using data from 84 Indonesian manufacturing firms (2019–2023). The results show that:

1. **Capital structure (DER)** significantly increases distress risk, while **DAR** has no effect.
2. **Sales growth** unexpectedly raises distress probability, indicating that expansion without efficiency or profitability may be unsustainable

3. **Profitability (ROA)** directly reduces distress, confirming its role as a protective factor.
4. **Profitability does not moderate** the effects of leverage or sales growth, suggesting its influence is primarily direct.

Theoretical Implications

The findings enrich the literature by clarifying inconsistent results. They confirm agency and pecking order theories while highlighting the limits of profitability as a moderator in emerging markets.

Managerial Implications

Managers should carefully balance debt and equity to avoid excessive leverage. Sales expansion must be aligned with profitability to ensure sustainable growth. Emphasizing cost efficiency and asset utilization will strengthen resilience.

Policy and Investor Implications

Regulators should monitor leverage and growth trends to detect early signs of distress, while investors should prioritize profitability when assessing firm health.

7. Limitations and Future Research

This study has limitations that offer directions for future work:

- **Sectoral focus:** Only consumer-related manufacturing firms were analyzed. Future research could expand to other sectors or cross-country samples.
- **Timeframe:** The 2019–2023 period includes COVID-19, which strongly affected financial performance. Longer time horizons could distinguish normal from crisis conditions.
- **Methods:** Logistic regression was used; advanced methods (e.g., panel regression, machine learning) may provide deeper insights.
- **Variables:** Profitability was measured only with ROA. Future studies could include ROE, cash flow ratios, or governance variables to capture broader determinants of distress.

Despite these limitations, the findings provide meaningful contributions for academics, practitioners, and policymakers concerned with corporate financial health in emerging economies.

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