

The Effect of Capital Structure, Transfer Pricing and Fixed Asset Intensity on Tax Avoidance, With Company Size as A Moderating Variable

Natasya Amelia Pujiastuti., Muti'ah

Faculty of Economics and Business, Universitas Mercu Buana, Jakarta, Indonesia

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ABSTRACT

Tax avoidance refers to a company's efforts to reduce its tax burden by exploiting loopholes in tax regulations whilst remaining within the bounds of the law. These practices are a cause for concern as they affect government revenue, particularly in infrastructure sector companies, which have substantial funding requirements and hold significant assets. This study aims to analyse the influence of capital structure, transfer pricing, and fixed asset intensity on tax avoidance, and to examine the ability of firm size to moderate these relationships. A quantitative approach was employed using secondary data from financial statements of infrastructure companies listed on the Indonesia Stock Exchange for 2020–2024. The population consists of 68 companies. Using purposive sampling, 129 firm year observations were initially obtained, and after handling outliers, 112 observations were used in the final analysis. Data were analysed via multiple linear regression and Moderated Regression Analysis (MRA) using SPSS. Tax avoidance was measured using the Effective Tax Rate (ETR), where a lower ETR indicates higher tax avoidance. The results show that capital structure and transfer pricing have no effect on tax avoidance. Conversely, fixed asset intensity has a positive effect on ETR, which significantly reduces corporate tax avoidance. Furthermore, firm size does not moderate any of these relationships. Thus, capital structure and transfer pricing are not determining factors of tax avoidance in the infrastructure sector, whereas fixed asset intensity plays a role in lowering it.

Keywords: Tax Avoidance, Capital Structure, Transfer Pricing, Fixed Asset Intensity, Firm Size.

INTRODUCTION

Based on Tax Administration Law taxation is the primary source of government revenue and is compulsory by law No. 17 of 2003, consequently the stability and optimisation of tax revenue are crucial for fiscal sustainability. However, such optimisation efforts are frequently confronted by tax avoidance practices, namely strategies to minimise tax liabilities carried out legally by exploiting loopholes in tax regulations (Muti'ah et al., 2021; Putra et al., 2023).

This phenomenon is evident in the infrastructure sector, as reflected in the case of PT ADHI KARYA (Persero) Tbk ADHI). According to the 2024 Sustainability Report, ADHI's total tax payments fell significantly from Rp3.05 trillion (2023) to Rp1.62 trillion (2024), coinciding with the disclosure of tax planning activities as part of the company's tax risk management. Although this decline cannot be directly attributed to tax avoidance given the influence of operational activities, this situation underscores the relevance of examining tax avoidance within companies in the infrastructure sector.

From an agency theory perspective, the relationship between shareholders as the principal and management as the agent may create conflicts of interest because management possesses greater information regarding the company than shareholders (Jensen & Meckling, 1976). Such information asymmetry may encourage management to make decisions that serve its own interests, including tax avoidance strategies aimed at reducing tax expenses and increasing after-tax profits, which may subsequently affect managerial compensation (Hery, 2020:32; Putra, Safelia, et al., 2023:70). Tax avoidance itself refers to legal efforts to reduce corporate tax liabilities through the utilisation of opportunities within applicable tax regulations

(Firmansyah & Triastie, 2022:33). In this study, tax avoidance is measured using the Effective Tax Rate (ETR). ETR is calculated as income tax expense divided by pre-tax profit, where a lower ETR indicates a higher level of tax avoidance and vice versa (Aronmwan & Okafor, 2019).

Several factors may influence corporate tax avoidance, including capital structure, transfer pricing, and fixed asset intensity. Capital structure reflects the composition of debt and equity used to finance company operations and investments. A higher proportion of debt may provide tax benefits through deductible interest expenses, thereby potentially increasing the company's incentive to reduce its tax burden (Aisjah, 2021; Nabila & Wiyanti, 2023). Transfer pricing refers to the determination of prices or compensation for transactions between companies with special relationships. Although it serves legitimate managerial and business purposes, transfer pricing may also be used to shift profits between related entities and reduce the overall tax burden (Hardianingrum & Sudaryono, 2024; Tamam & Tarmidi, 2025). Meanwhile, fixed asset intensity reflects the proportion of fixed assets to total assets. A higher proportion of fixed assets generates greater depreciation expenses, which can reduce taxable income and potentially encourage tax avoidance (Ramadhan & Ariefiara, 2025; Syawali, 2023). Firm size is also proposed as a relevant variable, both as a direct determinant and as a moderator of the relationships between these variables.

Firm size is also considered relevant in explaining tax avoidance because larger companies generally possess greater resources, more complex transactions, and broader tax planning capabilities. Consequently, firm size may not only influence tax avoidance directly but may also strengthen or weaken the relationship between capital structure, transfer pricing, fixed asset intensity, and tax avoidance (Sari & Ramli, 2023; Riani et al., 2025). Therefore, this study positions firm size as a moderating variable to examine whether differences in company scale alter the influence of the three independent variables on tax avoidance.

Previous empirical studies have reported inconsistent findings regarding the determinants of tax avoidance. Capital structure was found to significantly affect tax avoidance by (Nahri et al., 2024; Nugraha & Rachmat, 2024; Rachmat et al., 2021), whereas (Prayitno & Machdar, 2023; Susanto & Yunia Oktari, 2023) found no significant effect. Similar inconsistencies are observed in transfer pricing research, according to (Marlina, 2024; Pratomo & Triswidyaria, 2021), has a positive effect on tax avoidance, while (Imelda et al., 2022; Yoshida, 2023) found no significant effect. Regarding fixed asset intensity is reported to have an effect by (Shafiraanjali & Asmilia, 2024; Yanti & Astuti, 2023), but was not found to have an effect in the studies by (Suteja, 2023; Annisa et al., 2023). In addition, the moderating effect of firm size on the relationship between these variables also yielded mixed results (Nugraha & Rachmat, 2024; Fitriani & Taqi, 2024; Handayani, 2025) found a significant moderating effect, whilst (Hamdani & Mulyani, 2025) concluded that firm size does not moderate this relationship.

The inconsistency of previous findings indicates an empirical gap that warrants further investigation, particularly in the infrastructure sector. Infrastructure companies are typically capital-intensive, heavily reliant on debt financing, and frequently engaged in complex intra-group asset management, making them particularly vulnerable to aggressive tax planning strategies. This study therefore aims to examine the effect of capital structure, transfer pricing, and fixed asset intensity on tax avoidance and to determine whether firm size moderates these relationships in infrastructure companies listed on the Indonesia Stock Exchange during 2020 - 2024.

By focusing on the infrastructure sector and incorporating firm size as a moderating variable, this study is expected to provide additional empirical evidence regarding the determinants of corporate tax avoidance in Indonesia. Through the integration of agency theory and trade-off perspectives, this study provides a comprehensive analytical framework to understand how financial decisions interact with firm scale to dictate tax practices. Based on the underlying theory and empirical gap, this study proposes that capital structure, transfer pricing, and fixed asset intensity influence tax avoidance, and that firm size moderates these relationships by either amplifying or dampening these operational and financial incentives depending on the firm's total asset scale.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Agency Theory

According to Jensen & Meckling (1976), agency theory is a conceptual framework that analyzes the relationship between two key parties: shareholders as principals and managers as agents. In this relationship, the principal delegates authority to the agent to manage the company's operations and resources in order to achieve shared goals, both in the short and long term (Hery, 2020:32). However, this relationship is often characterized by information asymmetry, in which management as the agent possesses more comprehensive information regarding the company's internal conditions compared to shareholders (the principal). This information imbalance has the potential to trigger an agency conflict in the decision-making process. Agency conflicts generally arise due to conflicting interests between principals who seek to increase corporate value and shareholder welfare and agents, who tend to prioritize their own utility and personal interests. If oversight by the principal is inadequate, agents may exploit their position to implement policies that provide one-sided benefits, such as through tax avoidance practices. From the perspective of agency theory, tax avoidance can be used by managers as a tool to reduce the company's tax burden, thereby making reported net income appear higher and potentially increasing the managerial compensation or incentives they receive (Putra, Safelia, et al., 2023:70).

Capital Structure and Tax Avoidance

Within the agency theory framework, managers often prefer debt financing because interest expenses create a tax shield that reduces taxable income (Felisya et al., 2023; Ambarita et al., 2024; Tamam & Tarmidi, 2025). Simultaneously, shareholders view debt as a control mechanism to enforce managerial discipline. This capital structure, typically measured by the Debt-to-Equity Ratio (DER), reflects a company's reliance on debt instruments (Nahri et al., 2024; Nugraha & Rachmat, 2024). A higher DER provides management with greater opportunities to optimize tax efficiency through interest deductions, thereby positively affecting tax avoidance practices (Laila & Rosyati, 2025). Consequently, a higher capital structure increases the incentive to exploit these loopholes to lower tax liabilities (Rachmat et al., 2021). In this context, the greater the proportion of debt financing, the greater the potential tax benefits obtained from deductible interest expenses. This condition may encourage management to utilize debt more intensively as part of its tax planning strategy, particularly when the company seeks to maximize after-tax profits. Supported by empirical findings (Nahri et al., 2024; Nugraha & Rachmat, 2024; Rachmat et al., 2021), the first hypothesis is formulated as follows:

H₁: Capital structure has a positive and significant effect on tax avoidance.

Transfer Pricing and Tax Avoidance

In the context of a corporate group's operations, transfer pricing refers to the policy of setting prices for transactions between entities with a special relationship. This practice is often used strategically to allocate profits to jurisdictions with lower tax rates in order to minimize the entities overall tax liability (Hardianingrum & Sudaryono, 2024). From an agency theory perspective, transfer pricing is highly prone to triggering agency conflicts. This occurs because managers often tend to maximize their personal utility and artificially inflate company performance through tax efficiency, which may not necessarily align with the long-term interests of shareholders (Arditra et al., 2025). The existence of information asymmetry makes it easier for management to aggressively employ transfer pricing schemes to suppress reported profits and drastically reduce the tax liability (Marlina, 2024). Although transfer pricing is essentially a legitimate tax planning tool, the high volume and value of these related-party transactions further increase the opportunities and incentives for companies to engage in tax avoidance practices (Suherman, 2024). This theoretical argument is consistent with the empirical evidence from the studies by (Marlina, 2024; Pratomo & Triswidyaria, 2021; Oktavianus et al., 2023), which confirm that transfer pricing activities have a positive and significant effect on increasing the level of tax avoidance. Based on this discussion, the second hypothesis is formulated as follows:

H₂: Transfer pricing has a positive and significant effect on tax avoidance.

Fixed Asset Intensity and Tax Avoidance

Fixed asset intensity represents the proportion of tangible assets used to support a company's operations (Arditra et al., 2025). A high level of these assets implies an increase in annual depreciation expense (Setiadi et al., 2022), which legally functions as a deduction from taxable income (Suherman, 2024). From an agency theory perspective, management is required to manage resources efficiently (Setiadi et al., 2022). Consequently, management often leverages this high depreciation expense as a tax shield to reduce taxable income, which ultimately lowers the Effective Tax Rate (ETR). This reduction in the ETR indicates an increasing level of tax avoidance (Mahendra et al., 2024; Ramadhan & Ariefiara, 2025). In other words, an increase in the asset intensity ratio provides companies with a legal loophole to execute aggressive tax strategies (Shafiraanjali & Asmilia, 2024). Consequently, the higher the fixed asset intensity, the greater the tendency for companies to engage in tax avoidance (Yanti & Astuti, 2023). This theoretical argument is consistent with the empirical findings of (Shafiraanjali & Asmilia, 2024; Yanti & Astuti, 2023; Setiadi et al., 2022), who concluded that fixed asset intensity has a positive and significant effect on tax avoidance. Based on this discussion, the third hypothesis is formulated as follows:

H₃: Fixed asset intensity has a positive and significant effect on tax avoidance.

The Moderating Role of Firm Size

Firm size reflects an entity's scale of operations, level of complexity, and availability of resources. Theoretically, the scale of an entity is believed to moderate the effectiveness of various operational and financial decisions in influencing tax avoidance practices. In relation to capital structure, large-scale firms generally have broader access to financing and more advanced tax planning expertise (Neltiani et al., 2025). The high level of information asymmetry in large firms provides managers with the flexibility to optimize debt financing to exploit interest expenses as a tax shield. Therefore, firm size is projected to amplify the influence of capital structure on the propensity for tax avoidance (Yuliana & Prastyatini, 2022; Herlina et al., 2023; Kuswanto et al., 2025).

H₄: Firm size moderates the effect of capital structure on tax avoidance.

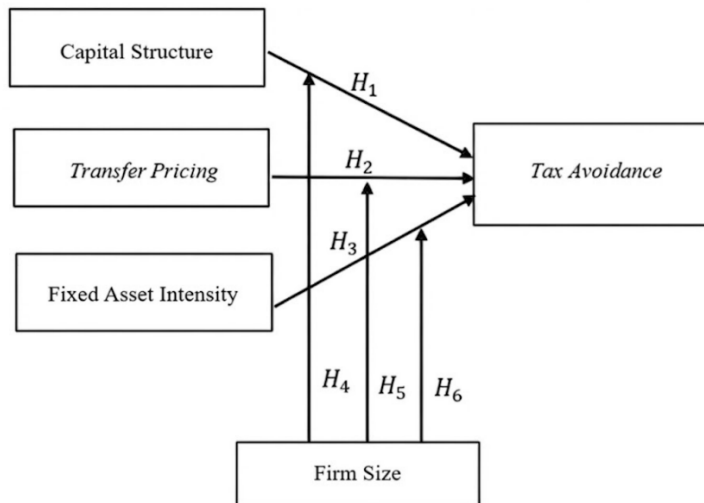
Furthermore, with regard to transfer pricing, a company's size has the potential to exacerbate agency conflicts. Large companies typically have complex organizational structures and affiliates spread across various jurisdictions (Tamam & Tarmidi, 2025). These characteristics provide management with significantly greater flexibility to implement transfer pricing strategies to allocate profits to regions with low tax rates a capacity that is severely limited in small-scale companies (Fitriani & Taqi, 2024; Marwa & Wahyudi, 2022). Thus, a company's size will amplify the impact of transfer pricing on increased tax avoidance (Handayani, 2025).

H₅: Firm size moderates the effect of transfer pricing on tax avoidance.

Finally, regarding fixed asset intensity, large companies with a massive asset base tend to have very high operational capacity and revenue generation, which leads to a surge in tax liabilities (Tamam & Tarmidi, 2025; Wardhani & Supriadi, 2025). The sheer scale of these liabilities further motivates management to optimize their tax burden through the maximum utilization of asset depreciation (Mariana et al., 2025). Although previous findings have been inconsistent due to differences in sector characteristics and the years of observation (Hamdani & Mulyani, 2025), theoretically, the size of an entity is believed to facilitate and strengthen the influence of fixed asset intensity on tax avoidance strategies. Therefore, firm size may determine the extent to which the tax benefits arising from fixed asset ownership are utilized in the company's tax management strategy.

H₆: Firm size moderates the effect of fixed asset intensity on tax avoidance.

Conceptual Framework



METHODOLOGY

Research Design

This study employs a quantitative approach with an explanatory (causal) research design. A causal design was applied to empirically test the cause-and-effect relationship and verify the hypothesis regarding the influence of capital structure, transfer pricing, and fixed asset intensity on tax avoidance practices, while integrating firm size as a moderating variable. The data collected in this study consists of secondary data sourced from officially published annual reports of companies in the infrastructure sector. These annual financial reports were systematically retrieved from the official website of the Indonesia Stock Exchange (www.idx.co.id) as well as the respective corporate websites. Furthermore, the use of panel data is deemed highly appropriate for this study, as it combines both time-series and cross-sectional dimensions, thereby providing a more informative, dynamic, and robust analytical framework.

Multiple linear regression analysis using the Ordinary Least Squares (OLS) method and Moderated Regression Analysis (MRA) were employed in this study to examine the effect of Capital Structure, Transfer Pricing, and Fixed Asset Intensity on Tax Avoidance, as well as the moderating role of Firm Size. The OLS method was deliberately chosen because the primary analytical focus is on evaluating the overall cross-sectional and direct relationships among the specified variables within a unified regression model, rather than modeling company-specific individual effects or time-series dynamics through dynamic panel data estimators. To ensure the reliability, efficiency, and validity of the OLS parameters, standard diagnostic procedures including normality, multicollinearity, heteroscedasticity, and autocorrelation tests were rigorously executed.

Population and Sample

The population in this study includes all infrastructure sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The sample was selected using purposive sampling with the following main criteria: consistently listed during the observation period, publishing complete annual financial reports, and not reporting a loss (negative income) to avoid interpretive bias in the calculation of the Effective Tax Rate (ETR). Companies reporting negative pre-tax income (losses) were excluded because calculating ETR with negative denominators yields distorted or uninterpretable tax avoidance measures. Based on these criteria, 33 eligible companies were identified, totaling 129 firm-year observations. Prior to hypothesis testing, data preprocessing was conducted to clean the dataset. Outliers were identified using standardized residual analysis (Z-score) resulting in the removal of 17 observations to ensure model normality and parameter stability. Thus, the final sample used in the panel data regression analysis consisted of 112 firm-year observations.

Operational Definition of Variables

The dependent variable, tax avoidance, is measured using the effective tax rate (ETR), which is calculated using Total Income Tax Expense including current and deferred tax divided by profit before tax. The ETR is specifically selected because it captures the cumulative effect of both permanent and temporary tax planning strategies on overall corporate income tax liabilities, while providing a standardised, comparable metric across companies. Capital structure is reflected by the mix of debt and equity financing, which is measured via the debt-to-equity ratio (DER), calculated by dividing total liabilities by total equity. Transfer pricing represents intra-group transaction schemes, measured by related party receivables divided by total receivables. Fixed asset intensity measures the proportion of tangible asset investments that generate depreciation tax shields. It is calculated by dividing total fixed assets by total assets. Finally, firm size acts as the moderating variable, representing corporate scale and operational complexity. It is measured using the natural logarithm of total assets to smooth data distribution and eliminate scale distortion.

Table 1: Operationalization of Variables

Variable Type	Variable Name	Proxy	Measurement
Dependent (Y)	Tax Avoidance	ETR	$\frac{\text{Total Income Tax Expense}}{\text{Profit Before Tax}}$
Independent (X ₁)	Capital Structure	DER	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$
Independent (X ₂)	Transfer Pricing	TP	$\frac{\text{Related Party Receivables}}{\text{Total Receivables}}$
Independent (X ₃)	Fixed Asset Intensity	FAI	$\frac{\text{Total Fixed Assets}}{\text{Total Assets}}$
Moderating (Z)	Firm Size	Size	Ln (Total Assets)

Data Analysis Procedure

The data analysis procedure in this study employs a quantitative approach utilizing Multiple Linear Regression based on the Ordinary Least Squares (OLS) framework and Moderated Regression Analysis (MRA), processed through IBM SPSS Statistics. The OLS method was deliberately chosen because the primary analytical objective focuses on evaluating the overall cross-sectional and direct structural relationships among the specified variables within a unified regression model, rather than modeling company-specific individual effects or time-series dynamics through dynamic panel data estimators.

To ensure that the OLS estimates are valid, reliable, and meet the Best Linear Unbiased Estimator criteria, a comprehensive set of classical assumption tests was conducted prior to hypothesis testing. The diagnostic procedures included evaluating residual normality using the One-Sample Kolmogorov-Smirnov test, assessing multicollinearity via Tolerance values (> 0.10) and Variance Inflation Factors ($VIF < 10$), checking heteroscedasticity using the Glejser test (significance value > 0.05), and testing for autocorrelation through the Durbin-Watson statistic.

Following the classical assumption procedures, the model goodness of fit was evaluated using the Coefficient of Determination (Adjusted R-squared) to measure the proportion of variance in tax avoidance explained by the independent variables, alongside the Simultaneous Test (F-test) to confirm the overall collective significance of the empirical model. Finally, hypothesis testing was conducted using Partial Regression Testing (t-test) at a significance level of $\alpha = 0.05$ to determine the individual effects of Capital Structure (X₁), Transfer Pricing (X₂), and Fixed Asset Intensity (X₃) on Tax Avoidance (Y). Furthermore, Moderated

Regression Analysis (MRA) was performed to evaluate whether Firm Size (Z) significantly strengthens or weakens these primary relationships.

RESULTS

Descriptive Statistics

Descriptive statistical analysis was conducted to provide an overview of the data distribution across 112 firm-year observations, covering the dependent variable (tax avoidance), independent variables (capital structure, transfer pricing, and fixed asset intensity), and the moderating variable (firm size).

Table 2: Descriptive Statistic

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Tax Avoidance	112	0,000	0,512	0,16996	0,121225
Capital Structure	112	0,000	5,5153	1,23754	1,018127
Transfer Pricing	112	0,001	1,117	0,31875	0,340220
Fixed Asset Intensity	112	0,000	0,970	0,63129	0,262237
Firm Size	112	25,124	37,241	30,02997	2,677223
Valid N (listwise)	112				

After undergoing data preprocessing, the final analysis included 112 valid observations, which are presented in Table 1. The tax avoidance (ETR) values ranged from a minimum of 0.000 to a maximum of 0.512, with a mean of 0.16996 and a standard deviation of 0.121225. The debt-to-equity ratio (DER) averaged 1.23754, indicating a high reliance on debt financing relative to equity. Meanwhile, transfer pricing averaged 0.31875 with a standard deviation of 0.340220. Fixed asset intensity showed an average of 0.63129, indicating that the majority of corporate assets are dominated by fixed asset investments. Finally, firm size recorded an average value of 30.02997. Overall, the distribution of the minimum, maximum, and standard deviation values reflects a fairly substantial variation among all the variables studied.

Classical Assumption Tests

Table 3: Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandarized Residual
N			112
Normal	Mean		0,0000000
Parameters ^{a,b}	Std. Deviation		0,11544962
Most	Absolute		0,077
Extreme	Positive		0,077

Differences	Negative		-0,040
Test Statistic			0,077
Asymp. Sig. (2-tailed)			0,112
Monte Carlo	Sig.		0,113
Sig. (2-tailed) ^d	99% Confidence Interval	Lower Bound	0,104
		Upper Bound	0,121

Prior to evaluating the hypotheses, classical assumption tests were conducted on the final sample of 112 observations after removing 17 outliers to ensure the reliability of the regression model. First, the normality test using the Kolmogorov-Smirnov test yielded an Asymp. Sig. (2-tailed) value of 0.112 (> 0.05), confirming that the residual data are normally distributed.

Table 4: Multicollinearity Test

Model		Collinearity Statistic	
		Tolerance	VIF
1	(Constant)		
	Capital Structure	0,803	1,245
	Transfer Pricing	0,780	1,282
	Fixed Asset Intensity	0,864	1,157
	Firm Size	0,761	1,313

Multicollinearity tests were conducted to ensure there were no strong correlations among the independent variables in the regression model. Based on the test, all independent variables showed a Tolerance value above 0.10 and a Variance Inflation Factor (VIF) below 10. This confirms that the regression model is free from multicollinearity and is suitable for further analysis.

Table 5: Heteroscedasticity Test

Model		Unstandardized	Coefficients	Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,242	0,083		2,912	0,004
	Capital Structure	0,000	0,007	-0,007	-0,064	0,949
	Transfer Pricing	-0,02	0,022	-0,009	-0,085	0,932
	Fixed Asset Intensity	0,027	0,027	0,100	0,998	0,326
	Firm Size	-0,006	0,003	-0,212	-1,965	0,052

A heteroscedasticity test was conducted to assess whether there was unequal variance in the residuals for each observation in the regression model. Based on the results of the Glejser test, all independent variables showed significance values (Sig.) greater than 0.05. This confirms that the regression model is free from heteroscedasticity, meaning that the residual variance is constant (homoscedasticity).

Table 6: Autocorrelation Test

Model	R	R square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,308 ^a	0,095	0,061	0,11472	1,970

An autocorrelation test was conducted to determine whether there is a correlation between the error term in a given period and the previous period within the regression model. Based on the results of the Durbin-Watson statistic test, a Durbin-Watson value of 1.970 was obtained. This value falls between the upper bound (d_u) and ($4 - d_u$), confirming that the regression model is free from autocorrelation and suitable for use.

Coefficient of Determination (R^2)

Table 7: Coefficient of Determination (R^2)

Model	R	R square	Adjusted R Square	Std. Error of the Estimate
1	0,308 ^a	0,095	0,069	0,11418

Based on the results of the coefficient of determination analysis in Table 7, the Adjusted R Square value was found to be 0.069. This indicates that 6.9% of the variation in tax avoidance can be explained by capital structure, transfer pricing, and fixed asset intensity, while the remaining 93.1% is influenced by other factors outside the research model.

Hypothesis Testing

Table 8: F-Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	0,146	3	0,049	3,730	0,14 ^b
	Residual	1,395	107	0,013		
	Total	1.541	110			

The F-test is used to test the simultaneous effect of all independent variables on the dependent variable. The calculated F-value was 3.730 with a significance level of 0.014 ($p < 0.05$), and the critical F-value was 2.69. The calculated F-value being greater than the table F-value ($3.730 > 2.69$) and the significance level being below 0.05 confirm that variables X_1 , X_2 , and X_3 simultaneously have a significant effect on the dependent variable.

Table 9: Hypothesis Testing (t-Test) and Multiple Linear Regression Analysis

Model		Unstandardized	Coefficients	Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		

1	(Constant)	0,086	0,029		2,950	0,004
	Capital Structure	-0,013	0,012	-0,105	-1,086	0,280
	Transfer Pricing	-0,008	0,035	-0,022	-,228	0,820
	Fixed Asset Intensity	0,143	0,045	-308	3,200	0,002

Multiple linear regression analysis yielded the equation $ETR = 0,086 - 0,013X_1 - 0,008X_2 + 0,143X_3 + e$. Based on the results ($t_{value} = 1.98217$), X_1 (Capital Structure) and X_2 (Transfer Pricing) show no significant effect on tax avoidance (t_{value} of -1.086, $p = 0.280$ and t_{value} of -0.228, $p = 0.820$, respectively), leading to the rejection of H_1 and H_2 . Conversely, X_3 (Fixed Asset Intensity) exerts a significant positive effect on Effective Tax Rate (ETR) ($t_{value} = 3.200$, $p = 0.002$). Since ETR serves as an inverse proxy for tax avoidance, a higher ETR reflects lower corporate tax avoidance. Thus, Fixed Asset Intensity significantly reduces tax avoidance, which leads to the rejection of H_3 as originally hypothesized.

Table 10: Moderated Regression Analysis (MRA)

Model		Unstandardized	Coefficients	Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0,533	0,439		-1,213	0,228
	DER	0,182	0,213	1,482	0,852	0,396
	TP	0,401	0,424	1,128	0,944	0,347
	FAI	0,757	0,655	1,635	1,155	0,251
	FZ	0,023	0,016	0,495	1,396	0,166
	DER_FZ	-0,007	0,008	-1,619	-0,903	0,369
	TP_FZ	-0,016	0,017	-1,126	-0,967	0,336
	FAI_FZ	-0,023	0,025	-1,383	-0,921	0,359

Multiple regression analysis with moderation yielded the equation $ETR = -0.533 + 0.182X_1 + 0.401X_2 + 0.757X_3 + 0.023Z - 0.007X_1Z - 0.016X_2Z - 0.023X_3Z + e$. Based on the MRA results, the interaction terms of Capital Structure, Transfer Pricing, and Fixed Asset Intensity moderated by Firm Size show no significant effect on tax avoidance, with significance values exceeding 0.05 ($p = 0.369$, $p = 0.336$, and $p = 0.359$, respectively) and t-values lower than t-table (1.98217). Consequently, H_4 , H_5 , and H_6 are rejected, indicating that Firm Size does not moderate the relationship between the independent variables and tax avoidance.

DISCUSSION

The Effect of Capital Structure on Tax Avoidance

The results of the hypothesis testing indicate that capital structure, as measured by the debt to equity ratio (DER), is not statistically significantly associated with tax avoidance, thereby rejecting H_1 . From an agency theory framework, managers are assumed to use debt financing to create interest tax shields that reduce taxable income, meanwhile, principals view debt as a governance mechanism to enforce managerial discipline. However, the empirical results show that this theoretical association does not result in tax minimising behaviour within the infrastructure sector. Infrastructure companies in Indonesia operate in a highly capital intensive environment, requiring substantial long term financing predominantly directed towards project

execution, asset construction and public facility development, rather than aggressive tax planning. Furthermore, strict regulatory oversight by the authorities and limitations on borrowing costs prevent managers from utilising debt purely as a tax avoidance instrument. Corporate management also prioritises solvency and financial risk mitigation over tax-saving benefits as high debt loads introduce default risks that outweigh the advantages of potential tax shields. These empirical findings reflect a statistical association specific to project-driven financing, rather than a causal tax strategy. This aligns with the studies by Prayitno & Machdar (2023) and Susanto & Oktari (2023), but contradict the study by Nahri et al. (2024).

The Effect of Transfer Pricing on Tax Avoidance

An empirical analysis has demonstrated that transfer pricing has no significant impact on tax avoidance. This leads to the rejection of hypothesis H₂. According to Agency Theory, information asymmetry and conflicting interests may encourage managers to exploit related-party transactions and price adjustments to artificially reduce taxable income in order to achieve short-term performance gains. However, the observed statistical independence suggests that intra-group transactions in the infrastructure sector are not a causal factor in tax avoidance. Related-party transactions among infrastructure firms are primarily driven by operational requirements, cross-entity project procurement, intra-group financing and supply chain coordination across specialised units. Furthermore, the enforcement of the arm's length principle through tax and the mandatory documentation of transfer pricing impose stringent compliance constraints, effectively curbing management's discretion to manipulate transfer prices for tax minimisation purposes. Consequently, transfer pricing reflects operational integration rather than opportunistic tax avoidance, which aligns with the empirical evidence of Imelda et al. (2022) and Yoshida (2023), but differ from the results of Marlina (2024) study.

The Effect of Fixed Asset Intensity on Tax Avoidance

The empirical results reveal that fixed asset intensity has a statistically significant positive effect on the effective tax rate (ETR). This means that it significantly reduces corporate tax avoidance, thus rejecting hypothesis H₃. In theory, high fixed asset intensity generates substantial depreciation expenses that legally reduce taxable income. In the context of the infrastructure sector, however, a substantial fixed asset base signifies long-term capital investments and operational capacity rather than an aggressive tax shield mechanism. From an agency theory perspective, management acts as a prudent agent, responsible for safeguarding long-term corporate investments and operational continuity. As infrastructure projects involve significant capital expenditure and substantial public exposure, aggressive tax avoidance strategies could lead to increased exposure to tax audits, financial penalties and reputational damage, which could disrupt ongoing operations and endanger long-term asset productivity. Consequently, infrastructure firms with higher fixed asset intensity tend to adopt a conservative tax stance, resulting in a higher ETR and lower tax avoidance. These results demonstrate a structural association between asset-heavy operational profiles and cautious tax compliance, thus reinforcing the findings Shafiraanjali & Asmilia (2024) and Mahendra et al. (2024), but differ from the findings of Annisa et al. (2023).

The Effect of the Moderating Role of Firm Size on the Relationship Between Capital Structure, Transfer Pricing, and Fixed Asset Intensity and Tax Avoidance

The empirical results of the moderated regression analysis demonstrate that firm size does not moderate the relationship between capital structure, transfer pricing or fixed asset intensity, and tax avoidance. This rejects hypotheses H₄, H₅ and H₆. According to Agency Theory, larger corporations have greater operational complexity, broader resource capacity and more sophisticated tax planning expertise. This gives managers more freedom to optimise tax strategies across debt, affiliated transactions and asset bases. However, the empirical findings confirm that corporate scale neither strengthens nor weakens these structural relationships in the infrastructure sector.

Regarding capital structure (H₄), large infrastructure firms primarily use debt to fund significant project capital expenditure and long-term asset development rather than to increase tax relief, meaning that firm size has no impact on debt-related tax incentives. For transfer pricing (H₅), although larger corporate groups engage in higher volumes of affiliated transactions, these activities are governed by strict group oversight and

compliance with the arm's length principle. Thus, scale does not widen the scope for tax avoidance manipulation. Regarding fixed asset intensity (H_6), large infrastructure entities acquire assets based on operational expansion and project demands rather than tax engineering. This means that firm size does not distort the conservative tax compliance behaviour driven by fixed asset ownership. Overall, these findings emphasise that statistical associations in the infrastructure sector are shaped by industry-specific operational demands rather than firm size, which is consistent with Sulaeman & Surjandari (2024), Tamam & Tarmidi (2025) and Hamdani & Mulyani (2025).

CONCLUSION

According to the results of hypothesis testing and discussion regarding capital structure, transfer pricing, and fixed asset intensity on tax avoidance with firm size as a moderating variable among infrastructure companies listed on the IDX for 2020–2024, capital structure shows no partial effect on tax avoidance, as debt allocation focuses primarily on long-term project financing under strict regulatory oversight rather than tax shields. Similarly, transfer pricing exerts no effect on tax avoidance, reflecting that related-party transactions serve pure operational needs under the arm's length principle. Conversely, fixed asset intensity exhibits a significant positive effect on ETR, where a higher fixed asset base fosters greater corporate caution to safeguard long term investments and mitigate tax penalty risks. Furthermore, firm size fails to moderate the relationships between these independent variables and tax avoidance, indicating that corporate scale neither distorts nor reinforces tax decision-making patterns within the infrastructure sector.

Future researchers should expand the scope by incorporating variables such as corporate governance, profitability, or corporate risk, alongside extending observation periods or comparing different industrial sectors. For government and tax authorities, these findings provide a foundation to tighten oversight on corporations with high fixed asset intensity and refine regulations against aggressive tax practices. For infrastructure management, the results serve as a strategic reference to prioritize transparent tax compliance across all operational and long-term investment decisions.

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