

Dynamics of Cost of Debt in Indonesia: The Interplay of Earnings Quality, Tax Avoidance, and Capital Structure in The Infrastructure and Property Sectors

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Abstract

This study examines the direct effects of earnings quality (EQ) and tax avoidance (TA) on the cost of debt (CoD), and explores the moderating role of capital structure (leverage) in Indonesia's infrastructure, property, and real estate sectors. Using a balanced panel of 103 listed companies (309 observations) from 2021 to 2023, we employ a robust Fixed Effects regression model. Earnings quality is proxied by the Stubben (2010) discretionary revenue model, while tax avoidance is measured using a transformed effective tax rate index (1 - ETR). The results reveal that earnings quality does not directly influence the cost of debt, reflecting a bank-based system where commercial lenders prioritize direct monitoring and physical collateral over public accounting metrics. However, tax avoidance exhibits a significant negative relationship with the cost of debt, strongly supporting the Tax-Saving Hypothesis where cash savings enhance internal liquidity and reduce default risk. Crucially, leverage significantly moderates the earnings quality–cost of debt relationship, proving that creditors value high-quality reporting as a vital monitoring mechanism only under elevated financial risk. Conversely, leverage does not moderate the tax avoidance–cost of debt link due to thin capitalization exemptions for infrastructure projects and flat final tax schemes for property firms. These findings offer practical insights for corporate executives optimizing capital structures and regulators refining financial disclosures.



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INTRODUCTION

The management of capital costs, particularly the cost of debt, constitutes a pivotal element in a firm's financial architecture. In the contemporary era of global economic integration, optimizing the capital structure is no longer just about balancing debt and equity

but involves a sophisticated navigation of risk perceptions among global and domestic creditors. For companies operating in emerging markets like Indonesia, accessing financing at competitive rates remains a significant hurdle. Unlike developed markets with deep liquidity and high transparency, emerging markets are often characterized by institutional voids, varying levels of investor protection, and higher information asymmetry.

The cost of debt represents more than just a nominal interest rate; it is a holistic reflection of a creditor's assessment of a firm's transparency, internal governance, and long-term sustainability (Carmo et al., 2016). In a world of increasing ESG (Environmental, Social, and Governance) awareness, creditors, especially institutional ones, are looking beyond the balance sheet to understand the underlying "quality" of the borrower. Therefore, any distortion in financial reporting or aggressive behavior in tax planning is quickly translated into a risk premium that increases the firm's financial burden.

Indonesia, as the largest economy in Southeast Asia, has embarked on an ambitious journey toward "Golden Indonesia 2045." A cornerstone of this vision is massive infrastructure development. In order to lower logistic costs and promote regional development, the Indonesian government has made building toll roads, ports, airports and powerplants a top priority since 2014. This momentum has culminated in the development of the Ibu Kota Nusantara (IKN), a project requiring hundreds of billions of dollars in investment (Intelligence, 2024).

The infrastructure sector, alongside the property and real estate sectors, serves as the primary engine for this transformation. However, these sectors are unique in their financial characteristics: they are extremely capital-intensive, rely on long-term project lifecycles, and often face high levels of uncertainty in revenue recognition. Because internal funding is rarely sufficient for projects of this scale, these firms are inherently dependent on external debt. This dependency makes them highly sensitive to interest rate fluctuations. In early 2023, corporate debt issuance in Indonesia surged by 19.43% year-on-year, reaching IDR 4.24 trillion, as firms hurried to lock in rates before anticipated hikes and political uncertainties surrounding the 2024 General Election (Pefindo, 2023).

In the complex environment of long-term construction and property development, financial reporting becomes a theater of judgment and estimation. The quality of earnings reported by these firms is the primary metric used by creditors to gauge the reliability of future cash flows. High-quality earnings accurately mirror a firm's economic reality and show persistence, allowing them to serve as a predictor of a firm's ability to meet its debt obligations (Dechow et al., 2010). However, the complexity of these sectors provides fertile ground for "earnings management", the opportunistic use of accounting choices to meet targets or avoid covenant breaches (Stubben, 2010).

Parallel to the challenge of reporting quality is the dilemma of tax policy. Tax avoidance is often viewed as a rational managerial tool to minimize wealth transfer to the government and enhance internal liquidity (Hanlon & Heitzman, 2010). In the short term, tax savings can improve a firm's cash position. However, aggressive tax avoidance is a double-edged sword. It introduces "regulatory risk" and "reputational risk." Creditors, who prioritize stability and predictability, often view complex tax avoidance as a signal of managerial rent-seeking or as a precursor to future cash flow drains via audits and penalties (Hasan et al., 2014). This perception is intensified in Indonesia, where the Directorate General of Taxes (DGT) has implemented strict "thin capitalization" rules (PMK 169/PMK.010/2015) to limit interest expense deductions, thereby altering the traditional tax-shield benefits of debt.

While substantial literature has examined the individual effects of earnings quality or tax avoidance on the cost of debt, there is a distinct lack of research that explores their *interaction* and the moderating influence of capital structure in the specific context of Indonesia's strategic sectors. Most studies in Indonesia have focused on manufacturing (Gea

& Johan, 2021) or have used traditional accrual models that may not capture the nuances of revenue-based manipulation prevalent in infrastructure projects.

Furthermore, the post-pandemic landscape (2021-2023) offers a unique "stress test" for these theories. Many Indonesian firms faced liquidity crunches and were forced to restructure debt, making creditor perception more critical than ever. This study aims to fill these gaps by:

1. Utilizing the Stubben (2010) Discretionary Revenue Model, which is specifically robust for industries with complex revenue recognition.
2. Exploring the Risk-Exposure vs. Tax-Saving paradox in an emerging market with aggressive tax enforcement.
3. Investigating how Leverage acts as a "risk multiplier," intensifying creditors' scrutiny of reporting and tax behaviors.

LITERATURE REVIEW AND HYPOTHESES

The essential lens for comprehending corporate conflicts is provided by Agency Theory, which was developed by Jensen and Meckling in 1976. While the manager-shareholder conflict is well-documented, the conflict between shareholders (represented by managers) and creditors is equally vital in capital structure decisions (Bharath et al., 2008).

Creditors provide capital with the expectation of fixed returns and principal safety. However, managers have incentives to engage in activities that benefit shareholders at the expense of creditors, such as taking on excessive risk or diverting assets. This is known as the "asset substitution" problem (Ghouma et al., 2018). To protect themselves, creditors charge a "risk premium", the cost of debt, which compensates them for the information asymmetry and monitoring costs they must bear. High-quality financial reporting acts as a "bonding" and "monitoring" mechanism, reducing the perceived risk and thus the cost of debt (Ghosh & Moon, 2010).

Signaling Theory (Spence, 1973) suggests that in a market with information asymmetry, the "better" firms will attempt to distinguish themselves by sending credible signals. In the financial context, high earnings quality is a primary positive signal. It communicates to the market that the firm's reported performance is not a result of accounting gimmickry but reflects real economic success (Amrah & Hashim, 2020).

For infrastructure and property firms, whose assets are often "opaque" and project timelines are long, these signals are crucial. A firm that reports transparently sends a signal of managerial integrity and operational stability (Eliwa et al., 2019). Conversely, aggressive tax avoidance can send a "noisy" or negative signal. While it might look like a cash-saving measure, it can signal that management is willing to take extreme risks or is hiding "bad news" through complex structures (Kaufinger & Neuenschwander, 2024).

The measurement of earnings quality (EQ) has evolved significantly. Early models, like the Jones (1991) and Modified Jones models, focused on "discretionary accruals." The logic was that managers manipulate earnings by shifting accruals between periods. However, recent empirical evidence shows that managers are increasingly shifting toward "real activities manipulation" and "revenue manipulation" because these are often harder for auditors and regulators to detect (Stubben, 2010).

The Stubben Model (2010) focuses on the relationship between accounts receivable and revenue. In sectors like property and construction, revenue is often recognized based on the "percentage of completion." This method involves significant managerial judgment, making it easy to recognize revenue prematurely to meet quarterly targets. Stubben's model provides a more powerful and less biased proxy for this type of manipulation, making it superior for analyzing Indonesian infrastructure firms.

The impact of tax avoidance on the cost of debt is one of the most debated topics in accounting. There are two competing schools of thought. First, the Tax-Saving Hypothesis: Proponents argue that tax avoidance increases a firm's internal funds, which reduces the need for external financing and lowers default risk. Studies in Korea (Lim, 2011) and Spain (Sánchez-Ballesta, 2023) have found that tax-saving activities can lead to a lower cost of debt. The second thought, the Risk-Exposure Hypothesis. This view holds that aggressive tax avoidance creates "opacity." It often involves complex, non-transparent transactions that increase information asymmetry. Furthermore, the risk of litigation, heavy fines, and reputational damage increases the firm's "downside risk." Research in the US (Hasan et al., 2014) and China (Chen & Zhu, 2013) supports this view, showing that creditors charge higher interest rates to firms with aggressive tax positions.

In Indonesia, the institutional environment leans toward the risk-exposure hypothesis. The Ministry of Finance and the Directorate General of Tax (DGT) have been increasingly aggressive in tax enforcement. The introduction of the Tax Harmonization Law (UU HPP) and the implementation of the Automatic Exchange of Information (AEOI) have made it significantly harder for firms to hide tax avoidance strategies without facing detection.

The Debt-to-Equity Ratio (DER) is more than just a financing choice; it is a signal of the firm's risk tolerance. According to the Pecking Order Theory, firms prefer internal funding, then debt, and finally equity. However, as debt levels rise, the firm's fixed financial obligations increase, magnifying the risk of financial distress (Saraswati, 2024).

From an agency perspective, leverage can act as a disciplining mechanism (the debt monitoring hypothesis). However, when leverage is excessive, it can trigger opportunistic behavior. Managers may feel pressured to manipulate earnings to avoid violating debt covenants or to engage in risky tax avoidance to preserve cash for debt servicing (Situmeang & Siagian, 2021). Thus, leverage likely acts as a "moderator" that influences how creditors perceive a firm's reporting and tax policies.

Transparency is the primary antidote to the cost of debt. When a firm provides high-quality earnings information, it reduces the "information risk" faced by creditors. High-quality earnings mean that the numbers on the financial statements are a reliable predictor of the firm's future ability to pay its interest and principal (Bharath et al., 2008).

In debt contracts, accounting numbers are often used to define "covenants"—rules that the borrower must follow to keep the loan. If earnings quality is high, the risk that these numbers are manipulated to hide a covenant breach is lower. Global evidence from Oman (Amrah & Aishah Hashim, 2020), Portugal (Carmo et al., 2016), and Brazil (Beiruth et al., 2021) consistently shows that creditors reward transparency with lower borrowing costs.

H1: Earnings quality has a negative influence on the cost of debt.

While tax avoidance saves cash, it increases the "opacity" of the firm. Aggressive tax strategies often require complex corporate structures that make it difficult for creditors to see the true state of the firm's operations (Guenther, 2014). For a creditor, this complexity is a major red flag.

Furthermore, the Indonesian tax environment is characterized by frequent regulatory changes. A tax strategy that is "legal" today might be challenged by the DGT tomorrow, leading to massive back taxes and penalties (Ministry of Finance, 2015). Creditors view this as a significant "tail risk." Unlike shareholders, who might benefit from the tax savings, creditors only face the risk of not being paid if the tax strategy fails. Therefore, we expect a positive relationship between tax avoidance aggressiveness and the cost of debt.

H2: Tax avoidance has a positive influence on the cost of debt.

The relationship between earnings quality and debt cost is not static; it depends on the firm's financial health. For a firm with very little debt, creditors may not be as sensitive to

minor earnings management. However, for a "highly leveraged" firm, every dollar of reported profit counts.

In a high-leverage scenario, the "signaling value" of high-quality earnings becomes even more important. It is the primary tool that a highly indebted firm can use to prove to its creditors that it is still a "going concern" (Awaloedin & Nugroho, 2019). We expect that the benefit of having high-quality earnings (in terms of lowering debt costs) is even greater when the firm has a high level of debt.

H3: Leverage strengthens the negative influence of earnings quality on the cost of debt.

Similarly, the risk associated with tax avoidance is magnified by leverage. A firm with high leverage already has a thin margin for error. If such a firm is caught in an aggressive tax avoidance scheme, the resulting fines could push it over the edge into bankruptcy.

Furthermore, Indonesia's thin capitalization rules (PMK 169/2015) specifically penalize firms whose DER exceeds 4:1 by limiting interest deductibility. This means that for highly leveraged firms, the "tax shield" benefit of debt is already capped, and any further aggressive tax avoidance is likely seen as an act of desperation rather than a prudent financial strategy (Tjondro & Permata, 2019). Creditors are likely to penalize this behavior with even higher interest rates.

H4: Leverage strengthens the positive influence of tax avoidance on the cost of debt.

RESEARCH METHODOLOGY

This study utilizes a quantitative approach with an explanatory research design to dissect the causal relationships between information quality, tax policy, and financing costs. The choice of the Infrastructure, Property, and Real Estate sectors is a deliberate strategic decision. These industries represent the "economic engine" of Indonesia's current development phase. Unlike the retail or service sectors, infrastructure and property are characterized by immense capital requirements, long gestation periods for assets, and a high degree of reliance on long-term debt financing.

The sampling process followed a rigorous purposive approach to ensure data "purity." We focused on the period of 2021-2023 to capture the specific dynamics of the post-pandemic recovery era. During these years, many Indonesian firms faced a "liquidity stress test," making their financial reporting signals particularly consequential for creditors. We excluded firms with negative equity to avoid the distorting effects of technical insolvency on the Debt-to-Equity Ratio (DER) and the cost of debt calculations. The final narrative of our sample involves 103 firms that remained listed and active throughout this volatile period, providing a robust balanced panel of 309 observations.

The measurement of the Cost of Debt (CoD) was designed to capture the effective burden of borrowing. Rather than using credit ratings (which can be lagging indicators), we used the ratio of total interest expense to average interest-bearing debt (Hashim et al., 2015). This provides a real-time, firm-specific measure of what creditors are actually charging the entity. Following Hashim et al. (2015) and Carmo et al. (2016), we measure the cost of debt as the effective interest rate:

$$CoD = \text{Total Interest Expense} \div \text{Average Interest Bearing Debt}$$

Interest-bearing debt includes bank loans (short and long term), bonds payable, and lease liabilities.

For Earnings Quality (EQ), we adopted the (Stubben, 2010) methodology. This involves a two-step narrative: first, estimating the "normal" level of accounts receivable growth relative to revenue changes across four quarters; and second, treating the residual, the part of receivable growth that cannot be explained by sales as "discretionary revenue." By

multiplying the absolute residual by -1, we created an index where higher values represent higher quality. This method is particularly suited for our sample because it directly addresses the risk of "pre-recognition" of revenue in construction and property sales. We use the (Stubben, 2010) Discretionary Revenue Model.

Step 1: We estimate normal accounts receivable through the following cross-sectional regression

$$\Delta AR_{it} = a + b1\Delta R1_3_{it} + b2\Delta R4_{it} + e_{it}$$

Where $\Delta R1_3_{it}$ is the change in revenue for quarters 1-3 and $\Delta R4_{it}$ is the change for the fourth quarter.

Step 2: The residual e_{it} represents discretionary revenue. We calculate EQ as:

$$EQ_{it} = e_{it} \times -1$$

A higher (closer to zero) value indicates higher quality.

Tax Avoidance (TA) was proxied using the GAAP Effective Tax Rate (ETR). While several proxies exist, ETR provides a comprehensive view of the firm's overall tax efficiency relative to its reported profit (Guenther, 2014; Orlando & Murwaningsari, 2022). We acknowledge the inherent limitation that a low ETR could result from either legitimate tax incentives or aggressive avoidance; however, in our regression model, we interpret lower ETR values as a signal of "tax aggressiveness" to test the risk-exposure hypothesis.

$$ETR = \frac{\text{Income Tax Expense}}{\text{Pretax Income}}$$

Theoretically, a low ETR actually reflects a high level of tax avoidance. This often leads to difficulties in interpretation, especially when this variable is interacted with other variables. In this study, the ETR was transformed into a tax avoidance index using the formula $1 - ETR$ or by inverting the scale, to ensure that increases in the values of all key independent variables (both leverage and tax avoidance) consistently reflect an "increase in the intensity" of managerial behavior or risk profile.

Leverage as a moderator is operationalized through the Debt-to-Equity Ratio (DER). This variable captures the firm's "structural risk." We test it as a quasi-moderator following the identification criteria by Sharma et al. (1981), allowing us to see if leverage has both a direct impact on debt costs and an interaction effect that changes the impact of earnings quality and tax avoidance.

This study uses three control variables, namely: Liquidity (Liq), measured through the Current Ratio (Current Assets / Current Liabilities); Asset Tangibility (Tang) measured as the ration of fixed asset to total assets, representing the "collateral safety". The last control variable is profitability that measured as Return on Aset, representing the "repayment capacity" of the company.

We use panel data regression with the following model:

$$CoD = \beta_0 + \beta_1 EQ + \beta_2 TA + \beta_3 DER + \beta_4 DER * EQ + \beta_5 DER * TA + \beta_6 Liq + \beta_7 Tang + \beta_8 ROA + \epsilon$$

RESULT AND DISCUSSION

The study utilizes a balanced panel dataset consisting of 103 groups over 3 periods, resulting in 309 observations. The average observation per group is exactly 3. The dependent variable shows a mean of 0.0279. The proximity of the mean to the minimum value (0.00) relative to the maximum (0.19) suggests a slight right-skewed distribution, which is common for financial ratios.

Table 1 Descriptive Statistic of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Cost f Debt (CoD)	309	0.0279	0.0309	0	0.1908
Earning Quality (EQ)	309	-0.0332	0.0627	-0.5736	-0.0002
Tax Aggressiveness (ETR)	309	0.5767	1.6807	-14.6229	4.7754
Debt to Equity Ratio (DER)	309	1.0929	2.2949	-21.0575	9.4284
Liquidity (LIQ)	309	2.1618	1.9612	0.0272	10.8078
Tangibility (TANG)	309	0.1614	0.2263	0.0002	0.9244
Return on Asset (ROA)	309	0.0351	0.258	-3.3851	0.8744

There is a significant discrepancy in the standard deviations across variables. For instance, ETR exhibit much higher dispersion compared to CoD or Tang. This high variance in tax-related metrics often indicates diverse tax-planning strategies among the sampled firms. Interestingly, the **EQ** has a negative mean (-0.033) and a maximum value that is also negative (-0.00018), implying that the entities in this sample might be experiencing specific financial structures or accounting treatments relevant to the study's context.

In this study, a panel data analysis was employed to examine the determinants of the cost of debt (COD) using a balanced panel dataset of 103 entities over a three-year period from 2020 to 2022. The longitudinal nature of the data, encompassing 309 observations, necessitates a rigorous selection between Pooled Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models to ensure the consistency and efficiency of the estimators. To identify the most appropriate econometric specification, three primary diagnostic tests were performed: the Chow test (redundant fixed effects test), the Breusch-Pagan Lagrange Multiplier (LM) test, and the Hausman specification test.

Table 2 Model Selection Test

Test Type	Statistics	p-value	Null Hypothesis (H0)			Decision	Result	
Chow Test (F-test)	F(102, 198) = 5.55	0.000	Pooled appropriate	OLS	is	Reject H0	Fixed Effects (FE)	Effects
Hausman Test	chi2(8) = 19.46	0.013	Random appropriate	Effects	is	Reject H0	Fixed Effects (FE)	Effects
LM Test (Breusch-Pagan)	chibar2(01) = 102.09	0.000	Pooled appropriate	OLS	is	Reject H0	Random Effects (RE)	Effects

Three diagnostic tests were conducted to determine the most appropriate model for the panel data analysis. First, the Chow test rejected the null hypothesis ($F(102, 198) = 5.56$, $p < 0.001$), indicating that the Fixed Effects (FE) model is superior to Pooled OLS. Second, the Breusch-Pagan LM test ($\text{chibar2} = 102.09$, $p < 0.001$) confirmed that the Random Effects (RE) model is also preferable to Pooled OLS.

To decide between the two panel estimators, the Hausman test was applied, yielding a chi-square value of 19.46 with a significant p-value of 0.0126. This result indicates that the individual-specific effects are correlated with the regressors, rendering the Random Effects estimator inconsistent. Consequently, the Fixed Effects (FE) model was selected as the most consistent and appropriate specification for this study.

To ensure the statistical validity and reliability of the regression estimates, a series of classical assumption tests were conducted. These tests are essential to verify that the Fixed Effects model fulfills the criteria for the Best Linear Unbiased Estimator (BLUE), particularly concerning the independence and constant variance of the residuals.

Tabel 3 Classical Assumption Test Result

Diagnostic Test	Statistics	p-value	Status
Multicollinearity (VIF)	Mean VIF = 1.77		Passed (No Multicollinearity)
Heteroskedasticity (Wald)	chi2(103) = 271619.84	0.000	Failed (Heteroskedasticity present)
Autocorrelation (Wooldridge)	F(1, 102) = 9.260	0.003	Failed (Autocorrelation present)

The model is free from multicollinearity issues, as indicated by a Mean VIF of 1.77 , with all individual VIF values remaining well below the threshold of 10. The Modified Wald test yielded a significant result (chi2 = 271,619.84, $p < 0.01$) , suggesting the presence of groupwise heteroskedasticity in the fixed effects model. The Wooldridge test ($F = 9.260$, $p = 0.0030$) confirmed the existence of first-order autocorrelation within the panel data.

Following the diagnostic results that confirmed the presence of groupwise heteroskedasticity and first-order autocorrelation, the standard Fixed Effects model was re-estimated using cluster-robust standard errors (vce robust). This econometric adjustment is essential for ensuring that the statistical inferences are valid even when the classical assumptions of spherical errors are violated.

By clustering the standard errors at the individual entity level (103 clusters in *id*), the model produces consistent standard errors that are robust to both arbitrary heteroskedasticity and within-group serial correlation. This ensures that the t-statistics and p-values remain unbiased, preventing the overestimation of statistical significance. The results of this final robust specification are summarized in the Table 4.

Table 4 The Regression Output

Variable	Expectation	Coefficient	Robust Std. Err.	t-statistic	p-value	Result
constant		0.0304	0.003	10.05	0.000***	
EQ	-	0.0212	0.0332	0.64	0.523	H1 rejected
ETR	+	-0.0027	0.0012	-2.31	0.023**	H2 rejected
DER	-	0.0013	0.0009	1.42	0.159	
LIQ	+	-0.0022	0.0009	-2.53	0.013**	
TANG	+	0.0074	0.0133	0.55	0.583	
ROA	-	0.0261	0.0117	2.23	0.028**	
EQ*DER	-	-0.0157	0.0044	-3.53	0.001***	H3 Supported
ETR*DER	+	0.0004	0.0004	1.23	0.221	H4 Rejected

R-Squared 0.2127

Prob > F 0.0000

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

The study utilizes a Fixed Effects (FE) model with cluster-robust standard errors to test the hypotheses. The model yields an R-squared of 0.2127, indicating that the independent and control variables explain 21.27% of the within-entity variation in the cost of debt. The overall model is statistically significant (Prob > F = 0.0000).

The regression results indicate that earnings quality does not have a direct, significant influence on the cost of debt in Indonesia's infrastructure, property, and real estate sectors (beta=0.0212; $p=0.523$). This finding **rejects Hypothesis 1**, which predicted a direct negative relationship between financial reporting quality and corporate borrowing costs. The failure to prove this direct relationship reflects the unique characteristics of Indonesia's financial architecture, which is predominantly a bank-based financial system (Trisnawati & Nasser, 2017) rather than a market-based system typical of the US or UK (Saeed, 2025).

In a bank-based financial environment, the primary providers of capital are commercial banks that possess direct access to conduct independent monitoring of the borrower's internal performance and condition. This direct information access dramatically reduces banks' reliance on publicly disclosed financial statements. For Indonesian commercial banks, credit approval and interest rate pricing decisions are based on creditworthiness evaluations that emphasize long-term relationship banking, physical collateral availability, and actual repayment capacity.

This is empirically supported by the control variables, where liquidity ($LIQ=0.0022$; $p=0.013$) and profitability ($ROA=-0.0261$; $p=0.028$) show significant negative effects on the cost of debt. Bank creditors in Indonesia prioritize liquid assets that can be easily converted to cash and actual operating profitability to mitigate short-term default risks, rather than evaluating abstract accrual accounting estimations. Since the property and infrastructure sectors are characterized by long project life cycles and high uncertainty in revenue recognition, banks tend to ignore fluctuations in discretionary accrual earnings quality as long as firms demonstrate sufficient operational cash flows and solid fixed-asset collateral.

The econometric estimation yields a negative and significant coefficient for the relationship between the tax avoidance (ETR) and the cost of debt ($\beta=-0.0027$; $p=0.023$). Since tax avoidance is measured using the transformation index ($1 - ETR$), this negative coefficient indicates that a higher intensity of tax avoidance is associated with a lower cost of debt. This finding **rejects Hypothesis 2**, which predicted a positive effect (that tax aggressiveness increases the cost of debt due to risk exposure). However, it provides strong empirical support for the Tax-Saving Hypothesis (Lim, 2011; Sanchez-Ballesta & Yagüe, 2023).

According to the Tax-Saving Hypothesis, effective tax planning is viewed by market participants and creditors as a rational managerial action to minimize wealth transfer to the state, thereby increasing retained earnings and free cash flows (Dyreng et al., 2019). This additional internal liquidity acts as a robust financial slack, reducing the need for costly external financing and strengthening the firm's capacity to service its interest and principal obligations on time. Consequently, the default risk decreases, and creditors are willing to offer loans at lower interest rates.

The acceptance of the Tax-Saving Hypothesis in Indonesia is also heavily influenced by the regulatory landscape governing these strategic sectors. For the property and real estate sector, income tax is final under Government Regulation No. 34 of 2016 (PP 34/2016) at a flat rate of 2.5% of the gross transfer value of land and buildings. This Final Income Tax scheme greatly simplifies corporate tax obligations and eliminates most complex tax disputes arising from book-tax differences. Since tax audit and penalty risks are low under the Final Tax system, creditors do not view tax efficiency as a major legal risk threat (risk exposure effect) but rather as a liquidity-enhancing factor that secures corporate solvency.

Although earnings quality has no significant direct influence on its own, the interaction term between earnings quality and capital structure ($EQ*DER$) exhibits a highly significant negative coefficient ($\beta=-0.0157$; $p=0.001$). This finding provides strong **support for Hypothesis 3**, which posits that leverage strengthens the negative influence of earnings quality on the cost of debt. This result empirically demonstrates the role of leverage as a signal amplifier and an agency discipline mechanism.

In firms with low leverage, creditors are less sensitive to managerial reporting behaviors because the safety margin for principal repayment is high, rendering earnings quality less relevant in debt pricing. However, as the proportion of debt in the capital structure increases, the agency conflict between shareholders and creditors (debt-equity agency conflict) escalates exponentially (Jensen & Meckling, 1976). At high leverage levels,

the risk of moral hazard, such as asset substitution or earnings manipulation to prevent debt covenant violations, becomes a primary concern for creditors.

In this high-risk environment, transparent and high-quality financial reporting (as proxied by the Stubben model) serves as a valuable positive signal (Saeed, 2025). High earnings quality assures bank creditors that reported operational performance is authentic and reliable for generating future cash flows, confirming that management is communicating honestly without manipulating revenue (Dalwai et al., 2023). In return, creditors reduce the information risk premium and offer lower interest rates to highly leveraged firms that maintain high reporting quality. This interaction confirms Signaling Theory, where positive financial signals are highly valued by the market only when the firm's inherent risk profile is elevated.

The regression analysis for the interaction between tax avoidance and capital structure ($ETR \times DER$) yields an insignificant coefficient ($\beta = 0.0004$; $p = 0.221$). Consequently, **Hypothesis 4 is rejected**, indicating that leverage does not moderate the influence of tax avoidance on the cost of debt in Indonesia's infrastructure and property sectors.

This lack of moderating effect can be explained by national tax regulations concerning thin capitalization rules under Minister of Finance Regulation No. 169/PMK.010/2015 (PMK-169). PMK-169 sets a maximum DER limit of 4:1 for income tax purposes, where interest expenses on debt exceeding this ratio are categorized as non-deductible. However, PMK-169 explicitly exempts taxpayers operating in the infrastructure sector.

Because infrastructure projects inherently require massive capital and long-term high leverage, this regulatory exemption ensures that increased leverage does not elevate the risk of tax interest deduction disallowance. On the other hand, for property firms whose revenues are dominated by Final Income Tax (PP 34/2016), traditional interest tax shields are less relevant because their tax liability is calculated directly from gross transaction value rather than net commercial profits. As a result, the interaction between leverage and tax planning does not affect creditors' perceptions of corporate tax compliance risk, rendering the moderating effect of leverage irrelevant in these sectors.

CONCLUSSIONS AND IMPLICATIONS

Conclusion

Based on the empirical analysis of 103 infrastructure and property companies in Indonesia from 2021 to 2023, this study concludes that the determination of the cost of debt is highly driven by the interaction between financial reporting transparency and capital structure, as well as the cash-saving benefits of tax compliance. Earnings quality alone does not directly lower borrowing costs due to the bank-based nature of Indonesia's financial system, where bank creditors rely on direct monitoring and physical collateral. However, earnings quality becomes a powerful tool to reduce borrowing costs when firms have high leverage. At high debt levels, earnings quality acts as a credible signal that mitigates information asymmetry and agency concerns.

Meanwhile, tax avoidance directly reduces the cost of debt, confirming the Tax-Saving Hypothesis in an emerging market. Cash savings from tax planning improve corporate internal liquidity (financial slack), reduce default risks, and encourage creditors to offer more competitive interest rates. Finally, leverage does not moderate the relationship between tax avoidance and the cost of debt due to thin capitalization rule exemptions (PMK-169) for the infrastructure sector and the flat Final Tax scheme (PP 34/2016) for the property sector, both of which decouple interest expenses, leverage, and tax risks in the eyes of creditors.

Implications

Findings of this study contribute significantly to the literature on corporate finance and tax management in emerging markets. It demonstrates that the signaling value of financial information is not uniform but contingent on the firm's financial risk level. High-quality financial reports only trigger positive creditor pricing responses when agency conflicts escalate at high leverage levels.

The study clarifies the debate between the Tax-Saving and Risk-Exposure Hypotheses. In a volatile post-pandemic environment marked by liquidity constraints in Indonesia, creditors prioritize cash preservation from tax efficiency over potential tax enforcement risks. This study supports Tax saving hypothesis of tax aggressiveness. The successful application of the Stubben (2010) model validates its robustness in capturing revenue-based earnings manipulation in sectors characterized by long-term percentage-of-completion revenue recognition.

While these academic contributions refine our theoretical understanding of signaling, agency conflicts, and tax-saving mechanisms, the empirical realities of Indonesia's strategic sectors also demand concrete practical and regulatory adjustments. Bridging the gap between conceptual frameworks and market enforcement, the theoretical insights derived from this study must be translated into actionable strategies. The following policy and practical implications are therefore formulated for corporate executives, capital regulators, and tax authorities to navigate these financial dynamics effectively.

Managers in the infrastructure and property sectors must recognize that maintaining financial reporting quality is a strategic financial decision. When planning high-leverage expansion, firms must enhance earnings quality to mitigate risk premiums from banks. Furthermore, legal tax planning should be professionally managed to preserve internal cash and secure solvency.

Financial Service Authority (OJK) should strengthen financial disclosure standards, particularly regarding debt covenant details and revenue recognition methods for long-term construction and property contracts. Since bank creditors are sensitive to earnings quality at high leverage levels, transparent reporting will help detect early insolvency signs and prevent non-performing loans (NPLs).

The Directorate General of Tax (The DGT) should carefully evaluate the application of thin capitalization rules (PMK-169). Although exempting the infrastructure sector supports national development, it creates loopholes for aggressive tax avoidance through related-party debt shifting. The DGT should enhance transfer pricing audits on intercompany loans in exempted sectors to protect the tax base without harming the investment climate.

Limitations

Several limitations in the scope and methodology of this study should be noted. First, the focus on the infrastructure and property sectors prevents the direct generalisation of these findings to other sectors (such as manufacturing or trade) that face strict PMK-169 DER limits and non-final tax schemes. Second, the reliance on the ETR transformation index cannot separate legitimate tax incentives (e.g., tax holidays) from aggressive tax evasion strategies that carry high legal risks. Last, the three-year timeframe (2021–2023) reflects a unique post-pandemic recovery era. This transition period may affect credit decisions and may not fully reflect long-term stable creditor behaviors.

Future Research

To extend and improve future research, the following directions are recommended:

1. Future studies should include the manufacturing sector, which is fully subject to the PMK-169 DER 4:1 limit, to compare how strict thin capitalization rules affect creditors' tax risk perceptions.
2. Future research should adopt more comprehensive proxies, such as Abnormal Book-Tax Differences (ABTD) or tax risk disclosure indexes, to distinguish between legal tax planning and highly uncertain tax avoidance.
3. Since firms often shift to real transaction manipulations under high regulatory scrutiny, future studies should include Real Earnings Management (REM) metrics to examine whether banks penalize real cash-flow distortions more heavily than paper accruals.
4. Future models should explore the moderating role of corporate governance, such as independent directors, audit committee expertise, or institutional ownership, to see if strong internal monitoring can mitigate information risk and lower borrowing cost

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