

Received: 15 July 2026; Revised: 26 July 2026; Accepted: 27 July 2026; Published: 31 July 2026

Determinants of Capital Structure in Emerging Markets: Empirical Evidence from Indonesia

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ABSTRACT

This study investigates the determinants of capital structure in food and beverage companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2023 period. The study employed a quantitative approach using secondary data obtained from the companies' annual financial reports. The research population consisted of 30 food and beverage companies listed on the IDX. Using purposive sampling based on predetermined selection criteria, 16 companies were selected as the final research sample. With a three-year observation period, the study generated 48 firm-year observations for analysis. Multiple linear regression analysis was employed to examine the effects of asset structure, profitability, and firm size on capital structure. The results demonstrate that asset structure and firm size have positive and significant effects on capital structure, supporting the propositions of Trade-Off Theory and Agency Theory regarding collateral capacity and access to external financing. Conversely, profitability has no significant effect on capital structure, indicating that the financing behavior of firms in this sector does not fully conform to the hierarchical financing preferences proposed by Pecking Order Theory. These findings imply that managers should optimize tangible assets and business scale to enhance access to external financing and financial flexibility. Future research is encouraged to incorporate macroeconomic variables and extend the observation period to provide a more comprehensive understanding of corporate financing decisions in emerging markets.

Keywords: Asset Structure; Capital Structure; Firm Size; Profitability

1. INTRODUCTION

Capital structure decisions are fundamental to financial management, directly influencing a firm's long-term financial position and sustainability. In the dynamic era of the industrial revolution, manufacturing firms notably those belonging to the Food and Beverage (F&B) sector and having their shares recorded as a listed

entity on the Indonesia Stock Exchange (IDX) face intensifying competition to maintain their market presence and growth. Previous evidence from Indonesian food and beverage companies indicates that leverage remains an important component of corporate financial decisions, emphasizing the relevance of examining financing behavior within this sector (Apriyando & Mariana, 2023).

Within the context of Agency Theory, an optimal capital structure is crucial to mitigate agency costs arising from the mutual relationship between shareholders and creditors, especially when firms utilize debt as a financing instrument. The Trade-Off Theory suggests that the potential expenses of financial distress must be weighed against the tax benefits of interest-bearing debt (Wagisuwari & Sitorus, 2024). Conversely, Pecking Order Theory emphasizes a firm's preference for internal financing (retained earnings) to fund operations and expansion before resorting to external debt (Rehan, Hadi, Hussain, & Hye, 2023).

The F&B sector possesses unique characteristics that make its capital structure dynamics a compelling subject of investigation. First, the industry demands high working capital and efficient supply chain management (Hasanah, 2023). The post-pandemic phenomenon (2021–2023) indicates that F&B firms must balance the use of retained earnings often eroded by inflationary pressure on raw material costs with the need for short-term borrowing to maintain operational liquidity. Second, due to the industry's reliance on fixed assets for production capacity, asset structure serves as vital collateral to gain creditor trust. Existing evidence suggests that firms with strong fixed asset bases possess greater flexibility in accessing external funding, aligning with findings that asset structure significantly and positively influences capital structure. Third, the "too-big-to-fail" paradox highlights that larger F&B firms on the IDX often enjoy wider market access and greater competitive advantages, leading them to employ higher leverage compared to their smaller counterparts (Pebrianti, 2024). Profitability and firm size represent important firm-specific characteristics in explaining corporate financial conditions, although their effects may vary depending on the financial outcome being examined (Rega & Annisa Hakim, 2022).

A particularly intriguing development in recent years is the capital structure paradox amidst post-pandemic economic uncertainty and global inflation. F&B companies are compelled to expand production capacity to meet growing population demands and changing consumption habits, requiring significant external funding. However, dynamic interest rate fluctuations force financial managers to adopt a more conservative approach toward long-term debt (Theresita, 2025). Given these phenomena, this study is relevant for testing the continued applicability of Trade-Off and Pecking Order theories in explaining the financing behavior of Indonesian F&B firms operating within a high-volatility economic environment, especially considering that post-2023 consumption patterns necessitate stricter capital efficiency (Donna, 2024).

Regarding specific determinants, high asset structure indicates that firms possess tangible collateral, such as machinery and properties, which reduces bankruptcy costs and information asymmetry, thereby increasing debt capacity (Ibrahim, Adebisi, & Roberts, 2025). The Pecking Order Theory posits that corporations enjoying high profitability are inclined to rely on internally generated

funds, thereby circumventing the flotation costs that accompany the issuance of new securities, suggesting a negative relationship between profitability and debt (Tarimo, 2025). Finally, larger firms generally benefit from broader business diversification and lower bankruptcy risk, facilitating easier access to capital markets and lower agency costs, which typically correlates with higher leverage levels (Supriandi & Masela, 2023).

2. THEORETICAL FRAMEWORK AND HYPOTHESIS

Trade-Off Theory

Trade-Off Theory provides a fundamental framework for explaining corporate capital structure decisions. The theory proposes that firms determine their capital structure by balancing the benefits of debt financing against the associated costs. Debt provides advantages, particularly through tax shields generated by interest payments; however, excessive debt increases the probability of financial distress, bankruptcy costs, and potential agency conflicts. Consequently, firms are expected to maintain a level of leverage at which the marginal benefits of debt are balanced against its marginal costs. Frank and Goyal (2009) emphasize that capital structure decisions reflect a trade-off between the benefits and costs of debt, with taxation, bankruptcy costs, and agency considerations playing important roles in determining corporate leverage.

In the context of the present study, Trade-Off Theory is particularly relevant for explaining the relationships between asset structure, firm size, and capital structure. Firms with a greater proportion of tangible fixed assets are expected to have greater debt capacity because these assets can serve as collateral. The availability of collateral reduces creditors' exposure to default risk and may lower the cost of borrowing. Empirical evidence provided by (Frank & Goyal, 2009) identifies asset tangibility as one of the most reliable determinants of leverage, with firms possessing more tangible assets generally exhibiting higher leverage.

Trade-Off Theory also provides an explanation for the expected relationship between firm size and capital structure. Larger firms generally have more diversified operations, greater financial stability, stronger reputations, and better access to external capital markets. These characteristics may reduce expected financial distress costs and increase firms' capacity to use debt. Frank and Goyal (2009) similarly identify firm size, measured by the logarithm of assets, as an important factor associated with leverage.

These theoretical arguments are particularly relevant to food and beverage companies because their production activities typically require investments in tangible assets, including machinery, production facilities, warehouses, and other operating assets. Such assets may increase collateral capacity and facilitate access to external financing. Therefore, Trade-Off Theory provides the principal theoretical foundation for predicting that firms with stronger tangible asset structures and larger operating scales may have greater capacity to employ debt in their capital structures.

Accordingly, in this study, Trade-Off Theory primarily underpins the expected positive effects of asset structure and firm size on capital structure. This theoretical perspective supports the formulation of H1, which predicts a positive relationship between asset structure and capital structure, and H3, which predicts a positive relationship between firm size and capital structure.

Pecking Order Theory

Pecking Order Theory provides an alternative explanation for corporate financing decisions by emphasizing financing hierarchy rather than the existence of an optimal debt ratio. Under this theory, firms prefer financing sources according to the degree of information asymmetry and financing costs. Internally generated funds, particularly retained earnings, constitute the first financing preference, followed by debt when internal resources are insufficient, while external equity is generally considered the last financing option. Thus, unlike Trade-Off Theory, Pecking Order Theory does not require firms to continuously adjust toward a predetermined optimal leverage ratio. (Frank & Goyal, 2009) explain that the financing hierarchy arises because retained earnings avoid adverse-selection problems, debt involves relatively smaller adverse-selection costs, and external equity is generally more sensitive to information asymmetry. Within the context of this study, Pecking Order Theory is particularly relevant for explaining the relationship between profitability and capital structure. Highly profitable firms generate greater internal cash flows and retained earnings, thereby reducing their dependence on external financing. Consequently, the theory predicts a negative relationship between profitability and leverage: as profitability increases, firms are expected to rely more extensively on internally generated funds and less on debt financing.

This theoretical prediction is supported by extensive empirical capital structure literature. Frank and Goyal (2009) identify profitability as one of the reliable determinants of leverage and report that more profitable firms tend to exhibit lower leverage. More recent cross-sector evidence also indicates that the explanatory relevance of capital structure determinants and competing financing theories may vary across sectors and estimation approaches, highlighting the importance of examining Trade-Off and Pecking Order predictions within specific industry settings. (Rehan et al., 2023), using sectoral evidence and panel-data estimators, emphasize that capital structure determinants can differ across industries.

The Pecking Order perspective is especially relevant to food and beverage companies because profitability may generate internal funds that can be used to finance working capital, inventory, production, and investment requirements. When sufficient internal resources are available, firms may reduce their dependence on external borrowing. Conversely, when retained earnings are insufficient to finance operational and investment needs, debt becomes the next preferred financing source before the issuance of new equity.

Therefore, Pecking Order Theory serves as the principal theoretical foundation for H2, which predicts that profitability has a negative effect on capital structure. If more profitable food and beverage companies rely more heavily on

retained earnings, their need for debt financing should decline. However, if the empirical relationship is insignificant, as observed in this study across CEM, FEM, and REM, the finding suggests that the financing behavior of the sampled firms does not fully conform to the financing hierarchy predicted by Pecking Order Theory.

Asset Structure and Capital Structure

Asset structure reflects the proportion of fixed assets relative to a firm's total assets and represents an important consideration in corporate financing decisions. The relationship between asset structure and capital structure can be primarily explained through Trade-Off Theory, which proposes that firms determine their debt levels by balancing the benefits of debt financing against the potential costs of financial distress and bankruptcy. Within this framework, tangible assets play an important role because they can serve as collateral and provide security for creditors.

Firms with a higher proportion of tangible fixed assets generally have greater collateral capacity. In the event of financial distress, tangible assets can be liquidated to partially recover outstanding debt, thereby reducing creditors' expected losses and the perceived risk of lending. Consequently, the availability of collateral may reduce borrowing constraints and enable firms to obtain external debt under more favorable conditions. From the perspective of Trade-Off Theory, this mechanism reduces the expected costs associated with debt financing and allows firms with greater asset tangibility to sustain relatively higher leverage.

This theoretical argument is particularly relevant to food and beverage companies, whose operating activities generally require substantial investments in production facilities, machinery, equipment, warehouses, and other tangible assets. A stronger tangible asset base may enhance creditors' confidence and increase firms' capacity to obtain debt financing for operational and business expansion. Therefore, as the proportion of fixed assets increases, firms are expected to have greater debt capacity and, consequently, higher leverage.

The argument is consistent with (Frank & Goyal, 2009), who identify asset tangibility as one of the reliable determinants of corporate leverage. Previous empirical evidence cited in this study also indicates that sufficient fixed assets can provide greater security to creditors and facilitate access to debt financing (Wirawan, 2017), while firms with higher asset structures may employ greater debt financing to support their operational activities and expansion (Mas & Dewi, 2020).

Accordingly, Trade-Off Theory provides the primary theoretical foundation for predicting a positive relationship between asset structure and capital structure. Greater asset tangibility increases collateral capacity, reduces creditors' expected risk, and strengthens firms' ability to utilize debt financing. Based on this theoretical reasoning, the first hypothesis is formulated as follows:

H1: Asset structure has a positive influence on the capital structure of food and beverage companies.

Profitability and Capital Structure

Profitability represents a firm's ability to generate earnings from its available resources and is an important factor in determining corporate financing decisions.

The relationship between profitability and capital structure in this study is primarily explained by Pecking Order Theory, which proposes that firms follow a hierarchical preference when selecting sources of financing. According to this theory, firms prioritize internally generated funds, particularly retained earnings, followed by debt financing, while the issuance of new equity is generally considered the least preferred financing alternative.

The theoretical mechanism implies that highly profitable firms generate greater internal cash flows and retained earnings, thereby increasing their capacity to finance operational activities and investments without relying extensively on external debt. As internal financing becomes more readily available, the need to obtain additional debt decreases. Conversely, firms with lower profitability and insufficient internal funds may become more dependent on external financing to meet their investment and operational requirements. Therefore, Pecking Order Theory predicts a negative relationship between profitability and leverage.

This argument is particularly relevant to food and beverage companies because their business operations require continuous financing for raw materials, inventories, production, distribution, working capital, and business expansion. Companies with higher profitability can accumulate greater retained earnings and use these internally generated resources to finance such activities. Consequently, greater profitability is theoretically expected to reduce dependence on external debt and lower the firm's debt-to-equity ratio.

This theoretical prediction is consistent with the broader capital structure literature. Frank and Goyal (2009) identify profitability as an important determinant of leverage and show that more profitable firms generally tend to have lower leverage, a relationship consistent with the financing hierarchy proposed by Pecking Order Theory. The argument is also consistent with the empirical evidence cited in this study that firms may utilize higher retained earnings to finance operations, thereby reducing their reliance on external debt (Winda & Nasution, 2022). Accordingly, Pecking Order Theory provides the primary theoretical foundation for predicting a negative relationship between profitability and capital structure. Higher profitability increases the availability of internal funds, which reduces the firm's need for debt financing. Based on this theoretical reasoning, the second hypothesis is formulated as follows:

H2: Profitability has a negative influence on the capital structure of food and beverage companies.

Company Size and Capital Structure

Large-scale companies generally possess broader product and market diversification, more stable cash flows, and lower earnings volatility, which may reduce their exposure to financial distress and bankruptcy risk. Larger firms also tend to have stronger reputations, greater asset bases, and better access to capital markets, enabling them to obtain external financing at relatively lower costs than smaller firms. Consequently, firm size may increase a company's capacity and willingness to employ debt as part of its capital structure.

This relationship is theoretically explained by Trade-Off Theory, which suggests that firms determine their level of debt by balancing the benefits of debt

financing, particularly tax advantages, against the potential costs of financial distress and bankruptcy. From this perspective, larger firms are expected to have greater debt capacity because their diversified operations, relatively stable cash flows, and lower probability of financial distress reduce the expected costs associated with borrowing. As the expected financial distress costs decline, larger firms may utilize a higher proportion of debt before the marginal costs of additional borrowing outweigh its benefits. Therefore, Trade-Off Theory predicts a positive relationship between firm size and leverage.

In addition, larger firms generally have greater access to external capital markets, stronger bargaining power with creditors, and lower information asymmetry, which may further reduce borrowing constraints. Frank and Goyal (2009) identify firm size as one of the reliable determinants of corporate leverage and show that larger firms tend to exhibit higher leverage, which is consistent with the predictions of Trade-Off Theory. Previous empirical evidence also suggests that firm size is positively associated with capital structure because larger firms generally have greater financing capacity and easier access to external financial resources (Lasut, Rate, & Raintung, 2018).

Accordingly, within the context of manufacturing companies, firm size reflects not only the scale of corporate operations but also the firm's capacity to absorb financial risk and obtain external financing. The larger the company, the greater its potential debt capacity and ability to optimize the benefits of debt financing relative to its expected financial distress costs. Thus, Trade-Off Theory provides the primary theoretical foundation for predicting a positive effect of firm size on capital structure, leading to the formulation of the following hypothesis:

H3: Company size has a positive influence on the capital structure of food and beverage companies.

3. RESEARCH METHOD

Quantitative methods form the basis of the research design employed in this study, utilizing archival financial data. The secondary data were drawn from the annual reports of food and beverage companies incorporated in the IDX, which were gathered via the exchange's designated internet portal (www.idx.co.id).

Population and Sample All food and beverage manufacturing firms that were publicly quoted on the Indonesia Stock Exchange (IDX) within the 2021–2023 interval served as the population of this investigation, amounting to 30 companies. The selection of samples was carried out through purposive sampling, which is a method that relies on predetermined criteria established by the researcher. The inclusion criteria were as follows: The company was listed on the IDX throughout the 2021–2023 period, published annual financial reports consecutively during the 2021–2023 period, provided complete data for all research variables and reported positive earnings (no losses) throughout the 2021–2023 period.

After the implementation of the specified selection criteria, 16 enterprises were deemed suitable for inclusion, thereby producing an analytical dataset comprising 48 observations (calculated as 16 companies multiplied by a 3-year

observation period). **Data Analysis Techniques** The study utilizes several statistical analysis stages to test the research hypotheses: **Descriptive Statistics:** Employing minimum, maximum, mean, and standard deviation values to provide a comprehensive description of the research data. **Classical Assumption Tests:** **Normality Test:** Assessed using the Normal P-P Plot and the Kolmogorov-Smirnov statistical test. **Autocorrelation Test:** Evaluated using the Durbin-Watson test. **Multicollinearity Test:** Verified through Tolerance and Variance Inflation Factor (VIF) values. **Heteroscedasticity Test:** Examined using Scatterplot visualization.

Multiple Linear Regression Analysis: Employed for the purpose of analyzing capital structure determinants, this approach examines the independent variables' concurrent and separate contributions. **Hypothesis Testing (t-test and F-test):** The F-test was applied to assess the overall model fit, whereas the t-test was used to determine the individual contribution of each explanatory variable, with statistical significance set at the 0.05 level.

The study employed EViews as the statistical analysis software to estimate three alternative panel-data regression models: the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Model selection was conducted sequentially using the Chow test to compare CEM and FEM and the Hausman test to compare FEM and REM. Based on the model specification tests, the Fixed Effect Model (FEM) was selected as the most appropriate model for this study. Therefore, the interpretation of regression coefficients, hypothesis testing, and discussion of the empirical findings were primarily based on the FEM estimation results, while the CEM and REM estimates were presented only as comparative specifications. The analysis was based on 48 firm-year observations obtained from 16 food and beverage companies observed over a three-year period.

4. DATA ANALYSIS AND DISCUSSION

Descriptive Statistics

Table 1 provides a descriptive statistical summary of the study variables, namely asset structure, profitability, firm size, and capital structure, for food and beverage firms listed on the Indonesia Stock Exchange from 2021 to 2023.

Table 1. Descriptive Statistic

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Asset Structure	48	0.059	0.758	0.3753	0.1777
Profitability	48	0.001	0.424	0.1010	0.0854
Size	48	27.340	32.726	28.9418	1.4416
Capital Structure	48	0.130	1.766	0.6802	0.4257

Based on the descriptive analysis, the asset structure variable exhibits a mean value of 0.3753 with a standard deviation of 0.1777, indicating variation in the proportion of fixed assets utilized in firms' operations. Meanwhile, the average profitability of the sampled firms is 0.1010, reflecting the firms' average capacity

to generate earnings from their total assets or equity throughout the observation period.

The Best Linear Unbiased Estimator (BLUE) criteria served as the benchmark against which the model was evaluated through classical assumption tests performed before the regression analysis. Normality was assessed using both the Normal P-P Plot and the Kolmogorov-Smirnov statistical test. It can be inferred from the Normal P-P Plot, where the points are distributed around the diagonal line, that the residuals are normally distributed. This finding is further supported by the Kolmogorov-Smirnov test outcomes, which indicate a significance level exceeding 0.05, thus validating the assumption of normality.

The Durbin-Watson autocorrelation test produced a coefficient of 1.984. As this value falls within the accepted benchmark interval ($1.5 < d < 2.5$), the statistical evidence leads to the conclusion that the model is free from autocorrelation, regardless of its sign. Finally, heteroscedasticity was examined through scatterplot visualization, which displays a random distribution of points above and below the zero line on the Y-axis. Accordingly, the findings indicate that heteroscedasticity is not present in the regression model.

Panel Regression Results and Hypothesis Testing.

Table 2. Fixed Effect Model (FEM) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Decision
C	-17.0193	5.0566	-3.366	0.0022	—
Asset Structure	0.3541	0.6781	0.522	0.6055	Not Significant
Profitability	0.2319	0.5730	0.405	0.6886	Not Significant
Firm Size	0.6319	0.1776	3.559	0.0013	Significant
R-squared	0.8932				
Adjusted R-squared	0.8269				
F-statistic	13.4697				
Prob(F-statistic)	< 0.001				
Observations	48				

Note: Dependent variable: Capital Structure. Statistical significance is evaluated at the 5% level.

Following the panel-data model selection procedure, the Fixed Effect Model (FEM) was identified as the appropriate estimation model and was therefore used as the primary basis for hypothesis testing and interpretation. Accordingly, the Common Effect Model (CEM) and Random Effect Model (REM) were retained only as comparative specifications, while the substantive interpretation of the empirical findings was based on the FEM results. As presented in Table 2, the selected FEM produces an F-statistic of 13.4697 with a probability value below 0.05, indicating that asset structure, profitability, and firm size jointly have a statistically significant effect on capital structure. Thus, the overall regression model is statistically significant and appropriate for explaining variations in the capital structure of the sampled food and beverage companies. The model produces an R-squared value of 0.8932 and an Adjusted R-squared value of 0.8269. The Adjusted R-squared indicates that approximately 82.69% of the variation in capital structure can be explained by asset structure, profitability, and firm size after accounting for firm-specific fixed effects and model complexity. The remaining variation is attributable to other factors not captured by the model.

Regarding the individual effects, asset structure has a positive coefficient of 0.3541 with a probability value of 0.6055, indicating that its effect on capital structure is statistically insignificant. Therefore, H1 is not supported. Profitability also shows a positive coefficient of 0.2319 with a probability value of 0.6886, indicating no statistically significant effect on capital structure. Since the hypothesized negative relationship is not empirically supported, H2 is not supported. In contrast, firm size has a positive coefficient of 0.6319 with a probability value of 0.0013, demonstrating a positive and statistically significant effect on capital structure. Accordingly, H3 is supported.

Table 3 Multiple Linear Regression Analysis Results

Variabel	Koefisien (B)	Std. Error	Beta	t-statistik	Sig.
Konstanta	-2,448	1,143	-	-2,143	0,038
Assets Structure	1,066	0,314	0,445	3,398	0,001
Profitability	0,270	0,648	0,054	0,416	0,679
Size	0,093	0,039	0,316	2,421	0,020

Note: Dependent Variable: Capital Structure.

The regression estimation results, which were employed to assess the partial effects of asset structure, profitability, and firm size on capital structure, are displayed in Table 3. The resulting regression equation is presented as follows:

$$Y = -2.448 + 1.066X_1 + 0.270X_2 + 0.093X_3 + e$$

This mathematical model is employed to predict changes in the capital structure (Y) in response to variations in the independent variables, holding other factors constant.

Table 4. Panel Data Regression Estimation Results

Variable	CEM Coefficient	Prob.	FEM Coefficient	Prob.	REM Coefficient	Prob.
Constant	-2.4484	0.0380	-17.0193	0.0022	-4.1531	0.0438
Asset Structure	1.0658	0.0010	0.3541	0.6055	0.3901	0.3874
Profitability	0.2698	0.6790	0.2319	0.6886	0.1489	0.7992
Firm Size	0.0933	0.0200	0.6319	0.0013	0.1614	0.0211
R-squared	0.2620		0.8932		—	
Adjusted R-squared	0.2117		0.8269		—	
Observations	48		48		48	

Note: Statistical significance is evaluated at the 5% level.

The results of the Common Effect Model (CEM) indicate that asset structure has a positive coefficient of 1.0658 with a probability value of 0.0010, demonstrating a positive and statistically significant effect on capital structure at the 5% significance level. This finding suggests that companies with a higher proportion of fixed assets tend to employ a higher level of debt relative to equity.

Profitability has a positive coefficient of 0.2698, but its probability value of 0.6790 exceeds the 5% significance threshold. Therefore, profitability does not have a statistically significant effect on capital structure. Meanwhile, firm size has a positive coefficient of 0.0933 with a probability value of 0.0200, indicating that firm size has a positive and significant effect on capital structure.

The CEM produces an R-squared of 0.2620 and an Adjusted R-squared of 0.2117. Furthermore, the F-statistic is 5.206 with a probability value of 0.004,

indicating that asset structure, profitability, and firm size jointly have a statistically significant effect on capital structure.

The Fixed Effect Model (FEM) was to account for unobserved firm specific characteristics that may differ across the sampled companies. The FEM results show that asset structure has a positive coefficient of 0.3541 with a probability value of 0.6055. Thus, although the direction of the relationship remains positive, asset structure does not have a statistically significant effect on capital structure after controlling for firm-specific effects. Profitability also has a positive coefficient of 0.2319, with a probability value of 0.6886, indicating no statistically significant effect on capital structure. In contrast, firm size has a positive coefficient of 0.6319 with a probability value of 0.0013, demonstrating a positive and statistically significant effect on capital structure.

The FEM generates an R-squared value of 0.8932 and an Adjusted R-squared value of 0.8269. These values indicate that the model has substantially greater explanatory power after accounting for individual firm effects. Nevertheless, the superiority of a panel-data model should not be determined solely on the basis of its R-squared value; formal model specification tests are required.

The Random Effect Model (REM) was also to accommodate unobserved firm-specific heterogeneity by treating individual effects as random components of the composite error term. The REM results indicate that asset structure has a positive coefficient of 0.3901 with a probability value of 0.3874. Therefore, asset structure does not have a statistically significant effect on capital structure under the REM specification.

Profitability has a positive coefficient of 0.1489 with a probability value of 0.7992, indicating that profitability also has no statistically significant effect on capital structure. In contrast, firm size has a positive coefficient of 0.1614 with a probability value of 0.0211, indicating a positive and statistically significant effect on capital structure at the 5% significance level.

Overall, the results show some differences across CEM, FEM, and REM, particularly regarding the statistical significance of asset structure. Asset structure is significant under CEM but becomes insignificant under FEM and REM, whereas profitability remains statistically insignificant across all three specifications. Firm size consistently exhibits a positive relationship with capital structure and remains statistically significant across CEM, FEM, and REM.

Discussion

The Effect of Asset Structure on Capital Structure

The first hypothesis proposes that asset structure has a positive effect on capital structure. Based on the Fixed Effect Model (FEM), which was selected as the most appropriate panel-data estimation model, asset structure has a positive coefficient of 0.3541, but the effect is statistically insignificant ($p = 0.6055 > 0.05$). Therefore, H1 is not supported. This finding indicates that, after controlling for unobserved firm-specific effects, variations in asset structure do not significantly determine the capital structure of food and beverage companies listed on the Indonesia Stock Exchange during the 2021–2023 period.

The positive direction of the coefficient is theoretically consistent with Trade-Off Theory, which argues that firms possessing a greater proportion of tangible assets should have greater debt capacity because tangible assets can be pledged as collateral. The availability of collateral can reduce creditors' expected losses in the event of financial distress and consequently facilitate access to external debt. However, the insignificant FEM result indicates that this theoretical mechanism is not sufficiently strong to explain variations in capital structure within the sampled companies during the observation period.

One possible explanation is that capital structure decisions among food and beverage companies are influenced not merely by the amount of tangible assets available as collateral but also by persistent firm specific characteristics. These may include creditworthiness, existing financing policies, debt commitments, growth strategies, liquidity requirements, managerial preferences, and relationships with creditors. Once these individual firm characteristics are controlled through fixed effects, asset structure no longer independently explains differences in leverage.

This result provides an important refinement to the application of Trade-Off Theory in the Indonesian food and beverage sector. Although tangible assets theoretically increase borrowing capacity, companies do not necessarily increase their leverage simply because they possess a larger proportion of fixed assets. Thus, the findings suggest that the collateral mechanism predicted by Trade-Off Theory may be conditional on other company-specific financing characteristics. Previous studies cited in this research, including (Habib, Rahim, & Hamidi, 2025; Nana & Dyah Lupita, 2020; Widayati & Agnes, 2025; Yunia & Nurabiah, 2025), indicate the relevance of asset structure in corporate financing decisions; however, the present FEM results demonstrate that its independent effect is not statistically significant after controlling for firm-specific heterogeneity.

The CEM and REM estimates are retained only as comparative specifications and do not constitute the primary basis for hypothesis evaluation. Consequently, the decision regarding H1 is based exclusively on the selected FEM. Therefore, H1 is not supported.

The Effect of Profitability on Capital Structure

The second hypothesis predicts that profitability has a negative effect on capital structure. Based on the selected Fixed Effect Model (FEM), profitability produces a coefficient of 0.2319 with a probability value of 0.6886 ($p > 0.05$). The coefficient is positive and statistically insignificant. Therefore, H2 is not supported. This result indicates that changes in profitability do not systematically determine the capital structure decisions of the sampled food and beverage companies after controlling for unobserved firm-specific effects.

The finding does not provide empirical support for the prediction of Pecking Order Theory, which constitutes the principal theoretical foundation for H2. According to Pecking Order Theory, profitable firms generate greater internal cash flows and retained earnings and should therefore rely less on external debt. Accordingly, a negative relationship between profitability and leverage was expected. However, the insignificant positive coefficient obtained from the FEM

indicates that higher profitability does not necessarily lead firms in the sample to reduce their debt financing.

A plausible explanation lies in the operating characteristics of the food and beverage industry. Companies in this sector continuously require financing for raw materials, inventories, production, distribution, working capital, and business expansion. Consequently, even profitable firms may continue to utilize debt to support their operational and investment requirements rather than relying exclusively on retained earnings. Conversely, firms with relatively lower profitability do not necessarily increase debt because their borrowing capacity may also be constrained by creditworthiness and other financial considerations.

The findings therefore suggest that profitability alone is insufficient to explain the financing hierarchy of the sampled companies. Corporate financing decisions may simultaneously reflect liquidity requirements, investment opportunities, existing debt commitments, cash-flow management, and long-term financing strategies. The result is consistent with the evidence cited from (Nuridah, Supraptiningsih, Sopian, & Indah, 2023; Rohiman & Ramli, 2025), which also documents an insignificant relationship between profitability and capital structure.

Although the CEM and REM results can be reported as comparative estimates, the interpretation and hypothesis decision in this study are based on the selected FEM. Accordingly, the empirical evidence does not confirm the negative profitability leverage relationship predicted by Pecking Order Theory. This finding does not necessarily reject the theory itself; rather, it indicates that profitability was not the dominant determinant of financing hierarchy among the sampled companies during the 2021–2023 observation period. Therefore, H2 is not supported.

The Effect of Firm Size on Capital Structure

The third hypothesis proposes that firm size has a positive effect on capital structure. Based on the selected Fixed Effect Model (FEM), firm size has a positive coefficient of 0.6319 with a probability value of 0.0013 ($p < 0.05$). Therefore, firm size has a positive and statistically significant effect on capital structure, and H3 is supported. The result indicates that increases in company size are associated with greater use of debt relative to equity after controlling for unobserved firm-specific characteristics.

This finding is consistent with Trade-Off Theory, which predicts that larger firms tend to possess greater debt capacity. Larger companies generally have broader asset bases, more diversified operations, greater financial stability, and stronger market reputations. These characteristics can reduce creditors' perceptions of default risk and expected financial distress costs, thereby facilitating access to external financing. Larger firms may also possess stronger bargaining power with financial institutions, allowing them to obtain debt under relatively favorable financing conditions.

The significant positive effect of firm size also indicates that business scale represents an important consideration in capital structure decisions among Indonesian food and beverage companies. As firms grow, their financing requirements for production capacity, distribution networks, inventories, technology, and business expansion may also increase. Larger companies are

generally better positioned to meet these financing requirements through external debt because they possess greater borrowing capacity and credibility in capital markets.

The finding is consistent with previous evidence cited in this study, including (Adityaputra & Perdana, 2024; Fajar, Santoso, Haryanto, & Santoso, 2025; Lasut et al., 2018), regarding the importance of company size in explaining financing capacity. More importantly, the result demonstrates that firm size remains a significant determinant of capital structure within the selected FEM specification, after firm-specific heterogeneity has been controlled.

Although the CEM and REM estimates are presented as comparative specifications, they are not used as the principal basis for hypothesis evaluation. The substantive interpretation follows the FEM as the selected model. Accordingly, the findings provide empirical support for the Trade-Off Theory proposition that larger firms, because of their lower expected financial distress risk and greater financing capacity, are more capable of utilizing debt in their capital structures. Therefore, H3 is supported.

5. CONCLUSION & SUGGESTION

Conclusion

This study investigates the effects of asset structure, profitability, and firm size on the capital structure of food and beverage companies using panel-data regression. Based on the selected Fixed Effect Model (FEM), asset structure has a positive but insignificant effect on capital structure, indicating that H1 is not supported. Similarly, profitability has a positive but insignificant effect on capital structure; therefore, H2 is not supported. In contrast, firm size has a positive and significant effect on capital structure, providing support for H3. These findings indicate that firm size is the primary significant determinant of capital structure after controlling for firm-specific heterogeneity. The significant positive effect of firm size is consistent with the Trade-Off Theory, which suggests that larger firms tend to have greater debt capacity and may therefore rely more extensively on debt financing. Meanwhile, the predicted effects of asset structure and profitability are not empirically confirmed under the selected model.

Suggestions

From a managerial perspective, firms should formulate financing policies by considering their debt capacity, cash-flow stability, financing costs, and financial distress risk rather than relying solely on asset structure or profitability. Investors and creditors should likewise evaluate firm size together with other indicators of financial sustainability when assessing borrowing capacity. Future research is encouraged to extend the observation period, increase the sample size, and incorporate additional determinants such as liquidity, business risk, growth opportunities, tax considerations, and corporate governance. Further studies may also employ alternative panel-data specifications and robustness tests to determine whether the findings remain consistent across sectors and economic conditions.

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