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# Analysis of Financial Flexibility, Earning Volatility, and Asset Structure on Capital Structure in Infrastructure Companies Listed on the Indonesia Stock Exchange 2021–2024

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**ABSTRACT**

This study explores the impact of financial flexibility, earnings volatility, and asset structure on the capital structure of companies operating in the heavy construction and civil engineering subsector of Indonesia's infrastructure industry, listed on the Indonesia Stock Exchange between 2021 and 2024. Employing panel data regression on 285 firm-year observations, the research identifies several critical insights. First, financial flexibility approximated by the ratio of retained earnings to total assets has a positive and statistically significant relationship with capital structure. This suggests that firms with greater internal financial strength tend to rely more on debt financing when additional funding is required, allowing them to respond efficiently to financial risks and investment opportunities in this capital-intensive environment. Second, earnings volatility, calculated as the standard deviation of return on assets (ROA), does not exhibit a significant influence on capital structure decisions. This outcome indicates that income variability does not markedly affect firms' use of debt, likely due to their ability to manage unstable earnings through adaptive financial practices. Lastly, asset structure measured by the proportion of fixed assets to total assets also shows no significant correlation with capital structure. This result challenges the universal applicability of the pecking order theory, especially within industries characterized by high capital demands and unique risk profiles, such as heavy construction. The findings offer valuable insights by analyzing financial decision-making in a capital-intensive sector within a developing economy and highlight the potential need to reconsider traditional capital structure theories in specific industry contexts.

**Keywords**
*Capital Structure, Financial Flexibility, Earnings Volatility, Asset Structure, Pecking Order Theory*

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## INTRODUCTION

Global rivalry is intensifying, affecting economic institutions and business settings, especially in emerging nations like Indonesia. This competitive environment requires firms to establish adaptable finance strategies to maintain their competitive advantages and operations. This strategic framework makes capital structure a crucial issue for business management. To optimize advantages for firms and shareholders, capital structure composition optimization requires careful planning and decision-making (R. L. Putri & Willim, 2024). Financial management is to maximize shareholder wealth and value. Thus, corporate managers must be cautious when making capital structure financing choices since they affect shareholder wealth maximization (Nurhaliza & Azizah, 2023). Organisations must examine key elements that influence financial policy, notably capital structure composition, to maximise profits and shareholder value (R. L. Putri & Willim, 2024).

Strategic debt and equity use creates optimum capital structure (Dewi & Sudiartha, 2017). This financial architecture directly affects business financial posture, making it crucial. Managers must carefully assess capital sources and use them for investment and operations to maximize corporate value. Capital management problems include meeting operations and development financial needs and ensuring capital structure integrity (R. L. Putri & Willim, 2024).

Financial choices over debt, preferred stock, and ordinary stock are capital structure decisions. Managers must effectively deploy internal and external resources to reduce capital expenses. The proportionate distribution of debt and equity in corporate finance determines the capital structure framework, which boosts business value. Managers must carefully assess each funding source's qualities and expenses since they affect firm financial success. From operational debt to retained profits, financial resources include all balance sheet commitments. Capital funds operations, allowing corporations to survive and grow throughout time (Artati, 2020).

Corporate capital cost management is key to financial health. The wrong capital structure configuration may lead to insolvency, hence organisations must properly manage it (Vasiliou et al., 2009). Three main sources of capital are internal cash, debt, and equity. External debt and equity acquisitions substantially impact profits per share. Due to tax benefits, debt financing is often cheaper, but debt holders have better rights on business assets than stock holders. Corporate risk increases proportionately with debt (Chaklader, 2021). Thus, capital structure selection is crucial for key, capital-intensive industries like infrastructure.

Infrastructure development boosts national economic growth, requiring large, long-term investments. Infrastructure firms use financial markets and creditor debt to finance operations. Investor attractiveness, job creation, regional connection, and economic development are boosted by the infrastructure, utilities, and transportation sectors (E. S. Putri & Wisudanto, 2017). Most infrastructure projects need internal and external finance. The debt-to-equity ratio study of infrastructure subsectors from 2021-2024 shows fluctuations across all IDX Industrial Classification infrastructure classifications. Construction drives employment, capital investment, infrastructure project volumes, and supporting sector relationships. It helps equalise development in food security, power and energy, education and healthcare, transportation infrastructure, and tourism (Asiva Noor Rachmayani, 2015).

The infrastructure industry includes transportation, heavy construction and civil engineering, telecommunications, and utilities. The heavy constructions & civil engineering subsector has the largest debt-to-equity ratios, suggesting significant risk. Innovative finance source innovations are needed to meet rising infrastructure development problems. Numerous variables influence capital structure, according to empirical investigations. Pecking order theory affects debt ratio variables (Saif-Alyousfi et al., 2020). Corporations prioritize finance sources hierarchically, according to Donaldson (1961) and Myers (1984)'s pecking order theory. According to this theoretical paradigm, internal funding is preferred, followed by debt financing and stock issuance. Thus, internal financing is used first, followed by debt issue when internal resources run out and equity issuance when debt financing is unfeasible.

Financial flexibility, earning volatility, and asset structure were chosen as study variables because they influence company capital structure choices and are theoretically related to pecking order theory. These variables reveal the complex dynamics of capital structure optimization in the Indonesian infrastructure sector, particularly in the heavy construction and civil engineering subsector with high external financing dependence and long-term investment requirements. Based on the pecking order theory, this paper examines how financial flexibility, earning volatility, and asset structure affect capital structure in Indonesia Stock Exchange-listed heavy construction and civil engineering enterprises in 2021–2024. The greatest debt-to-equity ratio among infrastructure subsectors indicates substantial dependence on external finance for long-term expenditures. Previous studies on these factors' influence on capital structure were inconsistent. Focusing on a capital-intensive strategic industry in a developing nation and studying pecking order funding choices adds to the literature.

## RESEARCH METHOD

### Types, Data Sources, Data Collection Techniques

This quantitative analysis uses secondary data, which has been gathered and analyzed by others and published (Supranto, 1994). The study uses secondary data from books, journals, and trustworthy web platforms related to its variables. The major data source is financial reports from IDX-listed infrastructure businesses from the first quarter of 2021 to the third quarter of 2024. Lit review and documentation entail carefully reviewing scholarly papers and gathering financial report data for examination.

**Operational Definition of Variables**

Variables are observable features or things that are investigated in research (Arikunto, 2010). According to Narbuko and Achmadi (2009), operational definitions should be quantifiable and visible to allow replication of research. This research uses capital structure (Y) as the dependent variable and financial flexibility, earning volatility, and asset structure as independent factors. Brigham and Houston (2013) describe capital structure as a firm's long-term debt and equity utilized to fund operations. It is crucial to a company's financial health and risk. Companies seek the best debt-equity ratio to boost company value (Hapsari et al., 2022). This study uses the Debt to Equity Ratio (DER) to depict capital structure (Febtiani & Isbanah, 2021). The DER measures a company's debt-to-equity ratio: DER = Total Debt / Total Equity.

Financial flexibility, the first independent variable, measures a firm's capacity to receive funds and change its capital structure to changing financial demands. Marsh (1982) states that internal financing flexibility determines a firm's optimum debt level. The pecking order theory (POT) by Myers (1984) proposes that corporations prioritize internal funding owing to its reduced costs and risks. Beattie et al. (2006) stress that financially flexible enterprises need less external debt. The ratio of retained profits to total assets is used to quantify financial flexibility in this research, following Putri and Willim (2024): Financial Flexibility = Retained Earnings/Total Assets.

The second independent variable, earning volatility, measures a firm's income instability. The standard deviation of return on assets (ROA) over a specific time indicates the firm's capacity to meet fixed commitments (Harris & Roark, 2019). Volatility increases bankruptcy risk, which may dissuade creditors and investors (Moradi & Paulet, 2019). The formula from Putri and Willim (2024) is: Earning Volatility = Standard Deviation of ROA. Finally, asset structure shows a firm's capital intensity by comparing fixed assets to total assets. Credit arrangements generally secure long-term financing to fund fixed assets (Alipour et al., 2015). The research used the fixed asset ratio (FAR): FAR = Fixed Assets / Total Assets 2024 (Putri & Willim).

**Population and Sample**

This study's population is a specified collection of things with certain characteristics chosen by the researcher to generate analytical findings

(Sugiyono, 2013). The population includes infrastructure sector businesses registered on the Indonesia Stock Exchange (IDX) with comprehensive financial reporting from 2021 to 2024. We found 55 enterprises in four subsectors: transportation infrastructure (9 firms), heavy constructions & civil engineering (22 firms), telecommunications (19 firms), and utilities (5 firms).

Purposive sampling was used in this study to guarantee representativeness (Sugiyono, 2013). Company criteria include (1) consistent IDX listing during the 2021–2024 observation period; (2) heavy constructions & civil engineering subsector, which has the highest and most consistent debt-to-equity ratios, aligning with the study's focus on capital structure; and (3) complete quarterly financial reports from Q1 2021 to Q3 2024. Using these criteria, 19 firms were selected for study.

**Data Analysis Methods**

This study examines variable correlations using multiple linear regression analysis and panel data. Panel data regression pools observations across time periods using cross-sectional and time-series dimensions. The technique has several benefits over time-series or cross-sectional analysis (Widarjono, 2006). In particular, panel data configurations improve dataset capacity, degrees of freedom, and statistical accuracy. In addition, temporal and cross-sectional data successfully address omitted variable bias issues that plague single-dimensional analytical methods.

Panel data implementation offers more than data aggregation. Baltagi et al. (2005) state that panel data approach allows individual variation among unobserved entities that greatly impact modelling findings, unlike pure time-series or cross-sectional investigations, which may skew results. Panel data allows dynamic analysis by allowing researchers to analyze entity circumstances throughout temporal periods and find and measure impacts that neither cross-sectional nor time-series data can capture. This strategy allows for the design and testing of increasingly complex analytical models while limiting aggregation bias from excessive observational units.

Multiple linear regression analysis on panel data may produce data distributions with skewness and kurtosis values over acceptable standards. To guarantee analytical validity, thorough data treatment processes are performed. Data filtering, missing data management, outlier treatment, and natural logarithmic transformation are included. Data filtering excludes firms with incomplete data owing to trade inactivity or suspension and verifies correctness via primary source validation. When dependable sources fail, regression imputation preserves distributional integrity and statistical analysis coherence for missing data.

After data verification, severe results indicating anomalous sample circumstances need outlier control. To reduce extreme numbers and maintain study accuracy, trimming is used. West (2022) shows that natural logarithmic translation often reduces measurement variable skewness and kurtosis. This transformation reduces data skewness and stabilizes variance for positive-valued data without zero or negative values. These extensive treatment techniques guarantee that panel regression model data meets statistical assumptions, resulting in accurate and interpretable estimate findings for Indonesia Stock Exchange-listed infrastructure sector businesses in 2021–2024.

The study analyzes panel data using two regression models. The primary model is: $SM = \alpha + \beta_1 FF_{it} + \beta_2 EV_{it} + \beta_3 SA_{it} + \varepsilon_{it}$, where SM is capital structure, $\alpha$ is constant, $\beta_1$, $\beta_2$, $\beta_3$ are slope coefficients, FF is financial flexibility, EV is earning volatility, SA is asset structure, i is cross-sectional individuals (1,2,...,n), and t is time series dimensions (1,2, $Ln\_SM = \alpha + \beta_1 Ln\_FF_{it} + \beta_2 Ln\_EV_{is} + \beta_3 Ln\_SA_{it} + \varepsilon_{it}$, integrating natural logarithmic transformations of all variables while keeping same structural linkages and parameter interpretations.

Widarjono (2006) lists Common Effects (Pooled Least Square), Fixed Effects Model (FEM), and Random Effects Model (REM) estimate methods for panel data regression. The Common Effects technique is the simplest, treating all people equally across time periods using pooled least squares estimation. In contrast, the Fixed Effects Model uses Least Square Dummy Variables to account for cross-sectional behavioural changes by assuming varied intercepts and constant slopes. Using error term techniques, the Random Effects Model captures cross-sectional and temporal interactions across persons and time periods while improving efficiency to overcome Fixed Effects modeling's degree of freedom limits.

Three unique tests—Chow (Likelihood Ratio), Hausman, and Breusch-Pagan Lagrange Multiplier—are used to choose models. The Hausman test uses chi-square statistics to choose between Fixed Effects and Random Effects models, whereas the Chow test uses limited F-testing to choose between them. The Lagrange Multiplier test determines the best panel regression parameters by comparing Common Effects and Random Effects models. Classical assumption testing also includes Kolmogorov-Smirnov normality testing, Durbin-Watson autocorrelation detection, scatterplot heteroscedasticity analysis, and tolerance and VIF multicollinearity assessments (Ghozali, 2005, 2007). These thorough diagnostics assure model reliability and statistical validity for empirical capital structure determinants study in Indonesian infrastructure enterprises.

## Hypothesis Testing

The partial hypothesis test, or t-test, determines whether specific independent factors affect the dependent variable statistically, assuming other independent variables stay constant. The computed and crucial t-values from the t-distribution table are compared in this two-tailed test. Gujarati (2002) states that the formula for computing the t-statistic is: t = (Regression Coefficient (β)) / (Standard Error of β).

The independent variable does not substantially affect the dependent variable if the calculated t-value is within the acceptability area (–t table to t table). A considerable influence occurs if the t-value is outside this range. To assess statistical significance, use the p-value. A p-value above 5% ($\alpha = 0.05$) indicates insignificance, while a p-value below 0.05 indicates significant influence on the dependent variable, such as the Debt to Equity Ratio (DER).

The F-test also assesses whether all independent factors affect the dependent variable. According to Gujarati (2002), the F-statistic is calculated using the formula: $F = (R^2 / (k - 1)) / ((1 - R^2) / (N - k))$, where $R^2$ represents the coefficient of determination, k the estimated parameters, and N the sample size. A determined F-value over the crucial F-value indicates that independent factors impact the dependent variable. A p-value below 0.05 shows considerable joint impact. The coefficient of determination ($R^2$) measures the extent to which the model explains variation in the dependent variable. Gujarati (2002) suggests adopting the Adjusted $R^2$, which compensates for model complexity and may change according on the explanatory power of new variables, since $R^2$ rises with more predictors, regardless of significance.

## RESULT AND DISCUSSION

### Descriptive Statistics

**Table 1.**
**Desriptive Statistics**

| | Y_SM | X1_FF | X2_EV | X3_SA |
|---|---|---|---|---|
| Mean | 2.38 | 0.33 | 0.04 | 0.13 |
| Median | 1.45 | 0.17 | 0.02 | 0.11 |
| Maximum | 39.87 | 3.18 | 0.42 | 0.54 |
| Minimum | 0.14 | 0.0003 | 0.0006 | 0.0010 |
| Std. Dev. | 3.52 | 0.51 | 0.07 | 0.12 |
| Skewness | 6.30 | 3.36 | 4.08 | 1.58 |
| Kurtosis | 57.70 | 15.53 | 20.41 | 4.91 |
| Jarque-Bera | 37417.23 | 2398.73 | 4389.74 | 162.09 |
| Probability | 0.00 | 0.00 | 0.00 | 0.00 |
| Sum | 679.16 | 94.69 | 11.48 | 37.79 |

| | | | | |
|---|---|---|---|---|
| Sum Sq. Dev. | 3528.27 | 74.83 | 1.49 | 3.89 |
| Observations | 285 | 285 | 285 | 285 |

Table 5 displays the study's dependent and independent variable distributions. Between Q1 2021 and Q3 2024, 19 Indonesia Stock Exchange-listed heavy construction and civil engineering companies provided 285 observations. Debt-to-equity ratio measures capital structure (SM). The mean score of 2.38 suggests this subsector's businesses use debt rather than equity. The median of 1.45, below the mean, implies a right-skewed distribution and undue leverage in firms. Djasa Ubersakti Tbk had 39.87 in Q3 2024 and Pratama Widya 0.14 in Q4 2022. Financial flexibility (FF) has a mean of 0.33, suggesting that subsector enterprises may lack financial agility to take advantage of investment possibilities or manage financial stress. A positively skewed distribution is shown by the median of 0.17, below the mean. Financial flexibility ratios ranged from 0.0003 in Q3 2021 for PT Lancartama Sejati Tbk to 3.18 in Q2 2024 for PT Meta Epsi Tbk. As evidenced by the standard deviation of 0.51, firms' financial manoeuvrability fluctuated throughout time.

The second independent variable, earnings volatility (EV), has a mean value of 0.04, indicating minimal income variations in this firm. The median of 0.02, lower than the mean, shows that most businesses have stable profits, but some have higher fluctuations. In Q4 2021, PT Meta Epsi Tbk had the greatest earnings volatility, 0.42, showing revenue uncertainty. In Q1 2022, PT Adhi Karya (Persero) Tbk had the lowest value, 0.0006. The standard deviation of 0.07 indicates little earnings fluctuation per firm. Finally, finansial structure (SA), the finansial of fixed to total assets, averages 0.13. This little sum is surprising as construction requires huge expenditures in heavy equipment and infrastructure. Median 0.11 indicates a little right-skew. At 0.54, FINANSIAL Finansial Pondasi Raya Tbk had the most reliant on physical assets in Q1 2021, while FINANSIAL Wijaya Karya Bangunan Gedung Tbk had the lowest at 0.0010 in Q3 2024. Firm finansial structure variability is shown by the 0.12 standard deviation.

Skewness and kurtosis were compared to 928ai ret al. (2010) and Byrne & Van de Vijver (2010) criteria of -2 to +2 and -7 to +7 to assess variable normalcy. In this study, capital structure (6.30, kurtosis 57.70), finansial flexibility (3.36, 15.53), and earnings volatility (4.08, 20.41) exhibit non-normal distributions. Only finansial structure (skewness = 1.58, kurtosis = 4.91) is normal. The large deviations from normality in three of the four variables need data manipulation to ensure a more symmetrical distribution. Ln changed capital structure, finansial flexibility, and earnings volatility per West (2022). Finansial and econometric study reduces skewness and leptokurtosis in positively skewed data using this modification. Note that log transformation works for positive variables without zero or negative values. After this, inferential statistical analyses are more trustworthy.

**Classical Assumption Test**

To establish model suitability and statistical validity, regression analysis requires classical assumption testing. The regression model and data must fulfill essential assumptions such the lack of multicollinearity, heteroscedasticity, autocorrelation, and properly distributed residuals (Priyatno, 2023). Before hypothesis testing and data analysis, the classical assumptions must be verified to determine how financial flexibility, earnings volatility, and asset structure affect capital structure. These traditional assumptions include normality, multicollinearity, heteroscedasticity, and autocorrelation testing.

Normality tests determine whether regression model residuals are normal. Normally distributed residuals characterize a well-fitting regression model. Greater than 0.05 probability values suggest normal residual distribution. We also employ the Jarque-Bera statistic, which supports normalcy with a lower value than the chi-square critical value (Priyatno, 2023). An first log-transformed data test showed non-normal residual distribution. When transformation fails to attain normalcy, Ghozali (2018) recommends outlier elimination. After removing outliers and rerunning the normality test, the residuals had a probability of 0.60, meeting the condition. This suggests the model's residuals are normally distributed, confirming later investigations.

When independent variables in a regression model have significant linear correlation, multicollinearity may make variable effects estimates difficult. If the Variance Inflation Factor (VIF) is below 10, multicollinearity is absent (Priyatno, 2023). According to Table 7, financial flexibility (1.35), earnings volatility (1.52), and asset structure (1.14) all have VIF values below the essential level. The regression model has no multicollinearity concerns. The lack of strong linear correlations between independent variables makes it easier to comprehend each variable's influence on the dependent variable, boosting the model's believability.

Unequal residual variance across data might make regression coefficient estimations inefficient due to heteroscedasticity. The Breusch-Pagan-Godfrey test detects this. If Chi-square probability is larger than 0.05, the null hypothesis—no heteroscedasticity—is accepted (Priyatno, 2023). Ghozali (2018) recommended outlier elimination after log transformation failed to address heteroscedasticity. Following correction, the probability value of 0.33 above the

0.05 criterion, indicating that the model does not have heteroscedasticity. Thus, the residual variance stays constant across independent variable values, satisfying a linear regression assumption.

Autocorrelation—the correlation between a variable's residuals across time—violates residual independence. This problem is assessed using the Breusch-Godfrey Serial Correlation LM test. A Chi-square probability over 0.05 indicates no autocorrelation (Priyatno, 2023). Autocorrelation was first found in log-transformed data. As Drukker (2003) advised, the data was first-difference transformed. Revised analysis showed a probability value of 0.38, meeting the no-autocorrelation condition. The model's inferential reliability is improved via residual independence.

Data transformation and outlier management were used to meet all regression analysis assumptions. Non-autocorrelation, homoscedasticity, multicollinearity, and residual normality are examples. The regression model is verified for analysis and hypothesis testing by meeting these requirements. Following these assumptions enhances empirical data inferences and model statistical integrity. The findings are substantial, offering a solid framework for assessing how financial flexibility, earnings volatility, and asset structure affect capital structure.

**Panel Data Regression Model**

This research used Priyatno (2023)'s methodology to choose the best panel data regression model. According to his criterion, the fixed effect model (FEM) is best if the Chow test, Hausman test, and Lagrange Multiplier (LM) test all suggest it. In this research, the Chow test showed a p-value of 0.0000, confirming FEM; the Hausman test showed 0.0059, supporting FEM; and the LM test verified REM with 0.0000. The series of statistical testing and preset decision procedures led to FEM as the best regression model for data analysis.

Panel data regression using the fixed effect model yielded the following regression equation: Ln_SM = 0.75 + 0.18Ln_FFit + 0.01Ln_EVit + 0.03SAit. This coefficient of 0.75 estimates the capital structure (SM) when all independent variables—financial flexibility (FF), earnings volatility (EV), and asset structure (SA)—are maintained constant. Assuming other factors stay fixed, a 1% improvement in financial flexibility would boost capital structure by 0.18%. This positive connection suggests that enterprises with more financial flexibility may get debt funding for their capital structure (Priyatno, 2023). The coefficient for earnings volatility was 0.01; this suggests a minor beneficial influence on capital structure. This suggests that slight profitability variations do not dissuade enterprises from raising debt. Finally, the asset structure coefficient was 0.03, suggesting that a 1% rise in fixed asset allocation increases capital structure by 0.03%. This link shows that enterprises with more physical assets may utilize them as collateral for external finance, affecting their capital structure (Priyatno, 2023).

**t-Test (Partial Test)**

The t-test determines the partial significance of each regression model independent variable. Each explanatory variable is tested for statistical significance on the dependent variable (Priyatno, 2023). The hypotheses for this test are: $H_0$, indicating no partial influence of the independent variable on the dependent variable, and $H_a$, indicating a partial effect. The regression result shows that financial flexibility (FF) affects capital structure (SM) with a computed t-value (5.91) over the crucial t-value (1.97) and a p-value of 0.00, below the 0.05 significance threshold. The findings refute $H_0$, demonstrating that FF substantially impacts SM when evaluated separately. In contrast, earnings volatility (EV) and asset structure (SA) had no significant partial impacts. The p-values of 0.76 and 0.97 for EV (0.30) and SA (0.04) above the 0.05 barrier, and their t-statistics are lower than 1.97. Priyatno (2023) found that EV and SA had no substantial influence on the firm's capital structure when studied independently.

**F-Test (Simultaneous Test)**

Regression analysis uses the F-test to determine if all independent variables affect the dependent variable, determining the regression model's significance (Priyatno, 2023). Two hypotheses are used in this test: the null hypothesis ($H_0$) states that independent factors do not influence the dependent variable concurrently, while the alternative hypothesis ($H_a$) suggests that independent variables have a substantial effect.

The regression findings show that financial flexibility (FF), earnings volatility (EV), and asset structure (SA) considerably and jointly impact capital structure. The estimated F-statistic of 95.42 exceeds the required F-table value of 2.64, supporting this result. A 0.00 p-value is considerably below the 0.05 significance limit. The findings reject $H_0$, showing that the three independent factors significantly impact capital structure. Thus, the regression model is robust and FF, EV, and SA explain capital structure fluctuations (Priyatno, 2023).

**Determination Analysis (Adjusted R Square)**

The coefficient of determination (adjusted $R^2$) indicates how well independent factors explain variance in the dependent variable in a regression model. Priyatno (2023) suggests that the adjusted $R^2$, which accounts for the number of variables used, better represents the model's explanatory power than the standard $R^2$, which increases with new predictors regardless of relevance.

The regression result indicates an adjusted $R^2$ value of 0.87. This implies that financial flexibility (FF), earnings volatility (EV), and asset structure (SA) explain 87% of capital structure (SM) variance. The remaining 13% of variance is likely attributable to factors not included in the present model, suggesting more study into capital structure variables.

**Analysis of the Influence of Financial Flexibility on Capital Structure**

The regression study showed that financial flexibility (FF), defined by retained profits to total assets, positively and statistically significantly affects capital structure. Firms with better financial flexibility are more likely to increase debt consumption, as demonstrated by a $p\text{-value} < 0.05$ and a positive regression coefficient. This conclusion supports R. L. Putri and Willim (2024)'s empirical findings that increased financial flexibility may improve debt financing, despite their original hypothesis suggesting a negative association.

R. L. Putri and Willim (2024) found that enterprises with high financial flexibility have more financing options and choose debt owing to its lower cost and tax advantages. Capital-intensive businesses like heavy construction and civil engineering need significant finance, making this conclusion noteworthy. Many such firms need organized internal and external finance for long-term, high-risk initiatives. In contrast, Yanti et al. (2022) found that FF negatively affected industrial capital structure, showing how industry-specific variables affect financing methods. Alipour et al. (2015) underline the complexity of financial flexibility, supporting these findings.

**Analysis of the Influence of Earning Volatility on Capital Structure**

Earning volatility (EV), defined by ROA standard deviation, does not significantly affect capital structure, according to regression analysis. A p-value of 0.76, which above the 0.05 significance level, and a regression coefficient of 0.01 indicate a small, negligible influence. Although R. L. Putri and Willim (2024) predicted a negative link, this analysis found that earnings volatility did not substantially affect capital structure choices. R. L. Putri and Willim (2024) propose that income instability may not affect corporate financing methods. Especially in heavy construction and civil engineering, enterprises may manage profit swings without changing debt composition. Their long-term, capital-intensive initiatives may necessitate flexible finance frameworks. The pecking order hypothesis suggests that fluctuating earnings inhibit loan consumption (Lemmon et al., 2008), however our analysis shows that earning volatility is industry-specific. Saif-Alyousfi et al. (2020) and Khan et al. (2023) discover different results, highlighting capital structure drivers' contextuality.

### Analysis of the Influence of Asset Structure on Capital Structure

Regression findings show that asset structure (AS), defined by fixed asset allocation to total assets, does not substantially affect capital structure. With a regression coefficient of 0.03 and a p-value of 0.97, the statistical evidence supports an insignificant positive connection. These results contradict R. L. Putri and Willim (2024), who predicted a strong beneficial impact. The conclusion confirms Fanani and Pertiwi (2022) and Efendi et al. (2021), which found no significant association between asset structure and capital structure due to low or negative asset growth across enterprises. Fixed assets should increase borrowing capacity as collateral (Mukaromah & Suwarti, 2022). According to this report, heavy construction and civil engineering enterprises do not depend extensively on asset composition for funding. This shows that these businesses may use more flexible capital methods, making pecking order theory unsuitable in this industry. Huda and Rahmawati (2024) and Hidayati et al. (2021) revealed both positive and negative impacts, demonstrating the context-dependent character of capital structure determinants.

## CONCLUSION

This research examined how financial flexibility, earnings volatility, and asset structure affected capital structure in Indonesia Stock Exchange-listed heavy construction and civil engineering infrastructure enterprises from 2021 to 2024. Panel data regression analysis of 285 observations yielded many findings. First, retained profits to total assets indicate financial flexibility, which improves capital structure. Organizations with stronger internal financial capability utilize debt more often when external capital is required. Flexible enterprises can effectively adapt to financial risks and opportunities, especially in this capital-intensive and high-risk subsector. Second, capital structure was unaffected by earnings volatility, assessed by return on assets standard deviation. This shows that revenue changes do not significantly affect loan choices in this market because businesses have adaptive financial structures that limit earnings volatility. Third, asset structure—the ratio of fixed assets to total assets—did not affect capital structure. This shows that the pecking order hypothesis may not apply to all industries, particularly those with distinctive operational features like heavy construction. Instead of physical asset collateral, companies in this subsector may base their capital structure choices on other factors.

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