

The Transmission Mechanism of Borrowing Costs in the Relationship between Sustainable Debt Instruments and Corporate Valuation

Yumna Wardatul Nafiah^{✉1}, Moh Khoiruddin²

Faculty of Economics and Business, Universitas Negeri Semarang, Semarang, Indonesia^{1,2}

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Abstract

This study examines how sustainable debt instruments affect corporate valuation, specifically by evaluating borrowing costs as a mediating mechanism. Offering a distinct novelty, this research bridges existing empirical gaps by examining the comprehensive transmission mechanism of sustainable debt within the unique context of an emerging market. Theoretically, borrowing costs are expected to mediate this relationship because transparent sustainability commitments reduce information asymmetry, signaling lower risk to creditors and thereby lowering the overall cost of capital. The analysis focuses on public companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. This study adopts a causal-associative quantitative design and applies purposive criteria to select a final sample of 46 companies. The analytical procedure employs panel data regression through directional hypothesis testing, supplemented by a Sobel mediation analysis to verify the transmission channel. Empirical findings indicate a direct increase in corporate valuation following the deployment of sustainable debt instruments. Furthermore, sustainable debt instruments successfully reduced borrowing costs, thereby indirectly stimulating further growth in overall corporate valuation. Consequently, this study confirms that borrowing costs serve as a partial mediator linking sustainable debt instruments with increased corporate valuation. These findings provide strategic implications for management to proactively optimize long-tenor sustainable instruments to achieve cost of capital efficiency. For investors, indicators of borrowing costs, ratings, and tenor can be integrated as criteria for assessing investment portfolios. Meanwhile, regulators are expected to provide economic and administrative incentives to accelerate the sustainable financial ecosystem in the capital market.

Mekanisme Transmisi Biaya Pinjaman dalam Hubungan antara Instrumen Utang Berkelanjutan dan Penilaian Perusahaan

Abstrak

Penelitian ini mengkaji bagaimana instrumen utang berkelanjutan memengaruhi penilaian perusahaan, khususnya dengan mengevaluasi biaya pinjaman sebagai mekanisme mediasi. Menawarkan kebaruan yang nyata, penelitian ini menjembatani kesenjangan empiris dengan menguji mekanisme transmisi dari instrumen utang berkelanjutan secara komprehensif dalam konteks unik pasar negara berkembang. Secara teoretis, biaya pinjaman diharapkan dapat memediasi hubungan ini karena pengungkapan komitmen keberlanjutan yang transparan mampu mengurangi asimetri informasi, memberikan sinyal risiko yang lebih rendah kepada kreditor, dan pada gilirannya menurunkan beban biaya modal. Analisis berfokus pada perusahaan publik yang terdaftar di Bursa Efek Indonesia (BEI) selama periode 2021–2024. Penelitian ini mengadopsi desain kuantitatif kausal-asosiatif dan menerapkan kriteria purposif untuk memilih sampel akhir sebanyak 46 perusahaan. Prosedur analitis menggunakan regresi data panel melalui pengujian hipotesis direksional, dilengkapi dengan analisis mediasi Sobel untuk memverifikasi saluran transmisi. Temuan empiris menunjukkan peningkatan langsung dalam penilaian perusahaan setelah penerapan instrumen utang berkelanjutan. Selain itu, instrumen utang berkelanjutan berhasil mengurangi biaya pinjaman, sehingga secara tidak langsung mendorong pertumbuhan lebih lanjut dalam penilaian perusahaan secara keseluruhan. Akibatnya, penelitian ini menegaskan bahwa biaya pinjaman berfungsi sebagai mediator parsial yang menghubungkan instrumen utang berkelanjutan dengan peningkatan penilaian perusahaan. Temuan ini memberikan implikasi strategis bagi manajemen untuk secara proaktif mengoptimalkan instrumen berkelanjutan bertenor panjang demi mencapai efisiensi biaya modal. Bagi investor, indikator biaya pinjaman, peringkat, dan tenor dapat diintegrasikan sebagai kriteria dalam menilai portofolio investasi. Sementara itu, regulator diharapkan dapat memberikan insentif ekonomi dan administratif untuk akselerasi ekosistem keuangan berkelanjutan di pasar modal.

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✉Correspondence Address

Institutional address: Sekaran, Gunungpati, Semarang City

Email: yumnawardatul194@students.unnes.ac.id

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INTRODUCTION

Corporate awareness of environmental and sustainability issues has reshaped the landscape of funding sources in global capital markets, including in Indonesia. The implementation of Environmental, Social, and Governance (ESG) principles is driving companies to shift toward more responsible financing instruments, one of which is the issuance of sustainable debt instruments (Sagita & Pebriyani, 2025). Operationally, sustainable debt instruments in this study are defined as debt financing tools that legally bind issuers to allocate funds specifically to sustainability projects. This broader scope specifically includes green bonds, social bonds, sustainability bonds, and sustainability-linked bonds. In contrast to traditional debt instruments, capital raised through sustainable debt instruments is exclusively earmarked for funding initiatives with positive ecological and societal outcomes (Mocanu et al., 2021). Such financing tools are in high demand among ESG-focused investors, as they strategically channel substantial capital into programs that generate measurable benefits for both the environment and local communities (Negi & Jaiswal, 2024). The fundamental driver of this financing trend is the corporate objective to maximize Corporate Valuation by bolstering public standing and reinforcing investor trust (Inayah, 2022; Barrak et al., 2023). Furthermore, corporate valuation acts as a core metric, representing not only present economic stability but also the market's expectation regarding the company's enduring expansion and sustainable operations (Nursasi, 2020; Indrayani et al., 2025). Currently, investors tend to assign higher valuations to companies that can align their business strategies with transparent environmental and social responsibilities (Zhou et al., 2022; Chen et al., 2023).

However, although interest in sustainability instruments continues to grow,

the effectiveness of issuing sustainable debt instruments in directly increasing corporate valuation remains a subject of debate. Some companies, such as MDKA, WOOD, and INKP actually experienced a decline in corporate valuation while they were actively issuing sustainable debt instruments. For instance, during the 2021-2022 period, MDKA recorded a 21.51% surge in its sustainable debt proportion but suffered a sharp decline of -3.26 in its Tobin's Q ratio, a pattern similarly observed in WOOD with a 14.25% debt increase accompanied by a -0.42 drop in valuation. Furthermore, this anomaly persisted in subsequent years, as seen in INKP, which experienced a 7.63% increase in its sustainable debt proportion alongside a cumulative valuation decline of -0.12 throughout the 2022-2024 period. A substantial body of literature comprising studies by Wang et al. (2020), Zhang et al. (2021), Jiang et al. (2022), Chen et al. (2023), Khurram et al. (2023), Chen (2025), and Ban et al. (2025) concludes that engaging in green debt markets yields favorable outcomes for corporate valuation, reflecting positively on both internal financial metrics and external market performance. Conversely, this optimistic consensus is challenged by the empirical evidence presented by Thoresen & Soltvedt (2023), Fani & Prijadi (2025), and Sagita & Pebriyani (2025), who report that green financing initiatives exert no meaningful influence on a company's corporate valuation. These contradictory findings factually stem from variations in sample populations, time periods, and methodologies. Studies reporting positive impacts primarily focus on the Chinese market between 2015 and 2023 (Jiang et al., 2022; Khurram et al., 2023; Ban et al., 2025; Chen, 2025). Conversely, negative or insignificant effects are observed when using developed market samples such as Norway (Thoresen & Soltvedt, 2023), global data across specific industries (Fani & Prijadi, 2025), or samples limited to the domestic banking sector (Sagita &

Pebriyani, 2025). Furthermore, methodological discrepancies contribute to these differences, ranging from Difference-in-Differences (DID) and event study (Cumulative Abnormal Return) approaches to panel data regressions employing diverse mediating and moderating variables. The inconsistency in previous findings indicates the need to examine other transmission mechanisms.

Despite the clear empirical inconsistencies, a significant theoretical gap also persists. Previous studies predominantly rely on Stakeholder Theory to explain the general reputational benefits of green financing, yet they insufficiently explain the specific financial transmission mechanism that converts these sustainability signals into tangible corporate value. Consequently, borrowing costs are positioned as a pivotal transmission mechanism linking these elements (Chen, 2025; Ban et al., 2025). By mitigating information gaps, offering sustainable debt instruments acts as a favorable indicator to lenders, prompting them to offer more competitive borrowing costs (Baulkaran, 2019; Li et al., 2019; Pedersen et al., 2021). Such capital cost efficiencies provide firms with the financial leverage necessary to enhance operational profitability and, subsequently, their corporate valuation. While numerous investigations document favorable market responses Baulkaran (2019), Chen (2025), Ban et al. (2025), Aljabri (2025), and Petreski et al. (2025), contradictory evidence from Chang et al. (2022) and Liu et al. (2024) suggests that issuing sustainable debt instruments does not inherently guarantee a pricing advantage. To ensure a robust analytical framework alongside the primary and intermediary factors, this research incorporates specific controls namely, issue volume, credit rating, and maturity period guided by prior literature (Wang et al., 2020; Hao & Zhou, 2025).

Based on the Asymmetric Information framework, this study argues that the issuance of sustainable debt instru-

ments can enhance corporate transparency, thereby narrowing the information gap between internal stakeholders and external investors (Caramichael & Rapp, 2022). Clear disclosure regarding capital allocation empowers companies to secure more favorable borrowing costs from lenders. This dynamic aligns closely with the Pecking Order paradigm, which suggests that corporate entities are inherently drawn to funding channels associated with minimal information friction (Shukla et al., 2025). Furthermore, from the perspective of Stakeholder Theory, the issuance of sustainable debt instruments allows organizations to align the diverse interests of their stakeholders while advancing their environmental and social commitments (Horisch et al., 2020; Freeman et al., 2021; Johnson-Cramer et al., 2022). Socially Responsible Investment (SRI) Theory also suggests that the issuance of sustainable debt instruments can boost corporate valuation due to the availability of low-cost capital from investors adhering to ESG principles (Oehmke & Opp, 2025).

Consequently, the central objective of this research is to elucidate how borrowing costs function as an intermediary pathway connecting sustainable debt instruments with enhanced corporate valuation. To empirically test this proposition, the investigation utilizes a panel data methodology, observing publicly traded entities on the Indonesia Stock Exchange (IDX) across the 2021 to 2024 timeframe. The projected outcomes anticipate confirming that borrowing costs serve as a beneficial and partial transmission mechanism for the issuing firms. To provide a clearer positioning, this study explicitly differentiates its contribution from recent prominent works such as Zhang et al. (2021), Chen (2025), and Ban et al. (2025). While those studies predominantly evaluate the isolated effect of green bonds within the mature Chinese market, this research advances existing sustainable finance literature by structurally consolidating its novelty into three

main pillars. First, it addresses the theoretical gap by establishing borrowing costs as the definitive financial transmission mechanism, moving beyond the traditional reputational focus. Second, it expands the empirical scope to comprehensive sustainable debt instruments (including social and sustainability-linked bonds) rather than limiting it to green bonds. Third, it provides robust evidence from Indonesia, an emerging market with a nascent sustainable ecosystem and distinct risk profiles, while systematically integrating issue-level control variables to ensure a precise estimation of capital cost efficiency.

Hypothesis Development

The Impact of Sustainable Debt Instruments on Borrowing Costs

In today's corporate landscape, the issuance of Sustainable Debt Instruments serves as a key tactical approach for organizations to demonstrate their commitment to Environmental, Social, and Governance (ESG) principles. From the perspective of Information Asymmetry Theory, the issuance of these sustainability-focused securities conveys favorable signals regarding a company's ecological commitment, thereby reducing information gaps and lowering perceived risk among investors (Zhou & Cui, 2019; Maltais & Nykvist, 2020). This behavior aligns with the Pecking Order Theory, which states that firms inherently prefer financing options with minimal information frictions (Ashri, 2025; Shukla et al., 2025). Empirical research by Ramirez & Wald (2025) and Zhang et al. (2025) shows that entering the market for sustainable debt instruments provides direct financial benefits to companies through lower capital costs. Furthermore, academic evidence from Zhang et al. (2021) and Ban et al. (2025) confirm that transparently publishing sustainability commitments through these sustainable debt instruments successfully reduces a company's overall borrowing costs.

To operationalize the independent variable, this research utilizes the Sustain-

able Debt Ratio (SDR), computed by dividing the aggregate value of outstanding sustainable debt instruments by the firm's overall debt obligations. Guided by the synthesized theoretical frameworks and preceding empirical evidence, the following hypothesis is proposed:

H1: The deployment of sustainable debt instruments inversely impacts corporate borrowing costs.

The Impact of Borrowing Costs on Corporate Valuation

At its core, the interest obligations tied to external financing represent a major element of the overall capital expenses, thereby placing a structural strain on an enterprise's fiscal health. According to Asymmetric Information Theory, borrowing costs serve as a signaling mechanism that reflects a company's default risk (Zhou & Cui, 2019; Maltais & Nykvist, 2020; Caramichael & Rapp, 2022). In line with Stakeholder Theory, corporate value creation is the result of effectively managing relationships with all stakeholders, including creditors (Freeman et al., 2021; Duggal et al., 2025). Research by Baulkaran (2019) and Zhang et al. (2021) found that efficient borrowing costs result in a positive wealth transfer to shareholders. Empirical assessments conducted by Ban et al. (2025) alongside Chen (2025) establish an inverse correlation between borrowing costs and overall corporate valuation.

For analytical purposes, borrowing costs are operationalized through the Credit Spread (CS), which is mathematically determined by deducting the sustainable debt instruments' coupon rate from the yield of a comparable-maturity government treasury. Drawing upon this synthesized theoretical and empirical groundwork, the following hypothesis is proposed:

H2: Low borrowing costs have a positive impact on a company's corporate valuation.

The Impact of Sustainable Debt Instruments on Corporate Valuation

From the perspective of Socially Responsible Investment (SRI) frameworks, deploying sustainable debt instruments functions as an authentic indicator designed to draw in ESG-focused market participants. This positive signal can reduce information asymmetry and lower investor risk (Zhou & Cui, 2019; Maltais & Nykvist, 2020; Kamil & Appiah, 2022). High interest from SRI investors will increase demand for the company's securities, potentially driving up stock prices. The issuance of sustainable debt instruments can also balance value creation for all stakeholders (AlAhabbi & Nobanee, 2020; Freeman et al., 2021; Duggal et al., 2025). Prior empirical investigations notably by Wang et al. (2020), Zhang et al. (2021), Khurram et al. (2023), Chen (2025), Ban et al. (2025) demonstrate that securing capital through sustainable debt instruments favorably influences corporate valuation.

To quantify this dependent variable, the current investigation applies Tobin's Q, calculated by dividing a firm's market value by its total assets. Supported by this synthesis of theoretical paradigms and prior literature, the following hypothesis is proposed:

H3: The deployment of sustainable debt instruments significantly enhances corporate valuation.

Borrowing Costs as an Intermediary Channel in the Relationship Between Sustainable Debt Instruments and Corporate Valuation

The translation of sustainable debt instruments into higher corporate valuation operates through direct reputation channels and indirect cost-saving mechanisms. Viewed through an SRI framework, ESG-conscious investors often accept lower financial returns if the funds support social-environmental goals a dynamic known as the sustainability premium or 'sustainium'

(Baker et al., 2018; Kumar, 2022). In line with the Pecking Order principle, corporate management systematically prefers funding streams that minimize information frictions (Shukla et al., 2025). Empirical validation by Chen (2025) demonstrates that reducing borrowing costs through sustainable debt instruments directly enhances corporate valuation. Similarly, Zhang et al. (2021) assert that these borrowing costs serve as a crucial bridge, illustrating how environmental financing strategies ultimately benefit shareholders.

By synthesizing these theoretical propositions and empirical observations, the following hypothesis is proposed:

H4: Borrowing costs function as a mediating force linking the use of sustainable debt instruments with corporate valuation.

METHOD

To investigate how sustainable debt instruments affect corporate valuation through the intermediary role of borrowing costs, this study adopts a quantitative causal-explanatory framework. This analytical model is based on secondary panel data collected from public companies listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024. The target population includes every entity that issued sustainable debt instruments within the specified timeframe. A non-probability purposive selection technique was applied to isolate the final dataset. Inclusion criteria required companies to: (1) maintain active listing status on the IDX throughout the study, (2) hold outstanding sustainable debt instruments for at least twelve months, and (3) publish comprehensive annual financial disclosures. The application of these strict filters resulted in a final sample of 46 distinct companies, comprising 373 specific debt issuance data points. The research sampling procedure is presented in Table 1.

Table 1. Sample Selection Procedure

Sample Criteria	Number of Companies
Companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 observation period	931
Less: Companies that did not issue sustainable debt instruments during the 2021–2024 observation period	(881)
Less: Companies that did not consistently publish annual financial reports during the 2021–2024 observation period	(0)
Less: Companies with incomplete research variable data or those that underwent extreme corporate actions (e.g., mergers) during the 2021–2024 observation period	(4)
Total sample companies meeting the criteria	46
Total firm-year observations (46 companies × 4 years)	184
Total debt issuance-level observations (N)	373

Source: Data Processed (2026)

This study employs a documentary research method by collecting data from companies' annual financial reports, sustainable debt instruments data, and various capital market statistics. Additionally, a literature review was conducted to examine relevant international and national scientific journal articles as well as previous research. To represent the primary outcome variable, corporate valuation is operationalized using Tobin's Q, which is calculated by dividing a firm's market value by its total assets (Ban et al., 2025). Meanwhile, the primary predictor, Sustainable Debt Instruments, is quantified using the Sustainable Debt Ratio (SDR). Mathematically, this indicator captures the proportion of active sustainable debt instruments relative to the organization's total liabilities (Ban et al., 2025). Finally, to capture the intermediate transmission channel, borrowing costs are measured via the Credit Spread (CS). This metric is obtained by calculating the difference between the coupon rate of specific sustainable debt instruments and the yield generated by government bonds with comparable maturities (Ban et al., 2025). Control variables used to avoid estimation bias include issuance size (SIZE), sustain-

able debt instruments rating (RATING), and tenor (Hao & Zhou, 2025). In terms of data processing, the variables were structured across two distinct dimensions. corporate valuation (Tobin's Q) and Sustainable Debt Ratio (SDR) were extracted at the firm level, reflecting the company's annual financial status. Conversely, borrowing costs (CS), as well as the control variables (SIZE, RATING, and TENOR), were recorded at the issuance level to capture the specific characteristics of each sustainable debt series. To integrate these datasets, the annual firm-level data was systematically matched and paired with every individual debt issuance executed by the corresponding company in that specific year, thereby constructing an unbalanced panel dataset structured around the 373 unique issuance observations. Prior to descriptive and inferential analysis, to minimize estimation bias and manage extreme outliers without reducing sample size, all variables were winsorized at the 1st and 99th percentiles following Ban et al. (2025), replacing values below the 1st percentile and above the 99th percentile with their respective cutoff values.

Data analysis was conducted using panel data regression with Pooled Ord-

nary Least Squares (Pooled OLS) within the EViews 12 environment. To avoid terminological ambiguity with Partial Least Squares Structural Equation Modeling (PLS-SEM), this study explicitly clarifies the use of Pooled OLS (Common Effect Model). This approach is conceptually suited for an unbalanced panel structured around discrete, non-continuous debt issuance series across companies, assuming constant intercepts and slopes across observations. Consequently, formal model selection tests (such as the Chow, Hausman, or Lagrange Multiplier tests) were omitted, as the structural nature of random issuance-level series dictates Pooled OLS as the baseline estimation model.

To guarantee that the analytical framework satisfies the conditions of a Best Linear Unbiased Estimator (BLUE), comprehensive diagnostic evaluations were conducted across the empirical models. Although the Jarque-Bera probability values were below 0.05, the normality assumption is satisfied asymptotically based on the Central Limit Theorem (CLT), given the large sample size ($N = 373 > 30$). Multicollinearity was ruled out, as Centered Variance Inflation Factor (VIF) values for all independent variables across all models remained well below the critical threshold of 10, with the highest VIF observed at 1.887 for Credit Spread in Model 3. Diagnostic testing for heteroskedasticity (Obs*R-squared Chi-Square p-value < 0.05) indicated the presence of unequal error variances, a common phenomenon in cross-firm financial datasets with varying asset scales. To rectify this, empirical estimations were conducted using Huber-

White Robust Standard Errors, ensuring that hypothesis testing (t-statistics and F-statistics) remains statistically valid and unbiased. Finally, formal serial correlation testing was not performed because the dataset consists of an unbalanced panel structured by discrete bond issuance series; the random and non-continuous time gaps between series make serial autocorrelation testing methodologically inapplicable. Furthermore, the overall goodness-of-fit was validated by observing the F-statistic combined with the adjusted coefficient of determination. For inferential decisions, directional hypotheses were evaluated via one-tailed t-statistics processed within the EViews 12 environment, while the robustness of the intermediary transmission pathway was statistically confirmed utilizing the Sobel computation.

RESULT AND DISCUSSION

The use of baseline statistical metrics provides information on the spread pattern of data for the variables Corporate Valuation (TOBINQ), Sustainable Debt Instruments (SDR), and Borrowing Costs (CS), as well as the control variables Issue Size (SIZE), Rating (RATING), and Tenor (TENOR). Prior to conducting the descriptive statistical analysis, the TOBINQ and SDR variables underwent winsorization by capping the extreme upper and lower percentiles to neutralize the impact from severe anomalies (Ban et al., 2025). The detailed values encompassing the mean, minimum, maximum, and standard deviation for each variable are sequentially presented in Table 2.

Table 2. Descriptive Statistical Analysis Test

Variable	N	Min	Max	Mean	Std. Dev
TOBINQ	373	0.053	5.250	0.773	1.081
SDR	373	0.000	0.544	0.165	0.140
CS	373	-1.346	7.109	2.238	1.740
SIZE	373	2.50 x 10 ¹⁰	6.00 x 10 ¹²	1.36 x 10 ¹²	1.09 x 10 ¹²
RATING	373	1.000	17.000	13.172	2.913
TENOR	373	1.006	9.997	3.353	1.941

Source: Data Processed (2026)

As detailed in Table 2, the TOBINQ records an average score of 0.773, ranging from a low of 0.053 to a peak of 5.250, indicating a high degree of valuation variation even though the average issuer is still classified as undervalued (<1). The SDR has a mean of 0.165, indicating that the proportion of this green financing remains relatively low, at only 16.5% of total debt. The CS exhibits relatively large variation, meaning that risk levels and interest burdens among the sample companies are highly fluctuating. It is crucial to note that although TOBINQ and SDR are inherently firm-level metrics, their total observations equate to $N = 373$. This structural alignment occurs because the annual firm-level data were systematically matched and duplicated across every specific sustainable debt series issued by the corresponding company within the same year, thereby standardizing the dataset at

the issuance level.

This research investigates how Sustainable Debt Ratio (SDR) influence Corporate Valuation (TOBINQ), both directly and indirectly through Borrowing Costs (CS) as a mediating variable, while controlling for other variables. The tests were conducted at a significance level of $\alpha=0.05$ (5%) for the direct effect test, and a more lenient $\alpha=0.10$ (10%) specifically to test the mediating effect (Sobel Test), which is conservative in nature. The relevance of this study's findings is reinforced by the model design, which positions borrowing costs as the primary theoretical conduit connecting sustainable debt instruments with the creation of corporate valuation. The empirical outcomes regarding the proposed structural models and respective hypothesis evaluations are detailed in Table 3.

Table 3. Panel Data Regression Analysis

Model	Var	Coef	Std. Error	t-Stat	Prob (one-tailed)	R2	Adj-R2	F-Stat	N
M1: SDR → CS	SDR		0.455	-1.808	0.036	0.308	0.301		373
	SIZE		0.000	-3.143	0.001				
	RATING		0.043	-6.453	0.000				
	TENOR		0.038	3.559	0.000				
M2: CS → TOBINQ	CS		0.030	-2.174	0.015	0.076	0.064	6.061	373
	SIZE		0.000	-1.038	0.150				
	RATING		0.010	4.711	0.000				
	TENOR	0.113	0.034	3.303	0.000				
M3: SDR → TOBINQ	SDR		0.387	2.145	0.016	0.069	0.059	6.797	373
	SIZE		0.000	-.720	0.236				
	RATING		0.011	5.824	0.000				
	TENOR		0.033	3.130	0.000				

Source: Data Processed (2026)

The results of the regression test for Model 1 show that the SDR variable has a p-value of 0.036 with a negative coefficient;

therefore, H1 is accepted. This proves that deploying sustainable debt instruments exerts a substantially adverse effect

on borrowing costs. This finding supports the premises of Asymmetric Information Theory, which posits that utilizing sustainable debt instruments functions as an effective mechanism for minimizing information asymmetry between management and creditors. Transparency regarding the use of funds to finance sustainable projects reduces creditors' risk, making them willing to offer reduced borrowing costs. This finding is also in alignment with the Pecking Order paradigm, suggesting that firms tend to choose funding sources with the most efficient costs and the lowest information risk. The proven negative influence of sustainable debt instruments on borrowing costs indicates that sustainable debt instruments serve as an efficient financing instrument because they offer lower capital costs. The current empirical outcomes align with the investigations by Ramirez & Wald (2025) and Zhang et al. (2025), documenting that the utilization of sustainable debt instruments provides companies with a direct incentive manifested as reduced borrowing costs. This evidence also reinforces prior conclusions drawn by Zhang et al. (2021) and Ban et al. (2025), who confirmed that high disclosure of sustainability commitments via sustainable debt instruments effectively reduces an enterprise's overall borrowing costs.

Regarding the integrated control variables, the statistical outputs demonstrate their respective expected influences on the structural model. Issue size (SIZE) and sustainable debt rating (RATING) inherently exhibit a negative and significant association with borrowing costs. This indicates that larger issuance volumes and superior credit ratings effectively compress the interest burden due to perceived lower default risks and higher market liquidity. Conversely, the Maturity (TENOR) variable demonstrates a positive relationship with borrowing costs, reflecting the fundamental financial logic that longer-term debt naturally demands a higher maturity premium to compensate creditors for ex-

tended risk exposure over time.

Analysis of the second empirical model reveals a significantly negative coefficient for the borrowing costs parameter (p -value = .015), leading to the acceptance of the corresponding hypothesis. This statistical outcome confirms a substantial inverse relationship, demonstrating that elevated borrowing costs constrain corporate valuation. Such evidence resonates well with the principles of financial efficiency, where low borrowing costs reduce financial burden, increase net profit, and raise stock prices, thereby driving up corporate valuation. According to the Pecking Order Theory, firms capable of securing funding at the lowest possible borrowing costs are considered to have strong fundamentals and low risk. When a firm secures lower borrowing costs, equity investors will assign a higher valuation to the firm's stock. These results are in strong agreement with prior investigations conducted by Chen (2025) and Ban et al. (2025), which concluded that borrowing costs inversely impact corporate valuation. Furthermore, this evidence also reinforces the argument by Zhang et al. (2021) that efficiency in borrowing costs results in a positive wealth transfer for shareholders.

Statistical outputs for the third model reveal that the SDR variable yields a p -value of 0.016 alongside a positive coefficient; consequently, H3 is supported. This proves that deploying sustainable debt instruments exerts a highly favorable and significant impact on corporate valuation. This finding supports stakeholder principles, suggesting that an enterprise's long-term viability is determined not only by shareholder prosperity but also by its capacity to fulfill the expectations of various stakeholders. Deploying sustainable debt instruments acts as concrete proof of an organization's dedication to ESG principles, which is positively received by the market because the company is perceived as having strong social legitimacy and more assured long-term sustainability.

These findings also support SRI Theory, where high demand for sustainable debt instruments sends a positive signal capable of attracting ESG-focused investors. The success of sustainable debt instruments is positively received by stock market participants (spillover effect) through buying activity, thereby boosting stock prices and corporate valuation. Such outcomes strongly align with empirical studies conducted by Chen (2025) and Ban et al. (2025), which established that introducing green funding mechanisms results in higher valuations and is met with a positive market response in the form of positive abnormal stock returns. These findings also reinforce the argument presented by Khurram et al. (2023) asserting that eco-friendly capital allocation has the potential to improve a company's reputation, enhance competitiveness, attract new capital inflows, and ultimately boost corporate valuation.

Drawing from the analytical outcomes of the Sobel Test, the one-tailed p-value is 0.082. Given a significance level of $\alpha=10\%$, since $p\text{-value } 0.082 < 0.10$, H_4 is accepted. This proves that borrowing costs function as an intermediary link connecting sustainable debt instruments to corporate valuation with a partial mediation effect. Conceptually, the emergence of partial mediation rather than full mediation occurs because cost of debt efficiency represents only one specific financial conduit through which green financing impacts firm value. While issuing sustainable debt instruments successfully reduces credit spreads by mitigating information asymmetry (Asymmetric Information Theory) and offering cheaper debt financing (Pecking Order Theory), this interest expense reduction channel primarily addresses the firm's liability structure. However, corporate valuation is a holistic metric encompassing both debt and equity market perceptions. Because borrowing cost reductions capture strictly the direct financial savings on the debt side, they

cannot fully absorb the broader, multi-dimensional impact of sustainability commitments, such as heightened equity investor demand, lower perceived operational risk, and expanded ESG-focused capital access, leaving a substantial portion of the valuation effect to bypass borrowing costs and operate directly.

This structural dynamic is further clarified by the path analysis results regarding the relative magnitude of these pathways, where the direct impact of sustainable debt instruments on corporate valuation (0.776) overwhelmingly dominates its indirect effect through borrowing costs (0.053). The pronounced dominance of the direct effect carries crucial economic meaning within the context of the Indonesian capital market. In an emerging market like Indonesia, interest rate cost compressions (credit spread reductions), while statistically significant, yield relatively modest cash flow savings relative to a firm's total revenues and asset base. Consequently, the purely financial mechanism (indirect effect) exerts a smaller quantitative pull on Tobin's Q. In contrast, equity market participants on the Indonesia Stock Exchange (IDX) respond with far greater enthusiasm to the immediate signaling value of sustainable debt issuances. Issuing green, social, or sustainability-linked debt serves as a prominent, high-visibility indicator of superior corporate governance, proactive risk management, and alignment with regulatory frameworks (e.g., OJK POJK 60/2017). Equity investors interpret this reputational capital and social legitimacy as a structural reduction in long-term risk, prompting them to assign a substantial valuation premium directly to the firm's equity. Thus, in Indonesia's evolving sustainable financial ecosystem, market valuation is driven predominantly by investor sentiment and reputational signaling (direct effect) rather than the operational interest savings captured by borrowing cost efficiencies (indirect effect).

A comprehensive visual summary of the structural pathways, encompassing both the direct and indirect effects along with

their respective statistical coefficients, can be observed in Figure 1.

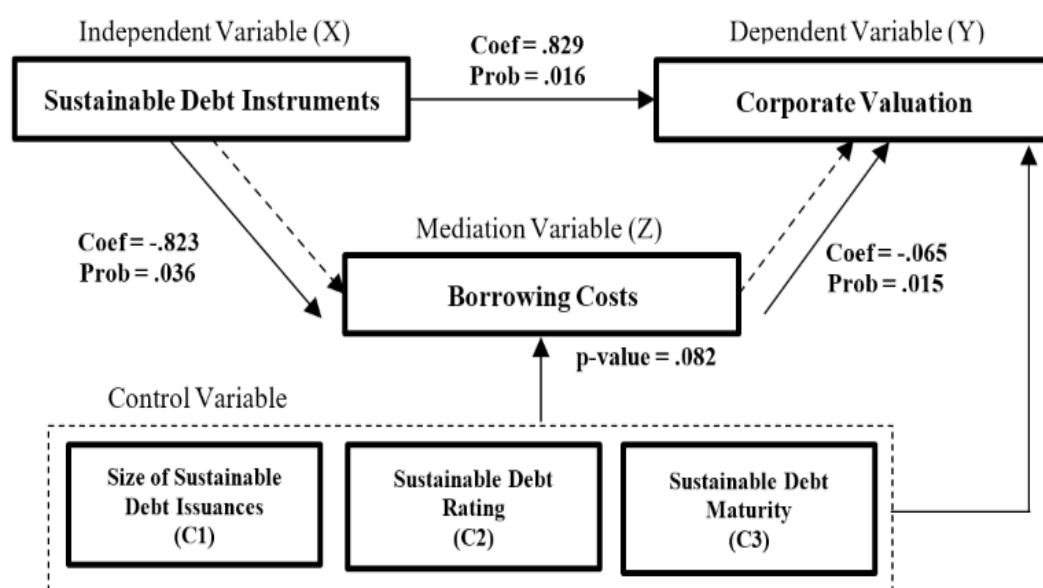


Figure 1. The Results of Full Model Analysis
Source: Data Processed (2026)

To critically contextualize these findings against earlier literature, this study provides a nuanced synthesis of convergence and divergence across global empirical evidence. While our results align with findings from large emerging markets such as China (Zhang et al., 2021; Chen, 2025; Ban et al., 2025), they explicitly contrast with evidence from developed economies, such as Norway (Thoresen & Soltvedt, 2023), and sector-specific domestic studies (Sagita & Pebriyani, 2025), which reported insignificant or neutral valuation impacts. This empirical divergence can be analytically attributed to the unique structural stage of Indonesia's sustainable financial market. In developed economies, ESG disclosures and green debt instruments have largely become institutionalized baselines, leading to diminishing marginal valuation returns due to market saturation. Conversely, in Indonesia, where the sustainable debt market remains in a nascent transition phase, sustainable debt issuances are still relatively scarce. Early

corporate adopters on the IDX capture a distinct "first-mover advantage" because ESG-focused capital in Southeast Asia is expanding rapidly. While eligible local green assets remain limited, Indonesian issuers benefit from high investor demand elasticity. Consequently, domestic and international ESG investors reward these Indonesian issuers with a pronounced valuation premium and lower borrowing costs, a dynamic that mature developed markets no longer exhibit.

CONCLUSION AND RECOMMENDATION

This research investigates how sustainable debt instruments influence corporate valuation, utilizing borrowing costs as an intermediary factor, and includes control variables such as issuance size, credit rating, and tenor. The results of hypothesis testing on 46 publicly traded entities on the IDX between 2021 and 2024 conclude that the issuance of sustainable

debt instruments is proven to substantially compress borrowing costs, which in turn favorably drives corporate valuation. Additionally, the issuance of these sustainable instruments also directly exerts a pronounced beneficial effect on corporate valuation. Furthermore, the current empirical evidence verifies that borrowing costs function as a partial mediator.

Crucially, this study delivers a pivotal contribution to the existing literature by explicitly mapping the transmission channel through borrowing costs and expanding the analytical scope beyond traditional green bonds to encompass a broader, more inclusive spectrum of sustainable debt instruments. Furthermore, this research offers substantial contextual novelty by providing empirical evidence from a nascent emerging market. It demonstrates that early corporate adopters in Indonesia secure a distinct "first-mover advantage" in the form of capital cost efficiency and valuation premiums, effectively countering the insignificant or negative market responses frequently documented in mature, developed markets. The explicit theoretical contribution of this study lies in bridging Asymmetric Information Theory and Pecking Order Theory within a modern ESG framework. It systematically proves that green signaling does not merely function as a superficial reputational tool, but actively alters a firm's capital structure dynamics by mitigating adverse selection. This creates a dual pathway to value creation: an indirect financial mechanism through cost of capital efficiency, and a direct market mechanism through enhanced social legitimacy.

Several constraints inherent in this investigation include the still very limited population of companies deploying sustainable debt instruments in Indonesia, the relatively short study period, and the use of borrowing costs as the sole mediator. Consequently, subsequent academic inquiries are encouraged to transcend single-market boundaries. Future research

should conduct cross-country comparative studies, particularly contrasting emerging markets in Southeast Asia (ASEAN) with mature markets (e.g., Europe), to analyze how varying degrees of regulatory maturity and ESG institutionalization influence the green valuation premium. Additionally, investigating the broader contextual impacts, such as the moderating role of macroeconomic shocks (e.g., central bank interest rate hikes) or the penalizing effects of corporate greenwashing controversies on this structural model, would yield deeper empirical insights.

Based on the study's findings, actionable recommendations are formulated for key stakeholders. For corporate issuers, management must integrate sustainable debt into their core long-term capital structure rather than treating it as a one-off public relations exercise. Issuers are advised to secure credible third-party ESG framework verifications (second party opinions) to boost debt ratings, structure longer tenor bonds that perfectly match green project lifecycles, and maintain rigorous transparency in use-of-proceeds reporting to lock in lower borrowing costs. For market participants, institutional and retail investors should actively utilize the issuance of sustainable debt and its subsequent borrowing cost reductions as a hard screening metric. Identifying firms capable of compressing their credit spreads via ESG commitments provides investors with a reliable indicator of fundamentally sound, lower-risk equities for long-term portfolio allocation. Finally, regulators are urged to accelerate the maturation of the domestic sustainable financial ecosystem through targeted interventions. This includes providing tangible economic incentives such as subsidized listing fees or fast-tracked regulatory approval processes for ESG-compliant issuances, as well as enforcing a strictly standardized national green taxonomy to prevent greenwashing and protect investor confidence.

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REFERENCES

- AlAhbabi, R., & Nobanee, H. (2020). *Sustainability Bonds: A Mini Review*. <https://doi.org/https://dx.doi.org/10.2139/ssrn.3540119>
- Aljabri, Q. (2025). Corporate Social Responsibility and Cost of Debt: The Moderating Role of Insider and Institutional Ownership. *Journal of Global Responsibility*, 16(4), 625–648. <https://doi.org/10.1108/JGR-04-2024-0072>
- Ashri, D. (2025). Unravelling Motives, Determinants and Outcomes of Green Bond Issuance: A Systematic Literature Review and Future Research Agenda. *Corporate Ownership & Control*, 22(3), 153–168. <https://doi.org/10.22495/cocv22i3art12>
- Baker, M., Bergstresser, D., Serafeim, G., & Wurgler, J. (2018). Financing the Response to Climate Change: The Pricing and Ownership of U.S. *Green Bonds*. *National Bureau of Economic Research*. <https://doi.org/10.3386/w25194>
- Ban, N., Che, X., Walker, T., & Zhao, Y. (2025). Does Green Bond Issuance Affect Firm Value? Evidence from China. *Global Finance Journal*, 66, 101124. <https://doi.org/10.1016/j.gfj.2025.101124>
- Barrak, T. Al, Chebbi, K., Aljughaiman, A. A., & Albarrak, M. (2023). Exploring the Interplay between Sustainability and Debt Costs in an Emerging Market: Does Financial Distress Matter? *Sustainability*, 15(12), 9273. <https://doi.org/10.3390/su15129273>
- Baulkaran, V. (2019). Stock Market Reaction to Green Bond Issuance. *Journal of Asset Management*, 20(5), 331–340. <https://doi.org/10.1057/s41260-018-00105-1>
- Caramichael, J., & Rapp, A. C. (2022). The Green Corporate Bond Issuance Premium. *International Finance Discussion Papers*, 162(1346), 1–46. <https://doi.org/10.17016/ifdp.2022.1346>
- Chang, X., Fu, K., Jin, Y., & Liem, P. F. (2022). Sustainable Finance: ESG/CSR, Firm Value, and Investment Returns. *Asia-Pacific Journal of Financial Studies*, 51(3), 325–371. <https://doi.org/10.1111/ajfs.12379>
- Chen, J., Yang, Y., Liu, R., Geng, Y., & Ren, X. (2023). Green Bond Issuance and Corporate ESG Performance: The Perspective of Internal Attention and External Supervision. *Humanities and Social Sciences Communications*, 10(1), 437. <https://doi.org/10.1057/s41599-023-01941-2>
- Chen, Y. (2025). Research on the Impact of Issuing Green Bonds on the Corporate Value of Listed Companies in China. *Frontiers in Business, Economics and Management*, 18(2), 63–70. <https://doi.org/10.54097/tqtv954>
- Duggal, N., He, L., & Shaw, T. S. (2025). Mandatory Corporate Social Responsibility Spending, Family Control, and the Cost of Debt. *The British Accounting Review*, 57(4), 101356. <https://doi.org/10.1016/j.bar.2024.101356>
- Fani, A. A. B., & Prijadi, R. (2025). The Impact of Green Bonds on Firm Value and the Role of ESG: Revisiting the Stakeholder Value Maximization Theory. *Gadjah Mada International Journal of Business*, 27(3), 351–372.
- Freeman, R. E., Dmytriiev, S. D., & Phillips, R. A. (2021). Stakeholder Theory and the Resource-Based View of the Firm. *Journal of Management*, 47(7), 1757–1770. <https://doi.org/10.1177/0149206321993576>
- Hao, Y., & Zhou, Y. (2025). Green Bond Issuance Premium Effect and Investor Incentive Effect. *Finance Research Letters*, 85, 108042. <https://doi.org/10.1016/j.frl.2025.108042>
- Horisch, J., Schaltegger, S., & Freeman, R. E. (2020). Integrating Stakeholder Theory and Sustainability Accounting: A Conceptual Synthesis. *Journal of Cleaner Production*, 275, 124097. <https://doi.org/10.1016/j.jclepro.2020.124097>

- Inayah, Z. (2022). Analisis Struktur Modal, Profitabilitas dan Kineja Keuangan terhadap Nilai Perusahaan (Penelitian Literature Review Manajemen Keuangan). *Jurnal Manajemen Pendidikan dan Ilmu Sosial*, 3(2), 788–795. <https://doi.org/10.38035/jmpis.v3i2>
- Indrayani, L., Tukiran, M., & Utami, V. N. (2025). Bagaimana Nilai Perusahaan dan Harga Saham Dipengaruhi Preferensi Risiko Perusahaan: A Literature Review. *E-Journal Ekonomi Bisnis dan Akuntansi*, 12(1), 33–40.
- Jiang, K., Chen, Z., & Chen, F. (2022). Green Creates Value: Evidence from China. *Journal of Asian Economics*, 78, 101425. <https://doi.org/10.1016/j.asieco.2021.101425>
- Johnson-Cramer, M. E., Phillips, R. A., Fadlallah, H., Berman, S. L., & Elms, H. (2022). What We Talk About When We Talk About Stakeholders. *Business & Society*, 61(5), 1083–1135. <https://doi.org/10.1177/00076503211053005>
- Kamil, R., & Appiah, K. O. (2022). Board Gender Diversity and Cost of Debt: Do Firm Size and Industry Type Matter? *Gender in Management: An International Journal*, 37(1), 19–38. <https://doi.org/10.1108/GM-12-2020-0363>
- Khurram, M. U., Xie, W., Mirza, S. S., & Tong, H. (2023). Green Bonds Issuance, Innovation Performance, and Corporate Value: Empirical Evidence from China. *Heliyon*, 9(4), e14895. <https://doi.org/10.1016/j.heliyon.2023.e14895>
- Kumar, S. (2022). A Quest for Sustainium (Sustainability Premium): Review of Sustainable Bonds. *Academy of Accounting and Financial Studies Journal*, 26(2), 1–18.
- Li, C., Xu, Y., Gill, A., Haider, Z. A., & Wang, Y. (2019). Religious Beliefs, Socially Responsible Investment, and Cost of Debt: Evidence from Entrepreneurial Firms In India. *Emerging Markets Review*, 38, 102–114. <https://doi.org/10.1016/j.ememar.2018.12.001>
- Liu, Y., Huang, H., Mbanyele, W., Wang, F., & Liu, H. (2024). Does the Issuance of Green Bonds Nudge Environmental Responsibility Engagements? Evidence from the Chinese Green Bond Market. *Financial Innovation*, 10(1), 92. <https://doi.org/10.1186/s40854-024-00620-8>
- Maltais, A., & Nykvist, B. (2020). Understanding the Role of Green Bonds in Advancing Sustainability. *Journal of Sustainable Finance & Investment*, 1–20. <https://doi.org/10.1080/20430795.2020.1724864>
- Mocanu, M., Constantin, L.-G., & Cernat-Gruici, B. (2021). Sustainability Bonds. an International Event Study. *Journal of Business Economics and Management*, 22(6), 1551–1576. <https://doi.org/10.3846/jbem.2021.15372>
- Negi, P., & Jaiswal, A. (2024). Sustainable Bonds as a Sustainable Financial Instrument: Thematic Insights and Future Prospects. *Qualitative Research in Financial Markets*, 17(5), 1061–1087. <https://doi.org/10.1108/QRFM-01-2024-0018>
- Nursasi, E. (2020). Pengaruh Kinerja Keuangan terhadap Nilai Perusahaan dengan CSR sebagai Variabel Moderasi. *Aktiva: Jurnal Akuntansi Dan Investasi*, 5(1), 29–44.
- Oehmke, M., & Opp, M. M. (2025). A Theory of Socially Responsible Investment. *Review of Economic Studies*, 92(2), 1193–1225. <https://doi.org/10.1093/restud/rdae048>
- Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible Investing: The ESG-Efficient Frontier. *Journal of Financial Economics*, 142(2), 572–597. <https://doi.org/10.1016/j.jfineco.2020.11.001>
- Petreski, A., Schäfer, D., & Stephan, A. (2025). The Reputation Effect of Repeated Green Bond Issuance and Its Impact on the Cost of Capital. *Business Strategy and the Environment*, 34(2), 2436–2448. <https://doi.org/10.1002/bse.4111>
- Ramirez, G. M., & Wald, J. K. (2025). Issuers Reach for Features when Spreads are High as Green and Sustainability-linked Bonds Reduce Borrowing Costs. *SSRN*. <https://ssrn.com/abstract=5798622>
- Sagita, D., & Pebriyani, D. (2025). Pengaruh Green Financing dan Pengungkapan ESG terhadap Nilai Perusahaan Perbankan di BEI 2021–2024. *Journal of Business and Economics Research (JBE)*, 06(03), 979–988. <https://doi.org/10.47065/jbe.v6i3.8579>
- Shukla, D. D., Bhatti, D. R. K., Raj, P., Nan-

- da, S. S., & S. Noorani, M. (2025). Green Bonds and Sustainable Investing: Trends, Challenges, and Future Outlook. *Journal of International Commercial Law and Technology*, 6(1), 335–341. <https://doi.org/10.2139/ssrn.5528398>
- Thoresen, A. S., & Soltvedt, J. (2023). *Does Green Bond Issuance Increase Firm Value in Norway? An Event Study Examining the Effect of Green Bond Issuance on the Stock Prices of Norwegian Firms*. [Master's thesis, Norwegian University of Science and Technology].
- Wang, J., Chen, X., Li, X., Yu, J., & Zhong, R. (2020). The Market Reaction to Green Bond Issuance: Evidence from China. *Pacific-Basin Finance Journal*, 60, 101294. <https://doi.org/10.1016/j.pacfin.2020.101294>
- Zhang, L., Han, J., Xiong, Y., & Yu, Q. (2025). Green Investors, Bond Ratings and Bond Issuance Spreads. *Finance Research Letters*, 108318.
- Zhang, R., Li, Y., & Liu, Y. (2021). Green Bond Issuance and Corporate Cost of Capital. *Pacific-Basin Finance Journal*, 69, 101626. <https://doi.org/10.1016/j.pacfin.2021.101626>
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable Development, ESG Performance and Company Market Value: Mediating Effect of Financial Performance. *Business Strategy and the Environment*, 31(7), 3371–3387. <https://doi.org/10.1002/bse.3089>
- Zhou, X., & Cui, Y. (2019). Green Bonds, Corporate Performance, and Corporate Social Responsibility. *Sustainability*, 11(23), 6881. <https://doi.org/10.3390/su11236881>