

Understanding Creditor Risk: Do Women on Boards Indirectly Escalate the Cost of Debt Through Tax Planning?

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Abstract

Purpose: This study investigates the direct effect of board gender diversity on the cost of debt, and its indirect effect mediated through corporate tax avoidance, during a macroeconomic crisis.

Research Methodology: Utilizing purposive sampling, a balanced panel of 60 manufacturing firms listed on the Indonesia Stock Exchange (180 firm-year observations) from 2021 to 2023 was analyzed using robust Common Effect panel regressions in Stata 18.

Results: The direct effect of board gender diversity on borrowing costs is highly insignificant. However, corporate tax avoidance has a significant positive direct effect on the cost of debt. The indirect pathway is positive and marginally significant, demonstrating that gender-diverse boards increase tax-planning intensity, which creditors subsequently penalize.

Conclusions: Board gender composition does not directly influence creditors. Rather, its effect is fully transmitted through strategic tax choices. During economic shocks, survival-driven cash conservation via tax planning is processed as a negative signal of opacity and audit risk by risk-averse relationship banks, driving up borrowing costs.

Limitations: The study is restricted to Indonesian manufacturing firms during the abnormal COVID-19 shock, with data availability constrained by incomplete corporate interest and debt disclosures.

Contributions: This research provides vital policy insights for the Financial Services Authority (*Otoritas Jasa Keuangan*-OJK) and commercial banks, showing that boardroom gender diversification mandates must be carefully balanced against strategic financial transparency demands in relationship-based emerging credit markets.

Keywords: *Board Gender Diversity, Cost of Debt, Emerging Markets, Indonesia, Tax Avoidance*

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1. Introduction

Corporate managers, shareholders, and creditors clash over control the moment ownership separates from management, a conflict [Jensen and Meckling \(1976\)](#) formalized as agency theory. Creditors absorb this conflict: they hold fixed-return claims, collect none of the upside from profitable risk-taking, and carry the full loss when a firm defaults. This asymmetry makes creditors watch managers for opportunistic behavior, risk-shifting, and financial opacity ([Jensen and Meckling, 1976](#); [Bhojraj, & Sengupta, 2003](#)). Boards of directors exist, in part, to blunt this friction; they monitor managers and protect the capital that external lenders supply ([Fama & Jensen, 1983](#)). Female directors sharpen that monitoring function. A growing body of research finds that women on boards tighten financial reporting, raise disclosure quality, and approach risk with more caution than their male colleagues do ([Adams & Ferreira, 2009](#)). Tax avoidance complicates this picture. Firms that shelter income keep more cash on hand and improve liquidity, but the transactions behind that shelter add complexity and obscure a firm's true financial position, a form of opacity that risk-averse lenders penalize with higher risk premiums ([Desai, & Dharmapala, 2006](#); [Shevlin, Urcan, & Vasvari, 2020](#)). Board gender diversity and tax planning pull in different directions: one signals stronger oversight, the other invites scrutiny, and creditors price both signals when they set the cost of debt.

Indonesia's manufacturing sector tested this debt-pricing dynamic between 2021 and 2023, when COVID-19 disrupted supply chains and squeezed corporate cash flow across the country. Firms struggled to service outstanding debt as production stalled and revenue dried up ([Martias, Syafei, Adriyani, & Aswad, 2023](#)). Court records from Indonesia's Supreme Court capture the scale of that distress: requests for Postponement of Debt Payment Obligations (Penundaan Kewajiban Pembayaran Utang, or PKPU) rose from 425 cases in 2019 to 637 in 2020, a 49.88 percent jump, then climbed again to 732 cases in 2021. Indonesian firms faced this liquidity crisis inside a financial system that offers few alternatives to bank credit. Public bond markets remain underdeveloped, so companies depend on relationship-based loans from commercial banks to raise capital ([Warjiyo, 2015](#); [Lubis, Darmadi, Pratiwi, Windara, Lutvian, & Firas, 2025](#)). Weak investor protection, lax enforcement, and concentrated family ownership define the broader institutional environment in which these firms operate ([Stefany & Joni, 2020](#)). These conditions sharpen Type II agency conflicts, the clashes between controlling owners and minority shareholders or creditors. Family owners who dominate a firm's ownership structure can extract resources or pursue aggressive tax strategies that serve their own interests at creditors' expense, and this behavior pushes up the baseline cost of debt across the sector ([Lubis et al., 2025](#)).

Research on board gender diversity, tax avoidance, and the cost of debt has not settled these questions. Three competing hypotheses divide the governance literature. The efficiency hypothesis, grounded in agency and resource dependence theory, holds that female directors strengthen internal oversight, curb managerial opportunism, and signal financial credibility to lenders, which lowers borrowing costs ([Usman, Farooq, Zhang, Makki, & Khan, 2019](#); [Pandey, Biswas, Ali, & Mansi, 2020](#); [García, & Herrero, 2021](#)). The inefficiency hypothesis argues the opposite: gender diversity can spark boardroom conflict, slow coordination, and delay communication, and creditors read these frictions as governance risk that raises the cost of debt ([Kamil & Appiah, 2022](#)). The neutrality hypothesis lands in between, finding no measurable link between board gender composition and how lenders price risk ([Stefany and Joni, 2020](#); [Garcia-Blandon, Argilés-Bosch, & Diego, 2024](#)). Tax avoidance research shows a similar split. [Hasan, Hoi, Wu, and Zhang \(2014\)](#) and [Shevlin et al. \(2020\)](#) find that lenders charge higher rates for tax-avoiding firms because of the transaction complexity and audit risk involved, while [Ustadza and Firmansyah \(2023\)](#) report mixed, neutral, or statistically insignificant effects. Scholars have not converged on whether banks treat tax planning as a cash cushion that protects a firm or as an agency hazard that threatens it.

This literature leaves two gaps unaddressed. First, most studies examine female directors on a single board organ in isolation, typically the board of directors alone ([Adams & Ferreira, 2009](#)). That approach fits poorly with dual-board markets like Indonesia, where supervisory and executive functions sit on separate boards and regulation mandates an independent audit committee ([Stefany & Joni, 2020](#)). Studying one organ at a time misses the combined monitoring signal that creditors

evaluate when women sit across several governance bodies at once, not one. Second, researchers have treated the path from board composition to debt pricing as a black box, tracing direct, linear effects while skipping the strategic decisions that sit between them ([Karavitis, Kokas, & Tsoukas, 2021](#)). Little research explains how gender-diverse boards navigate the trade-off between preserving cash and avoiding scrutiny when they set tax policy during a systemic shock like COVID-19, when firms need cash to survive but lenders punish transactional opacity ([Desai and Dharmapala, 2006](#); [Shevlin et al., 2020](#)). These two gaps, a fragmented view of governance and an unexamined transmission channel, leave open the central question this study asks: does board gender diversity shape the cost of debt on its own, through tax avoidance as a mediator, or through both channels at once?

This study addresses both gaps and advances governance research in two ways. First, it replaces the fragmented, single-organ view of female representation with a combined governance measure (womonboard) that captures women's presence across the Board of Directors, Board of Commissioners, and Audit Committee together, the monitoring signal creditors observe. Second, it opens the black box of debt pricing by testing corporate tax avoidance (taxavoid) as a mediating channel between board composition and loan terms, rather than assuming a direct path ([Karavitis et al., 2021](#); [Duong, & Huang, 2022](#)). This design exposes a theoretical tension. Resource Dependence Theory [Pfeffer and Salancik \(1978\)](#) predicts that gender-diverse boards use tax planning to secure cash and protect firm survival during a crisis [Jarboui and Rigueu \(2020\)](#), while Agency Theory [Jensen and Meckling \(1976\)](#) and Signaling Theory [Ross \(1977\)](#) predict that lenders read the same tax planning as a risk signal and charge a higher premium for it ([Desai and Dharmapala, 2006](#); [Shevlin et al., 2020](#)). Resolving that tension matters for Indonesia, where regulators now enforce gender representation mandates under SEOJK No. 16/SEOJK.04/2021. This study tests these relationships on a balanced panel of 60 listed manufacturing firms in Indonesia across 2021 to 2023, 180 firm-year observations in total, using robust standard error-OLS regressions with sobel test that control for profitability, liquidity, firm size, market-to-book ratio, dividend policy, audit quality, and institutional, managerial, foreign, and government ownership, and split by dividend policy, managerial ownership, and foreign ownership to test these boundary conditions. Section 2 reviews the theory and hypotheses, Section 3 details the sample and models, Section 4 reports the results, Section 5 discusses implications, and Section 6 concludes.

2. Literature Review and Hypotheses Development

2.1 Grand Theory Framework

Agency Theory anchors the study of board oversight, corporate strategy, and credit contracting. [Jensen and Meckling \(1976\)](#) define the firm as a nexus of contracts and show that the separation of ownership and control produces principal-agent conflict. Managers hold more information than the shareholders and creditors who fund them, and this asymmetry lets managers pursue their own interests rather than the owners'. Principals absorb agency costs to close that gap: monitoring expenditures they pay themselves, bonding expenditures the agent pays to signal good faith, and the residual loss that remains even after both parties spend ([Jensen & Meckling, 1976](#)). [Jensen and Meckling \(1976\)](#) extend this framework beyond the shareholder-manager conflict to the agency cost of debt, a distinction this study treats as central. Shareholders and creditors hold different payoff structures: shareholders capture the upside of risky ventures while creditors, who hold fixed claims, absorb the full downside if a firm defaults. Managers acting for shareholders therefore have an incentive to shift risk onto creditors, overinvesting in risky projects or substituting safe assets for risky ones in ways that transfer wealth away from lenders ([Jensen and Meckling, 1976](#); [Myers, 1977](#)). Lenders anticipate this behavior before it happens rather than reacting to it after the fact. They write restrictive covenants into loan contracts, monitor compliance through periodic financial reporting, and price a credit risk premium into the interest rate to protect their capital before a default ever occurs ([Bhojraj & Sengupta, 2003](#)). This premium, and the governance and disclosure choices that move it, forms the theoretical center of the model this study builds.

This study maps three variables onto that theoretical structure. Board gender diversity (womonboard) operates as the internal monitoring mechanism the theory predicts firms need. Measured across the

Board of Commissioners, Board of Directors, and Audit Committee together, a gender-diverse board strengthens oversight and ethical scrutiny, which narrows the information gap that opportunistic managers exploit ([Jensen and Meckling, 1976](#); [Adams, & Ferreira, 2009](#)). Corporate tax avoidance (taxavoid) sits in the model as the mediating variable, and it carries a double edge. [Desai and Dharmapala \(2006\)](#) show that tax planning raises cash reserves but also builds a layer of transactional complexity that managers can use to conceal bad news, divert resources, or widen information asymmetry rather than shrink it. The cost of debt (costofdebt) serves as the dependent variable: the price creditors set to cover the information risk and default hazard they carry ([Bhojraj & Sengupta, 2003](#)). To isolate these three relationships from confounding forces, the model controls for profitability (profit), liquidity (liquidity), mean-centered company size (sizec), market-to-book ratio (mbvrat), dividend policy (divpol), Big 4 audit quality (auditqual), mean-centered institutional ownership (insownc), managerial ownership (mngown), foreign ownership (foreignown), and government ownership (govown). Each control targets a specific channel through which unobserved firm characteristics might otherwise contaminate the results, and each one carries its own precedent in prior capital-structure and governance research. Together, these controls absorb default risk, external monitoring capacity, and the Type II agency conflicts between controlling family owners and minority creditors that define many emerging markets, Indonesia included ([Lubis, Darmadi, Pratiwi, Windara, Lutvian, & Firas, 2025](#)).

This combined framework predicts how board diversity, tax planning, and debt pricing interact once a macroeconomic shock hits. Classical governance research treats board gender diversity as a direct signal that lowers borrowing costs on its own. This study argues that during a systemic crisis like COVID-19, that signal travels almost entirely through tax planning, and this claim rests on a friction between Resource Dependence Theory [Pfeffer and Salancik \(1978\)](#) and Agency Theory ([Jensen & Meckling, 1976](#)). Resource Dependence Theory casts a gender-diverse board as an advisory body that secures resources for the firm, and this study argues that board uses tax planning as an internal liquidity substitute when external credit turns scarce and costly ([Pfeffer and Salancik, 1978](#); [Jarboui, & Riguen, 2020](#)). That same decision then collides with Agency Theory from the lender's side. Lenders share none of the cash savings tax avoidance generates, but they carry the full exposure to its downside: audits, penalties, and reputational damage ([Jensen & Meckling, 1976](#)). Signaling Theory [Ross \(1977\)](#) explains why relationship banks read this decision negatively rather than rewarding it: Indonesian relationship banks read the complexity and opacity that tax planning requires as a signal of credit risk, not as a sign of prudent cash management ([Ross, 1977](#); [Spence, 1973](#)). Creditors respond by demanding a higher risk premium in return for extending credit under that uncertainty. Put together, the framework predicts that the cash-conservation strategy a gender-diverse board pursues to survive a crisis ends up raising, not lowering, the firm's cost of debt, because creditors price the tax-related agency risk this strategy creates rather than the governance quality that motivated it.

2.2 Hypotheses Development

2.2.1 Board Gender Diversity and the Cost of Debt

Agency Theory ([Jensen & Meckling, 1976](#)) and Resource Dependence Theory ([Pfeffer & Salancik, 1978](#)) together explain why board gender diversity should lower a firm's borrowing costs. Agency Theory locates the core friction in credit contracting between risk-averse lenders and managers who may shift risk, substitute assets, or hoard bad news at creditors' expense ([Jensen and Meckling, 1976](#); [Myers, 1977](#)). Female directors counter these hazards through documented behavioral differences: higher risk aversion, lower overconfidence, and a stronger commitment to ethical standards and financial transparency than their male counterparts show ([Jianakoplos, & Bernasek, 1998](#); [Sunden, & Surette, 1998](#); [Charness, & Gneezy, 2012](#)). [Lara, Osmá, and Penalva \(2017\)](#) find that this behavioral profile improves accounting disclosure quality and limits managers' room to misuse discretionary cash flow. Resource Dependence Theory adds a second mechanism: a diverse board brings varied human capital, cognitive range, and problem-solving approaches that secure external resources and build corporate legitimacy, both of which cushion a firm against insolvency during a shock ([Pfeffer & Salancik, 1978](#)). These two mechanisms reinforce one another rather than operating in isolation. Relationship banks read this combined governance signal as evidence of a disciplined, lower-risk

borrower and price their loans accordingly, lowering the default risk premium they charge to firms that demonstrate this profile.

Empirical research on board gender diversity and credit pricing splits into two camps. One camp find that diversity lowers borrowing costs. [Usman, Farooq, Zhang, Makki, and Khan \(2019\)](#) show that Chinese lenders charge firms with at least one female director 4 percent less than all-male boards. [Pandey, Biswas, Ali, and Mansi \(2020\)](#) in Australia and [García and Herrero \(2021\)](#) across Europe report the same pattern: higher female representation narrows interest spreads and lowers bankruptcy risk by softening creditor-shareholder conflict. Turkish boards with a female chairperson or directors reduce lenders' perceived default risk directly. A second camp complicates this picture. [García-Blandon, Argilés-Bosch, and Diego \(2024\)](#) exploit Norway's mandatory gender quota in a difference-in-differences design and find no change in borrowing costs after the quota pushed female representation up sharply, which suggests earlier linear findings may reflect endogeneity rather than a causal effect. [Stefany and Joni \(2020\)](#) and [Dewi \(2024\)](#) report similar neutrality in Indonesia, where female board appointments often trace to family ties rather than expertise. [Kamil and Appiah \(2022\)](#) find a positive relationship in Ghana, the opposite of what the efficiency hypothesis predicts, and [Fleitas-Castillo, Peña-Martel, Pérez-Alemán, and Santana \(2025\)](#) document an inverted U-shape in Spain: a small female presence raises borrowing costs through tokenism, and costs fall only after female representation crosses a 30 percent threshold.

This study reconciles these conflicting findings by treating the boardroom as a source of governance signals that relationship banks price directly, rather than as a demographic box lenders check once and ignore. Agency Theory and Resource Dependence Theory together predict that a board with female representation spread across the Board of Directors, Board of Commissioners, and Audit Committee sends a credible signal of strong internal control and prudent strategy, not a token gesture confined to one seat. During a macroeconomic crisis, when information asymmetry runs high and bank credit tightens, the risk-averse, transparent oversight that female directors bring functions as a default-risk mitigant that lenders can observe and reward with better loan terms. Country-specific variation and tokenism concerns do not undercut this logic; they explain why some single-market studies find weaker effects, not why the underlying mechanism fails to hold across contexts. Single-organ measures, the kind most prior studies rely on, likely understate the signal because they capture only a fraction of the governance structure a lender observes when underwriting a loan. A holistic measure that spans three governance organs, rather than a single board seat, should therefore capture the signal lenders respond to more completely. This study proposes:

H₁: Board gender diversity has a direct negative effect on the cost of debt

2.2.2 Tax Avoidance and the Cost of Debt

Agency Theory ([Jensen & Meckling, 1976](#)) and Signaling Theory ([Ross, 1977](#)) together explain why tax avoidance should raise a firm's cost of debt. Creditors hold fixed claims and want to minimize default risk and managerial moral hazard above all else ([Jensen & Meckling, 1976](#)). Tax avoidance requires complex, structured, opaque financial arrangements to execute, and [Desai and Dharmapala \(2006\)](#); [Desai and Dharmapala \(2009\)](#) describe the result as a transaction screen: a shield of complexity that lets managers extract private benefits, pursue rent-seeking, or hide bad operational news behind it. Tax avoidance, in this reading, does more than transfer wealth from the state to shareholders; it widens the information gap between a firm's insiders and its outside lenders ([Desai & Dharmapala, 2006](#)). Signaling Theory explains how banks respond to that widened gap. Lenders cannot easily tell value-enhancing tax planning apart from opportunistic extraction, so they treat the complexity and opacity itself as a signal of default risk and future regulatory exposure ([Ross, 1977](#)). Lenders bear the downside of that exposure, tax audits, financial penalties, reputational damage, without sharing in any of the cash savings tax avoidance produces for the firm. To protect their capital against a risk they cannot verify directly, they charge a higher interest rate, and that premium raises the firm's cost of debt.

Empirical work on tax avoidance and credit pricing shows a similar split between risk-exposure and cash-shield views. [Hasan, Hoi, Wu, and Zhang \(2014\)](#) find that tax-avoiding firms face higher bank loan spreads, shorter maturities, and tighter covenants, evidence that commercial banks treat tax aggressiveness as a credit hazard. [Shevlin, Urcan, and Vasvari \(2020\)](#) find the same pattern among public and private debtholders, who demand a premium to cover the cash flow volatility tax-sheltering creates. [Kovermann \(2018a\)](#) and [Ladhari \(2025\)](#) confirm this sensitivity in bank-dominated markets, where lenders adjust pricing upward to hedge against future audits and regulatory action. [Lim \(2011\)](#) documents the same positive relationship in Korea and finds it grows stronger where corporate governance and external monitoring run weak. A second stream of research pushes back against this consensus. Tax avoidance can act as a liquidity-generating cash shield that lowers default risk and borrowing costs under certain loan structures. [Trisnawati \(2017\)](#) and [Fajarwati \(2023\)](#), working in emerging markets, find the direct effect of tax avoidance on the cost of debt turns statistically insignificant or even negative once strong governance or institutional blockholders moderate the relationship, evidence that context shapes how lenders read tax planning rather than the practice carrying a fixed price everywhere.

This study reconciles the cash-shield and risk-exposure views by centering Indonesia's bank-dominated, low-trust institutional setting. Between 2021 and 2023, COVID-19 pushed corporate default risk to a peak and rationed commercial bank credit, and in that environment, lenders scrutinize any move toward financial complexity or transaction opacity with more suspicion than they would apply in calmer years. Tax planning may preserve cash, but the opacity it creates and the audit exposure it invites function as negative signals to Indonesian relationship lenders that outweigh the liquidity benefit the firm gains internally. Agency Theory and Signaling Theory both point to the same outcome: banks treat the short-term cash gains from tax avoidance as secondary to the long-term agency risk and audit exposure it carries, and they charge manufacturing firms a higher risk premium to compensate for that exposure. Indonesia's concentrated, family-dominated ownership structures add a further layer of concern for lenders, since controlling owners can direct tax strategy toward private benefit rather than firm-wide value, a possibility banks price in even before they see the outcome. This concentration effect compounds the baseline risk premium that tax opacity already carries in a bank-dominated system, where lenders have limited recourse beyond the relationship itself if a borrower turns opaque. This study proposes:

H₂: Corporate tax avoidance has a direct positive effect on the cost of debt

2.2.3 The Mediating Role of Tax Avoidance

Agency Theory ([Jensen & Meckling, 1976](#)), Resource Dependence Theory ([Pfeffer & Salancik, 1978](#)), and Signaling Theory ([Ross, 1977](#)) combine to explain why tax avoidance mediates the link between board gender diversity and the cost of debt. Resource Dependence Theory frames the board as a body that secures resources the firm needs to survive environmental uncertainty ([Pfeffer & Salancik, 1978](#)). Under the severe credit constraints COVID-19 imposed between 2021 and 2023, this study argues that a gender-diverse board guides the firm toward tax planning as an internal substitute for scarce external credit ([Jarboui & Riguen, 2020](#)). That cash-conservation choice then runs into Agency Theory from the lender's side. Tax planning raises after-tax cash reserves, but it also builds the complex, opaque financial arrangement [Jensen and Meckling \(1976\)](#) and [Desai and Dharmapala \(2006\)](#) describe as a shelter for managerial opportunism and rent extraction. Signaling Theory explains what happens next: lenders cannot separate legitimate cash preservation from opportunistic tax manipulation, so they read the added tax-planning intensity as a signal of default risk and future regulatory drain ([Ross, 1977](#)). Banks respond by raising the risk premium they charge on the loan. Female board leadership, in this model, never touches credit pricing directly; its influence travels entirely through the tax-planning choices the board makes on the firm's behalf.

Empirical research supports this two-step pathway from both ends. On the first leg, from governance to tax choices, [Lanis and Richardson \(2011\)](#), [Richardson, Taylor, and Lanis \(2016\)](#), and [Jarboui and Riguen \(2020\)](#) show that board gender diversity shapes tax strategy: female directors discourage aggressive, illegal tax evasion while supporting legal tax planning that still raises firm value. On the

second leg, from tax choices to credit pricing, [Hasan, Hoi, Wu, and Zhang \(2014\)](#) and [Shevlin, Urcan, and Vasvari \(2020\)](#) show that banks and public debtholders price and penalize tax avoidance with a real interest premium. [Duong and Huang \(2022\)](#) connect both legs in the ASEAN region, using path analysis and Sobel tests to confirm that tax avoidance mediates the effect of governance and sustainability signals on borrowing costs. Other studies complicate the picture. [Lim \(2011\)](#) in [Sánchez-Ballesta and Yagüe \(2023\)](#) in [Ladhari, Lakhal, and Ben \(2025\)](#) in France find a negative relationship between tax avoidance and the cost of debt, arguing tax savings substitute for debt and reduce default risk in financially constrained or smaller firms. [Garcia-Blandon, Argilés-Bosch, and Diego \(2024\)](#) find no direct link between board gender diversity and borrowing costs at all, a result that fits a fully mediated model better than a direct-effect one. These mixed findings leave the mediation pathway open, and this study tests it directly rather than assuming it from prior work.

This study tests that mediation pathway in Indonesian manufacturing firms during the COVID-19 period, when operational disruption drove a sharp rise in PKPU bankruptcy filings and made cash preservation a matter of survival ([Martias, Syafei, Adriyani, & Aswad, 2023](#)). Resource Dependence Theory predicts that a gender-diverse board, measured across the Board of Directors, Board of Commissioners, and Audit Committee (womonboard), guides firms toward legal tax-avoidance strategies to protect cash flow during that period. Indonesia's bank-dominated, low-trust credit market runs on relationship transparency and capital safety above all else, so this cash-preservation choice does not travel through the credit market unnoticed. When firms adopt complex tax-planning schemes, Agency Theory predicts banks will treat the resulting opacity and audit exposure as a credit hazard, and Signaling Theory predicts that this signal will override whatever positive signal board gender diversity sends on its own once lenders see both together. Banks respond by charging a higher borrowing premium to cover that combined risk. The cash-preservation strategy that female board leaders pursue during a global crisis therefore raises borrowing costs indirectly, through the risk premium banks attach to the tax opacity that strategy creates rather than through the board's composition itself, a distinction this study's mediation model is built to detect. This study proposes:

H₃: Board gender diversity has an indirect effect on the cost of debt through the mediation of corporate tax avoidance

3. Research Methodology

3.1 Research Design and Sample Selection

We designed this study as a quantitative panel study to test how board gender diversity, corporate tax avoidance, and the cost of debt relate to one another. We drew our target population from every manufacturing company listed on the Indonesia Stock Exchange (IDX) during fiscal years 2021 through 2023, a period defined by the liquidity strain and financial pressure COVID-19 imposed on Indonesian firms. We selected our final sample through purposive sampling, applying five sequential criteria. Each firm had to publish complete, audited annual reports and financial statements across all three years. Each firm had to report its financial statements in Indonesian Rupiah, which rules out distortion from currency translation. Each firm had to disclose interest expenses and financial liabilities in its financial statement notes. Each firm had to carry both short-term and long-term interest-bearing debt on its balance sheet in every observed year. Finally, each firm's tax avoidance score, proxied by the Effective Tax Rate (ETR), had to fall between 0 and 1; we excluded firms with negative ETRs or ETRs above 100 percent, since these extremes usually trace to temporary tax loss carryforwards rather than genuine avoidance behavior. Applying these five filters to an initial population of 313 listed manufacturing firms eliminated 253 companies and left a final balanced panel of 60 firms observed over three years, yielding 180 firm-year observations in total [Table 1](#).

Table 1. Purposive sampling selection criteria and observations

No	Sampling Criteria Description	Companies	Observations
1	Manufacturing sector companies listed on the Indonesia Stock Exchange (IDX) during 2020–2023	313	939

No	Sampling Criteria Description	Companies	Observations
2	Financial reports are not available publicly during the period of 2020–2023	(94)	(282)
3	Financial reports are not using rupiah as reporting currency during the period of 2020–2023	(37)	(111)
4	Financial reports do not clearly present interest of financial liabilities data	(76)	(228)
5	Companies do not consistently have short/long-term debt during the period of 2020–2023	(10)	(30)
6	Companies with tax avoidance score calculation value below 0 and above 1	(36)	(105)
7	Final balanced sample size representing Indonesian manufacturing firms	60	180

3.2 Operational Definition and Measurement of Variables

We measure the dependent variable, cost of debt (*costofdebt*), as the ratio of total interest expense incurred during the fiscal year to the average of short-term and long-term interest-bearing debt, multiplied by 100 to express a percentage rate, following [Bacha et al. \(2021\)](#) and [Lim \(2011\)](#). We measure board gender diversity (*womonboard*), our independent variable, as the sum of female members on the Board of Directors, Board of Commissioners, and Audit Committee divided by the total number of members across those three organs, following [Adams and Ferreira \(2009\)](#) and [Usman et al. \(2019\)](#). We measure the mediating variable, corporate tax avoidance (*taxavoid*), using the Effective Tax Rate, the ratio of total tax expense to pre-tax income ([Angie et al., 2024](#)), and we map it as 1 minus ETR so that higher values signal greater tax avoidance intensity. We add ten control variables to isolate the pathways we test: profitability (*profit*) as Return on Assets, net income divided by total assets ([Yuliarti et al., 2021](#)); liquidity (*liquidity*) as the Current Ratio, current assets divided by current liabilities; company size (*sizec*) as the mean-centered natural logarithm of total assets and growth opportunity (*mbvrat*) as market capitalization divided by book value of equity ([Kovermann, 2018b](#)). We code dividend policy (*divpol*) as 1 if the firm distributed cash dividends and 0 otherwise; audit quality (*auditqual*) as 1 if a Big 4 firm conducted the audit and 0 otherwise; managerial, foreign, and government ownership (*mngown*, *foreignown*, *govown*) each as 1 if that ownership type is present and 0 otherwise; and institutional ownership (*insownc*) as the mean-centered percentage of shares institutional investors hold ([Lim, 2011](#)).

3.3 Data Collection Method

We drew our data from secondary, audited sources rather than surveys or interviews. Our primary source is the set of audited annual reports and financial statements that Indonesian manufacturing firms listed on the IDX filed for fiscal years 2021, 2022, and 2023. We downloaded these reports from the official IDX website (www.idx.co.id) and from each company's own website, cross-checking the two sources against each other whenever a report appeared on both. Indonesia's Financial Services Authority (*Otoritas Jasa Keuangan*, or OJK) regulates how firms disclose annual reports under SEOJK No. 16/SEOJK.04/2021, which gives us confidence that the disclosures we drew on meet a consistent standard of reliability and transparency across firms and years. We extracted the financial and governance variables ourselves rather than relying on a pre-built commercial database, since several of the variables our model needs, board gender counts across three governance organs in particular, do not appear in standard financial data feeds. We pulled board gender counts, interest expenses, pre-tax income, and ownership figures by hand from the notes to the financial statements and the corporate governance sections of each annual report, cross-checking entries against the source documents twice to catch transcription errors before they entered the dataset.

3.4 Data Analysis Method

We ran the full empirical analysis in STATA version 18, working through four sequential stages from description to inference. First, we calculated descriptive statistics, mean, standard deviation, minimum, and maximum, to characterize the panel at the univariate level. Second, we computed a

Pearson pairwise correlation matrix to check bivariate relationships and flag preliminary multicollinearity concerns, treating any coefficient above 0.70 threshold as a warning sign that a pair of variables needs closer inspection before we trust the regression output.

Third, we ran the standard set of classical assumption tests: residual normality, multicollinearity through Variance Inflation Factors, autocorrelation, and heteroscedasticity. We mean-centered the continuous variables for company size and institutional ownership before this step to resolve multicollinearity in advance (Draief, 2018). Fourth, we tested the direct and mediated relationships through a two-stage path analysis built on the Common Effect Model, estimated by Ordinary Least Squares with robust standard errors to guard against heteroscedasticity and serial correlation. We then fed the coefficients and standard errors from these robust regressions into a [Sobel \(1982\)](#) test to check whether the indirect mediation pathway reaches statistical significance. Finally, we reran both the robust regressions and the Sobel tests across sub-samples split by dividend policy, managerial ownership, and foreign ownership, our robustness checks on the main results.

4. Results and Discussions

4.1 Critical Discussion

Three findings anchor this analysis. Board gender diversity carries no direct effect on the cost of debt (Model 3: coefficient = -1.076, $p = 0.702$), and Hypothesis 1 fails. Tax avoidance carries a strong positive effect on the cost of debt (Model 3: coefficient = 4.993, $p = 0.029$), and Hypothesis 2 holds. The Sobel test places the indirect path at the edge of conventional significance ($z = 1.861$, $p = 0.063$), so Hypothesis 3 clears the 10% threshold but misses the 5% threshold. The total effect of board gender diversity on the cost of debt confirms the cancellation behind that pattern: coefficient = -0.098, $p = 0.958$, a result indistinguishable from zero. Three theories explain why these findings sit together this way. Agency Theory ([Jensen & Meckling, 1976](#)) explains why banks price tax avoidance as a threat: Indonesian commercial lenders operate in a low-trust, relationship-based system, and they treat tax planning as cover for wealth extraction rather than as evidence of managerial skill. A firm that lowers its effective tax rate invites audits, retroactive assessments, and penalties from the Directorate General of Taxes (DJP), and lenders write that exposure into loan terms. Resource Dependence Theory ([Pfeffer & Salancik, 1978](#)) explains the first-stage result: women-led boards increased tax planning (Model 2: coefficient = 0.196, $p = 0.051$) during the 2021-2023 liquidity shock, a pattern that fits cash preservation rather than risk-taking. Boards under insolvency pressure turned to legal tax minimization to protect working capital. Signaling Theory ([Ross, 1977](#)) explains why that governance intent failed to reach creditors: banks read the resulting tax-planning intensity as a negative signal regardless of the motive behind it, and this penalty canceled out any benefit board diversity might have carried on its own. The direct path from board composition to borrowing cost collapses into statistical noise not because gender diversity carries no influence, but because its influence travels through a channel that creditors punish, as shown in the [Table 2](#).

Table 2. The summary statistics of the continuous variables

Variables	Obs	Mean	Std. Dev.	Min	Max
costofdebt	180	6.842	2.525	1.177	19.186
womonboard	180	0.125	0.104	0.000	0.571
taxavoid	180	0.759	0.106	0.275	0.992
profit	180	0.067	0.072	-0.152	0.412
liquidity	180	2.319	2.055	0.085	14.207
sizec	180	0.000	1.511	-2.574	3.648
mbvrat	180	1.627	1.359	-0.054	6.509
insownc	180	0.000	0.205	-0.644	0.333

Table 3. The frequency distributions of the binary dummy variables

Variables	Value = 0 Freq	Value = 0 %	Value = 1 Freq	Value = 1 %
divpol	46	25.56	134	74.44

Variables	Value = 0 Freq	Value = 0 %	Value = 1 Freq	Value = 1 %
auditqual	100	55.56	80	44.44
mngown	62	34.44	118	65.56
foreignown	125	69.44	55	30.56
govown	164	91.11	16	8.89

This result in the Table 3 set fits the dominant stream of international corporate finance research on tax avoidance and debt pricing. [Hasan, Hoi, Wu, and Zhang \(2014\)](#) show that banks charge higher loan spreads, shorten maturities, and impose tighter covenants on tax-avoiding borrowers, and our coefficient of 4.993 matches that pattern of penalty pricing. The mechanism runs through information: a lower effective tax rate tells a credit officer that the firm's reported earnings diverge from its taxable income, and that divergence raises the cost of verifying true cash flow before a loan committee can sign off on new terms. [Shevlin, Urcan, and Vasvari \(2020\)](#) document that public and private debt holders price the cash flow volatility tied to tax-sheltering schemes, a result consistent with the risk premium we observe, and their evidence spans both bond markets and syndicated loan markets, which suggests the penalty travels across financing channels rather than sitting inside bank debt alone. Within [Angie, Hadiwibowo, and Aziz \(2024\)](#) find that tax avoidance and tax risk raise borrowing costs because Indonesian creditors treat tax-planning opacity as a marker of default risk that warrants closer monitoring and higher rates. [Masri and Martani \(2012\)](#) and Marcelliana and Purwaningsih (2014) reach the same conclusion in earlier Indonesian samples: creditors read tax avoidance as risky behavior and charge for it. On the governance side, [Duong and Huang \(2022\)](#) frame tax planning as a mediation channel through which board decisions reach creditors, and our Sobel result gives that framework empirical support, even at a marginal significance level. Taken together, these studies describe a credit market that treats tax-planning complexity as a cost rather than a shield, and Indonesian manufacturing firms operating through 2021-2023 paid that cost through elevated borrowing premiums tied to their tax strategy, regardless of the board's original intent behind the strategy, as shown in the Table 4.

Table 4. Pearson pairwise correlation matrix (Columns 1 to 7)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) costofdebt	1.000						
(2) womonboard	0.046	1.000					
(3) taxavoid	0.115	0.193*	1.000				
(4) profit	-0.184*	-0.187*	0.201*	1.000			
(5) liquidity	-0.007	0.177*	0.197*	0.117	1.000		
(6) sizec	-0.181*	-0.178*	-0.031	0.103	-0.067	1.000	
(7) mbvrat	0.042	-0.015	0.019	0.308*	0.012	-0.067	1.000
(8) divpol	-0.092	-0.068	0.058	0.347*	0.142*	0.364*	0.167*
(9) auditqual	-0.164*	-0.162*	0.057	0.170*	-0.036	0.578*	0.038
(10) insownc	-0.159*	0.133*	0.088	-0.074	0.071	-0.026	0.043
(11) mngown	0.148*	-0.112	-0.118	0.158*	-0.074	-0.114	0.153*
(12) foreignown	-0.260*	-0.113	-0.018	0.033	-0.150*	0.149*	-0.015
(13) govown	0.104	-0.055	-0.084	-0.164*	-0.060	0.062	-0.067

*Note: * indicates significance at the 10% level ($p < 0.10$).

Table 5. Pearson pairwise correlation matrix (columns 8 to 3)

Variables	(8)	(9)	(10)	(11)	(12)	(13)
(1) costofdebt						
(2) womonboard						
(3) taxavoid						
(4) profit						
(5) liquidity						
(6) sizec						

Variables	(8)	(9)	(10)	(11)	(12)	(13)
(7) mbvrat						
(8) divpol	1.000					
(9) auditqual	0.165*	1.000				
(10) insownc	0.176*	-0.006	1.000			
(11) mngown	0.058	-0.058	-0.162*	1.000		
(12) foreignown	-0.137*	0.159*	0.199*	-0.204*	1.000	
(13) govown	-0.041	0.113	0.014	-0.020	-0.207*	1.000

*Note: * indicates significance at the 10% level ($p < 0.10$).

Table 5 a separate stream of research reaches the opposite conclusion, and the contrast exposes what sets Indonesia apart. [Sánchez-Ballesta and Yagüe \(2023\)](#) treat tax planning as a liquidity-generating cash shield that lowers default risk and borrowing costs for credit-constrained firms. [Francis, Hasan, and Wu \(2013\)](#) and [Richardson, Taylor, and Lanis \(2016\)](#) find that gender-diverse boards reduce tax aggressiveness through risk aversion and ethical alignment, the reverse of what we find here. Institutional structure resolves both discrepancies. Developed common-law markets run on liquid public bond markets and dispersed ownership, and Type I agency conflicts between managers and diffuse shareholders dominate those settings; a cash shield reassures dispersed shareholders and outside bondholders alike, because neither group holds enough control to divert the cash for private ends, and bondholders in those markets can also exit through a liquid secondary market if their trust in a borrower slips. Indonesia runs on bank-dominated credit and concentrated, family-controlled ownership ([Stefany, & Joni, 2020](#); [Lubis, Darmadi, Pratiwi, Windara, Lutvian, & Firas, 2025](#)), and Type II conflicts between controlling families and outside creditors dominate instead. A relationship lender watching a family-controlled firm expand its tax planning does not read discipline; the lender reads a family owner using tax complexity to extract value at creditor expense. During the 2021-2023 cash crisis, the audit exposure and opacity penalty that bank monitors attached to tax planning outweighed whatever short-term liquidity it generated for these firms, and that imbalance explains why the cash-preservation strategy that women-led boards pursued drew a borrowing penalty instead of a reward. The null result for Hypothesis 1 fits the same institutional logic and matches [Stefany and Joni \(2020\)](#) in Indonesia and [Garcia-Blandon, Argilés-Bosch, and Diego \(2024\)](#) in Norway: token female board representation does not move lenders unless it comes with a substantive operational or financial change lenders can verify on their own.

Table 6. The robust panel path regression results for the overall sample

Variables	Model 1: Main Model (Dep: costofdebt)	Model 2: Mediator Model (Dep: taxavoid)	Model 3: Direct Model (Dep: costofdebt)
taxavoid	—	—	4.993** (2.267)
womonboard	-0.0977 (2.759)	0.196* (0.0997)	-1.076 (2.802)
profit	-7.174* (3.636)	0.377** (0.165)	-9.058** (4.056)
liquidity	0.00276 (0.116)	0.00582** (0.00259)	-0.0263 (0.115)
sizec	-0.158 (0.225)	-0.00474 (0.00725)	-0.135 (0.220)
mbvrat	0.171 (0.170)	-0.00393 (0.00620)	0.191 (0.172)
divpol	0.0185 (0.541)	-0.00776 (0.0265)	0.0573 (0.557)
auditqual	-0.270 (0.669)	0.0216 (0.0206)	-0.379 (0.651)
insownc	-1.621 (1.562)	0.0363 (0.0604)	-1.802 (1.475)
mngown	0.514 (0.565)	-0.0266 (0.0236)	0.648 (0.545)
foreignown	-0.937 (0.662)	-0.0110 (0.0229)	-0.882 (0.644)
govown	0.506 (0.732)	-0.0184 (0.0415)	0.598 (0.716)
Constant	7.057*** (0.952)	0.721*** (0.0410)	3.456* (1.883)
Observations	180	180	180
R-squared	0.153	0.142	0.190

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Table 6 Robust standard errors are reported in parentheses under each regression coefficient. All models are estimated using the Common Effect Model (CEM) with robust variance-covariance estimations to control for heteroscedasticity and serial correlation in panel data. Variables 'sizec' and 'insownc' are mean-centered to eliminate multicollinearity.

Table 7. The Sobel-Goodman mediation test results for the overall sample

Mediation Test Type	Estimate	Std. Error	z-statistic	p-value
Sobel Test	0.978	0.525	1.861	0.063*
Aroian Test	0.978	0.544	1.798	0.072*
Goodman Test	0.978	0.506	1.931	0.053*

Note: * indicates significance at the 10% level ($p < 0.10$). Table 7 the indirect effect coefficient is calculated as $a * b = 0.196 * 4.993 = 0.978$. The Sobel z-statistic of 1.861 is significant at the 10% level, showing a marginal indirect mediation transmission channel of corporate tax avoidance.

Table 8. Path Coefficients and Mediation Effects for the overall sample

Path	Relationship	Coefficient	t / z Value	p-value	Conclusion
Path a	womonboard → taxavoid	0.196	t = 1.970	0.051*	Positive, Sig at 10%
Path b	taxavoid → costofdebt	4.993	t = 2.200	0.029**	Positive, Significant
Path c'	womonboard → costofdebt (Direct)	-1.076	t = -0.380	0.702	Negative, Insignificant
Path ab	womonboard → costofdebt (Indirect)	0.978	z = 1.861	0.063*	Positive, Sig at 10%
Total Effect	womonboard → costofdebt	-0.098	z = -0.053	0.958	Negative, Insignificant

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Table 8 Summarizes the key direct and indirect pathways modeled in the path analysis. Direct effect (H_1) is rejected at standard 5%, while tax avoidance direct effect (H_2) is accepted at 5%. The indirect effect (H_3) via mediation of tax avoidance is supported at the 10% level.

These results carry consequences for three groups. Corporate managers face a genuine trade-off: tax planning preserves cash in the short run, consistent with Resource Dependence Theory, but it raises the cost of long-term debt, consistent with Agency Theory, and CFOs who lean on tax minimization during a liquidity crunch should expect creditors to charge for it once the crunch passes. Firms can offset part of that penalty through transparent communication channels that show lenders their tax positions stay within legal bounds and do not mask wealth extraction toward controlling shareholders. Bank credit officers gain a specific lesson from the mediation result: board composition metrics and tax risk profiles carry information that standard liquidity and leverage ratios miss, and credit models that ignore governance structure will misprice a segment of tax-avoiding borrowers on both sides, charging too little for opaque firms and too much for transparent ones. A loan officer who adds a governance screen to the standard leverage and liquidity checks can separate a defensive tax posture from an extractive one before the loan closes, not after a default forces the question. Regulators face the clearest mandate here. The Financial Services Authority (OJK) and the Directorate General of Taxes (DJP) can use SEOJK No. 16/SEOJK.04/2021 to push firms toward disclosure of tax-risk management and governance practice, and that disclosure would cut the information asymmetry that now forces banks to price uncertainty instead of actual risk. A credit market that can tell defensive tax planning apart from extractive tax planning prices both with more accuracy, and Indonesian manufacturing firms stand to gain from that precision on both sides of the ledger, as would the banks that lend to them.

4.2 Robustness Checks

Splitting the sample by dividend policy tests whether an external signal can offset the tax-planning penalty, and the results confirm that it can. Among dividend-paying firms (Model 2.1, $N = 134$, $R\text{-squared} = 0.268$), tax avoidance carries no significant effect on the cost of debt (coefficient = 3.879, $p = 0.128$), and the mediation path stays flat (Sobel $z = 0.715$, $p = 0.475$). Among firms that pay no dividends (Model 2.2, $N = 46$, $R\text{-squared} = 0.255$), the same tax-avoidance coefficient grows to 5.687 and clears the 10% threshold ($p = 0.087$), though the mediation path stays insignificant (Sobel $z = 1.136$, $p = 0.256$). Signaling Theory explains the gap: cash dividends signal financial health and earnings quality to outside creditors (Easterbrook, 1984; Bacha, Darmadi, & Windara, 2021), and that signal offsets the negative read on tax-planning opacity. A bank that watches a firm pay dividends through a liquidity crisis infers that the firm holds cash to spare beyond what its tax strategy generates, and that inference softens the penalty attached to an aggressive tax position. A firm that withholds dividends sends no such signal, so lenders fall back on tax-planning intensity as their main read of firm risk and price it at the higher rate we observe here. Dividend policy functions as a substitute signal, not a complement, and its presence or absence sets whether tax planning reads to the bank on the other side of the loan as prudent cash management or as opportunistic extraction dressed up in legal form. This boundary condition also carries a practical warning for non-dividend firms: cutting dividends to conserve cash during a downturn can raise the cost of the very debt that cash conservation was meant to avoid, so the two levers work against each other unless the firm finds another way to signal its intent.

Table 9. Robustness regression results for dividend policy sub-samples (model 2.1 vs. model 2.2)

Variables	Model 2.1 (Paying Dividends, D=1) Full (costofdebt)	Model 2.1 (Paying Dividends, D=1) Mediator (taxavoid)	Model 2.1 (Paying Dividends, D=1) Direct (costofdebt)	Model 2.2 (Non-Paying, D=0) Full (costofdebt)	Model 2.2 (Non-Paying, D=0) Mediator (taxavoid)	Model 2.2 (Non-Paying, D=0) Direct (costofdebt)
taxavoid			3.879 (2.615)			5.687* (3.179)
womonboard	-2.066 (2.820)	0.0585 (0.0811)	-2.293 (2.890)	6.715 (5.569)	0.476* (0.259)	4.010 (6.214)
profit	-6.488* (3.700)	0.544*** (0.181)	-8.600** (3.842)	-9.325 (7.862)	0.500 (0.614)	-12.17 (8.553)
liquidity	-0.0167 (0.101)	0.00231 (0.00310)	-0.0257 (0.104)	-0.332 (0.338)	0.00802 (0.00891)	-0.378 (0.328)
sizec	-0.153 (0.218)	0.00280 (0.00562)	-0.164 (0.218)	-0.112 (0.845)	-0.0305 (0.0181)	0.0611 (0.777)
mbvrat	0.111 (0.161)	-0.00908 (0.00659)	0.146 (0.170)	0.831* (0.466)	0.0264 (0.0232)	0.681 (0.430)
auditqual	-0.572 (0.706)	-0.00395 (0.0183)	-0.556 (0.705)	0.966 (1.201)	0.0369 (0.0593)	0.756 (1.110)
insownc	-3.443** (1.416)	-0.0245 (0.0405)	-3.348** (1.419)	-1.164 (2.497)	0.0370 (0.103)	-1.375 (2.503)
mngown	0.799 (0.481)	-0.0514** (0.0242)	0.999* (0.515)	-0.383 (1.486)	0.00632 (0.0529)	-0.419 (1.318)
foreignown	-1.144** (0.538)	0.00163 (0.0204)	-1.151** (0.535)	0.547 (1.532)	0.0218 (0.0569)	0.423 (1.579)
govown	0.518 (0.812)	-0.0409 (0.0245)	0.677 (0.764)	1.840 (2.052)	0.0716 (0.142)	1.433 (2.074)
Constant	7.460*** (0.792)	0.761*** (0.0419)	4.508** (2.169)	5.452** (2.063)	0.567*** (0.117)	2.230 (2.865)
Observations	134	134	134	46	46	46
R-squared	0.254	0.246	0.268	0.191	0.274	0.255

Table 9 show Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Continuous variables (sizec and insownc) are mean-centered. Table 9 presents the regression results for the mediation analysis of tax avoidance (taxavoid) in the relationship between dividend policy and cost of debt, separated into dividend-paying firms ($D=1$) and non-paying firms ($D=0$). For dividend-paying firms, taxavoid shows a positive but insignificant effect on cost of debt in both the full and direct models, indicating that tax avoidance does not significantly influence debt costs in this group. The mediation model shows that profitability has a positive and significant effect on tax avoidance, while managerial ownership negatively affects tax avoidance. In the cost of debt model, profitability,

institutional ownership, and foreign ownership exhibit significant negative effects, suggesting that stronger financial performance and ownership monitoring mechanisms may reduce financing costs.

Table 10. Robustness regression results for managerial ownership sub-samples (model 3.1 vs. model 3.2)

Variables	Model 3.1 (Mngown=1, With Mng) Full (costofdebt)	Model 3.1 (Mngown=1, With Mng) Mediator (taxavoid)	Model 3.1 (Mngown=1, With Mng) Direct (costofdebt)	Model 3.2 (Mngown=0, No Mng) Full (costofdebt)	Model 3.2 (Mngown=0, No Mng) Mediator (taxavoid)	Model 3.2 (Mngown=0, No Mng) Direct (costofdebt)
taxavoid			1.069 (2.123)			6.715* (3.740)
womonboard	-2.719 (3.134)	0.172** (0.0766)	-2.903 (3.227)	6.603* (3.250)	0.361 (0.359)	4.178 (3.072)
profit	-3.711 (3.746)	0.419** (0.190)	-4.159 (3.778)	-7.418 (8.249)	0.488 (0.701)	-10.69 (9.420)
liquidity	-0.203 (0.258)	0.0132** (0.00547)	-0.217 (0.265)	-0.0100 (0.0606)	0.000548 (0.00383)	-0.0137 (0.0634)
sizec	-0.0943 (0.254)	-0.00187 (0.00816)	-0.0923 (0.257)	-0.664 (0.449)	-0.0217 (0.0175)	-0.518 (0.380)
mbvrat	0.168 (0.196)	-0.00433 (0.00719)	0.173 (0.199)	0.651* (0.341)	0.00612 (0.0187)	0.610* (0.316)
divpol	0.781 (0.673)	-0.0292 (0.0367)	0.812 (0.654)	-1.141* (0.641)	0.0373 (0.0371)	-1.392* (0.802)
auditqual	-0.703 (0.827)	0.0238 (0.0209)	-0.728 (0.836)	0.623 (0.850)	0.0424 (0.0539)	0.338 (0.812)
insownc	-2.635 (1.656)	-0.0207 (0.0434)	-2.613 (1.676)	-0.799 (2.276)	0.104 (0.0929)	-1.498 (2.090)
foreignown	-0.247 (0.795)	0.00157 (0.0216)	-0.249 (0.794)	-2.339*** (0.754)	-0.0239 (0.0459)	-2.179** (0.831)
govown	1.983*** (0.720)	0.0411 (0.0523)	1.939** (0.744)	-2.295** (0.993)	-0.137** (0.0581)	-1.375 (0.996)
Constant	7.372*** (0.976)	0.685*** (0.0432)	6.640*** (1.341)	6.872*** (1.345)	0.668*** (0.122)	2.384 (2.219)
Observations	118	118	118	62	62	62
R-squared	0.208	0.225	0.210	0.423	0.231	0.493

Table 10 show Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Continuous variables (sizec and insownc) are mean-centered. Table 10 examines the moderating role of managerial ownership in the relationship between tax avoidance and cost of debt. For firms with managerial ownership, tax avoidance does not significantly affect cost of debt, while female board representation, profitability, and liquidity positively influence tax avoidance. Conversely, for firms without managerial ownership, tax avoidance has a positive and significant effect on cost of debt, indicating higher financing costs associated with greater tax avoidance practices. Foreign ownership reduces cost of debt, while government ownership affects tax avoidance. Overall, the results suggest that managerial ownership influences the relationship between tax avoidance and cost of debt by reducing information asymmetry and shaping creditor perceptions.

Table 11. Sobel-goodman mediation test results for robustness sub-samples

Sub-sample Model	Sobel Est	Sobel z	Sobel p-val	Aroian Est	Aroian z	Aroian p-val	Goodman Est	Goodman z	Goodman p-val
Model 2.1: Paying Dividends (N=134)	0.227	0.715	0.475	0.227	0.618	0.536	0.227	0.878	0.380
Model 2.2: Non-Paying Dividends (N=46)	2.705	1.136	0.256	2.705	1.041	0.298	2.705	1.263	0.207
Model 3.1: Managerial Ownership (N=118)	0.184	0.424	0.671	0.184	0.388	0.698	0.184	0.473	0.636
Model 3.2: No Managerial Ownership (N=62)	2.426	1.418	0.156	2.426	1.351	0.177	2.426	1.497	0.134

Table 11 show Statistics derived using STATA 18's sgmediation command for the partitioned sub-samples. Table 11 presents the mediation test results using the Sobel, Aroian, and Goodman methods for each sub-sample model. The results show that all mediation effects are statistically insignificant, as indicated by p-values above 0.05 across all tests. The highest mediation effect is observed in the

non-paying dividend model and no managerial ownership model, but the indirect effects remain insufficient to confirm a significant mediation role of tax avoidance. Overall, the findings indicate that tax avoidance does not significantly mediate the relationship between the examined variables and cost of debt across different dividend policy and managerial ownership conditions.

Table 12. Path coefficients and mediation effects for robustness models

Sub-sample Model	a_coefficient (X → M)	b_coefficient (M → Y)	Indirect Effect (a x b)	Direct Effect (c')	Total Effect (c)
Model 2.1: Paying Dividends (N=134)	0.059 (0.072)	3.879 (2.548)	0.227 (0.318)	-2.293 (2.048)	-2.066 (2.054)
Model 2.2: Non-Paying Dividends (N=46)	0.476 (0.313)	5.687* (3.325)	2.705 (2.382)	4.010 (6.359)	6.715 (6.326)
Model 3.1: Managerial Ownership (N=118)	0.172** (0.078)	1.069 (2.472)	0.184 (0.433)	-2.903 (2.029)	-2.719 (1.977)
Model 3.2: No Managerial Ownership (N=62)	0.361 (0.215)	6.715*** (2.552)	2.426 (1.710)	4.178 (4.016)	6.603 (4.130)

Table 12 show the partitioning by managerial ownership produces a comparable pattern and points to the same mechanism: incentive alignment. Among firms with managerial ownership (Model 3.1, N = 118, R-squared = 0.210), tax avoidance carries no effect on the cost of debt (coefficient = 1.069, p = 0.665), even though board gender diversity still raises tax-planning intensity within this group (coefficient = 0.172, p = 0.027); the mediation path stays insignificant (Sobel z = 0.424, p = 0.671). Among firms with no managerial ownership (Model 3.2, N = 62, R-squared = 0.493), the tax-avoidance coefficient jumps to 6.715 and clears the 1% threshold (p = 0.008), while the mediation path stays insignificant (Sobel z = 1.418, p = 0.156). Jensen and Meckling's (1976) alignment-of-interests logic accounts for the split. A manager who holds equity in the firm bears part of the cost that aggressive tax planning could trigger, from DJP penalties to reputational damage, and that stake gives lenders a reason to trust the firm's tax strategy without demanding a large premium for the uncertainty. Where managerial ownership sits at zero, no such stake exists, and lenders read tax planning as an unchecked agency hazard pursued at their expense; the resulting 6.715 borrowing premium reflects that absence of trust (Desai & Dharmapala, 2006; Ladhari, Lakhal, & Ben Slimane, 2025). Across both partitions, the boundary condition holds steady: tax avoidance raises borrowing costs only where creditors lack an independent signal, whether dividends or ownership stakes, that management does not use tax complexity to divert value away from the firm and its creditors. The two robustness checks together indicate that our main-model penalty is not a fixed feature of tax avoidance itself but a conditional response that depends on what other information creditors can gather about a borrower's incentives before they set the price of a loan.

5. Conclusions

5.1 Conclusion

Board gender diversity carries no direct effect on the cost of debt, but it reaches borrowing costs through a different channel: tax planning. Gender-diverse boards raised tax-planning intensity during the 2021-2023 liquidity shock, a pattern consistent with Resource Dependence Theory, as boards protected cash when external credit tightened. Banks, in turn, priced that same tax planning as an agency hazard under Signaling Theory and charged a higher borrowing premium for it. The two theoretical mechanisms collide rather than reinforce each other: a decision that reads as sound internal governance reads as opacity to a relationship lender outside the firm. This friction opens the mediating channel at the center of our model. Board composition reaches creditors only through the strategic

actions boards take, not through demographic presence on its own. Indonesian credit markets price outcomes, not symbols.

5.2 Research Limitations

Three limitations bound how far these findings extend. Data availability constrained the sample: many Indonesian manufacturers do not break out short-term and long-term interest-bearing debt or interest expense in their financial statement notes, forcing a smaller, more selective panel than the full listed population. Sector scope limits generalizability further, since the sample covers manufacturing firms alone, and service, technology, property, and financial firms carry different capital structures and tax dynamics that this model does not capture. Timing narrows the findings too: the sample spans the COVID-19 shock years of 2021 through 2023, a period of unusual credit rationing and cash pressure, and bank risk sensitivity during calmer, non-crisis periods may diverge from the pattern reported here. A single-country design also limits the reach of the theoretical framework, since Indonesia's bank-dominated, family-ownership structure may not transfer to markets with dispersed ownership or deep bond markets.

5.3 Suggestions and Directions for Future Research

Future researchers can extend this model along three lines. Comparative studies across ASEAN markets, including Malaysia, Thailand, Vietnam, and the Philippines, would test whether creditor protection regimes and bank-dominated financial systems change the size of the tax-planning penalty documented here. Non-linear estimation techniques, such as quantile or threshold regressions, would test for critical-mass effects, the point at which female board representation shifts from token presence to genuine influence over tax strategy. Researchers should also add governance variables this model excludes: ESG performance scores, green governance indicators, and voluntary tax-transparency disclosures under OJK's sustainability reporting framework would show how non-financial signals interact with tax behavior to shape what creditors charge for debt. A fourth avenue ties board gender diversity to specific debt covenant terms, not only interest rates, since maturity structure and collateral requirements may absorb part of the risk premium our cost-of-debt measure captures as a single price.

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Author Contributions

IH was responsible for conceptualization, study design, data collection, data analysis, manuscript preparation, supervision, and final approval. OO contributed to the manuscript review process, provided revision recommendations, and performed the final review and approval.

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