International Conference on Sustainable Economics, Management, and Accounting (ICSEMA 2026)
Proceedings
Vol. 02 Year 2026, 1659 – 1676
ISSN: 3109-3337

THE EFFECT OF CORPORATE SUSTAINABILITY PERFORMANCE ON THE SPEED OF LEVERAGE ADJUSTMENT: THE ROLE OF MODERATION OF FINANCIAL CONSTRAINTS AND ENVIRONMENTAL POLICY STRINGENCY

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Article Information: Received --- June, 25 2026, Published ---- August, 10 2026

Abstract

This study aims to examine the influence of Corporate Sustainability Performance on Speed of Leverage Adjustment, as well as analyze the role of moderation from Financial Constraints and Environmental Policy Stringency. Using a quantitative approach, the sample of this study includes non-financial public companies listed on the Indonesia Stock Exchange during the 2023–2025 observation period using the purposive sampling method. The estimation of the test model was carried out using dynamic panel data regression analysis with the Generalized Method of Moments (GMM) approach. The results of the analysis show that Corporate Sustainability Performance has a positive and significant effect on the Speed of Leverage Adjustment, proving that sustainability commitments accelerate the recovery of the capital structure towards its optimal target. However, the testing of interaction variables confirmed that Financial Constraints significantly weakened the positive relationship due to the company's internal liquidity limitations. In addition, Environmental Policy Stringency was also found to moderate the relationship negatively, indicating that tightening environmental regulations at the national level creates an external compliance burden that hinders the flexibility of corporate debt restructuring. The contribution value of this study lies in the simultaneous integration between internal capacity constraints and external macro policy pressures in influencing dynamic capital adjustment behavior. These findings provide important implications for financial managers to align the green agenda with liquidity resilience, as well as for regulators in formulating accommodative green transition incentive policies in developing countries.

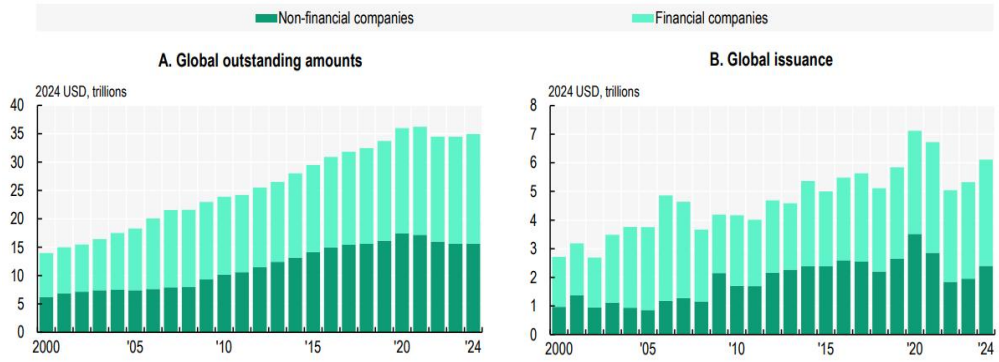
Keywords: Corporate Sustainability Performance, Speed of Leverage Adjustment, Financial Constraints, Environmental Policy Stringency, GMM Dinamis.

INTRODUCTION

Capital structure is one of the most crucial financial decisions for corporations to achieve optimal corporate value through debt and equity balancing (Widodo & Juardi, 2020). The urgency of debt management is reflected in the current volume of the global debt market. As shown in Figure 2.1, the accumulation of global corporate bond debt has continued to be at a very high level over the past two decades, even growing again in real value in 2024 after having experienced a decline for three consecutive years. In the midst of the massive liquidity of debt instruments in the global market, the company's ability to adjust the debt ratio towards the optimal target, or speed of leverage adjustment, is a crucial reflection of the company's operational efficiency and financial flexibility (Ricca et al., 2021; Widodo & Juardi, 2020). On the other hand, in the global economic transition towards sustainable development, corporate sustainability performance has emerged as a significant new determining factor for corporations

in the fight for the debt funding pie (Botta & Colombo, 2022; Hussain et al., 2020; Adiba, 2022; Wiyandari & Manurung, 2024). Companies with superior sustainability performance are able to lower barriers to access to this global bond market through increased information transparency and better stakeholder engagement, ultimately cutting agency costs.

Image 1. Global corporate bond debt

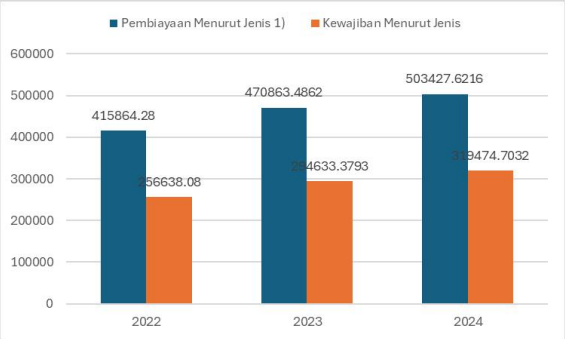


Source: OECD Capital Market Series Dataset, LSEG; see Annex 2.A for details

However, the reality in Indonesia shows a fairly real gap. Although the government has mandated sustainability reporting through POJK 51/2017, many issuers are still stuck in compliance formalities without integrating sustainability principles into substantive financial strategies (Ardiana et al., 2025; Ricca et al., 2021; Setyowati, 2020; Qudriyah et al., 2021).

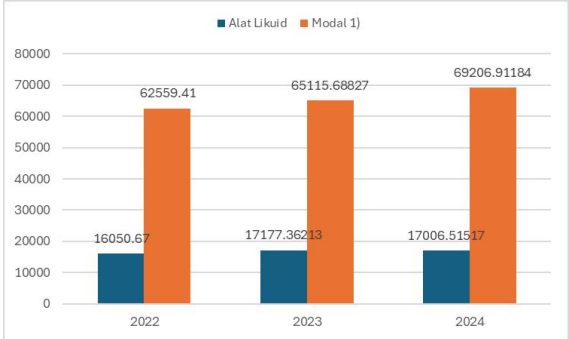
In addition, this transition faces obstacles in the form of internal liquidity limitations, or Financial Constraints. As shown in Figure 3 (Balance of Finance Companies), this internal capacity limitation can be seen from the position of Liquid Instruments which is very minimal and tends to be stagnant, namely from IDR 16,050.67 billion in 2022, had a slight increase in 2023, then actually turned down to IDR 17,006.51 billion in 2024. In contrast to Liquid Instruments that are running on the spot, the Capital component is actually required to continue to increase until it reaches IDR 69,206.91 billion in 2024. This wide gap between liquid assets and capital confirms the narrowness of corporate self-funding space to finance the green transition agenda. This transition is increasingly complex due to the uncertainty of costs from tightening environmental regulations, such as the preparation of carbon taxes and carbon trading, which is termed as Environmental Policy Stringency (Wahyuningtyas et al., 2024; Madyan & Widuri, 2023). This regulatory pressure forces corporations to rely on external funding to keep pace with the pace of business. This phenomenon is clearly recorded in Figure 2, where the rate of financing jumped aggressively from IDR 415,864.28 billion in 2022 to IDR 503,427.62 billion in 2024. This high financing expansion is directly proportional to the swelling of the value of liabilities (debt) which increased significantly from IDR 256,638.08 billion (2022) to reach IDR 319,474.70 billion in 2024. As revealed by Lee et al. (2024), overly rigid environmental regulations can ultimately distort funding cost efficiency and slow down the mobility of corporate capital adjustments, especially when corporations have to shoulder the ever-increasing burden of external liabilities to maintain their operational growth.

Image 2. Financing Position and Liabilities of Finance Companies in Rupiah



Sumber : Indonesian Economic and Financial Statistics - December 2025

Image 3. Company Balance Sheet Financing



Sumber : Indonesian Economic and Financial Statistics - December 2025

Theoretically, the company's commitment to sustainability aspects has a positive correlation with the efficiency of capital structure management (Ho et al., 2021; Adeneye et al., 2022; Pujiastuti et al., 2024). Companies with superior CSP levels tend to show better information transparency and stronger stakeholder engagement (Ho et al., 2021; Kim & Park, 2022; Pinto & Gaio, 2025). This condition is able to significantly reduce the problem of information asymmetry between management and external parties, which in turn reduces agency costs and transaction costs in the capital market (Ho et al., 2021; Adeneye et al., 2022; Asimakopoulos et al., 2023; Raimo et al., 2021). As a result, companies with good sustainability performance will face lower barriers when accessing outside funding, allowing them to adjust leverage levels towards optimal targets at a higher pace (Ho et al., 2021; Adeneye et al., 2022; Li & Li, 2025; Pujiastuti et al., 2024; Asimakopoulos et al., 2023; Raimo et al., 2021).

Although CSP offers various advantages in accelerating SOA, the effectiveness of this relationship cannot be separated from the company's internal conditions, especially the level of financial constraints (Ho et al., 2021; Li et al., 2024; Miranda-García & Segovia-Vargas, 2024; Agoraki et al., 2022; Hu, 2023; Liu et al., 2024; Dinçergök & Pirgaip, 2025; Cheng & Manansala, 2025; Futri et al., 2025). Companies that face high financial constraints generally experience limited liquidity and tighter access to external capital (Li et al., 2024; Miranda-García & Segovia-Vargas, 2024; Hu, 2023; Liu et al., 2024; Dinçergök & Pirgaip, 2025; Futri et al., 2025). For this group of companies, financial flexibility becomes very limited as most of the cash flow must be allocated to maintain basic operational continuity rather than funding costly sustainability initiatives (Li et al., 2024; Miranda-García & Segovia-Vargas, 2024; Hu, 2023; Cheng & Manansala, 2025; Futri et al., 2025). As a result, financial constraints are believed to act as internal limiting factors that can weaken the positive impact of CSPs on the speed of leverage adjustment (Ho et al., 2021; Li et al., 2024; Miranda-García & Segovia-Vargas, 2024; Hu, 2023; Liu et al., 2024; Dinçergök & Pirgaip, 2025; Cheng & Manansala, 2025; Futri et al., 2025).

In addition to internal factors, the dynamics of capital restructuring are also highly dependent on the pressures of the external regulatory environment in which the company operates (Fard et al., 2020; Tascón et al., 2020; Yang et al., 2022; Lin & Pan, 2023; Sánchez et al., 2025). The implementation of environmental policy instruments by governments, known as Environmental Policy Stringency (EPS), has been empirically proven to influence corporate funding decisions on a macro basis (Fard et al., 2020; Shu et al., 2023; Yang et al., 2022; Lin & Pan, 2023; Sánchez et al., 2025). Increasingly stringent environmental regulations can increase funding costs, limit bank lending options for carbon-intensive industries, and generally slow down the pace of adjusting firms' leverage due to increased transaction costs related to environmental compliance (Fard et al., 2020; Tascón et al., 2020; Yang et al., 2022; Lin & Pan, 2023; Hussain et al., 2020).

Therefore, the level of policy tightness is an external contextual variable that is crucial in moderating how internal sustainability performance translates into capital structure decisions (Shu et al., 2023; Yang et al., 2022; Nabi et al., 2025; Kusumawati, 2024; Sánchez et al., 2025).

The context of this Environmental Policy Stringency is very relevant to the current business climate in Indonesia, which is intensively transitioning to a green economy (Hartono et al., 2023; Setyowati, 2020; Leonard et al., 2024; Guild, 2020). Through its emission reduction commitment, the Indonesian government has introduced various new regulatory instruments such as the carbon tax implementation plan and the launch of the Indonesia Carbon Exchange (IDXCarbon) (Hartono et al., 2023; Leonard et al., 2024). The increasing strictness of environmental policies creates a landscape of risks as well as new opportunities for issuers on the IDX (Setyowati, 2020; Leonard et al., 2024; Guild, 2020; Kusumawati, 2024; Ramdhan, 2025). Companies that are unable to align their operations with the new environmental standards will face the risk of funding disincentives, while companies with high CSP have the potential to take advantage of these stringent regulations to obtain green financing with looser terms (Setyowati, 2020; Leonard et al., 2024; Guild, 2020; Nabi et al., 2025; Kusumawati, 2024; Ramdhan, 2025; Sánchez et al., 2025).

Despite the real urgency, previous literature still shows a research gap (Tascón et al., 2020; Shu et al., 2023; Tang et al., 2025; Yang et al., 2022; Lin & Pan, 2023; Nabi et al., 2025; Hussain et al., 2020). Research on the impact of sustainability performance on capital adjustment has largely focused on developed markets by comprehensively ignoring the interaction of internal financial constraints (Tascón et al., 2020; Shu et al., 2023; Tang et al., 2025; Nabi et al., 2025; Hussain et al., 2020). On the other hand, studies of environmental regulatory interventions such as EPS have generally only looked at their impact on aggregate debt levels without attributing them to dynamic adjustment speed responses from the perspective of individual ESG performance of companies (Tascón et al., 2020; Shu et al., 2023; Yang et al., 2022; Fard et al., 2020; Lin & Pan, 2023; Hussain et al., 2020). There has been no empirical research that integrates the CSP dimension as an internal driver, financial constraints as a constraint on internal capacity, and EPS as external regulatory pressures in one integrated model in the context of developing countries such as Indonesia (Hartono et al., 2023; Setyowati, 2020; Leonard et al., 2024; Guild, 2020; Nabi et al., 2025; Kusumawati, 2024; Ramdhan, 2025).

Based on the above theoretical phenomenon and gap, this study is designed to empirically test the influence of Corporate Sustainability Performance on the Speed of Leverage Adjustment. This study specifically places financial constraints and Environmental Policy Stringency as moderation variables to capture the dynamics of simultaneous internal and external interactions in non-financial companies listed on the Indonesia Stock Exchange. The results of this study are expected to make a theoretical contribution to the literature on dynamic capital structures and provide practical guidance for financial managers in navigating funding decisions amid stringent environmental regulations and capital constraints.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

The main theoretical foundation in this study is built on the Dynamic Trade-off Theory which states that companies actively seek to maintain their capital structure at the optimal target level by balancing the tax protection benefits of debt against the risk of incurring financial hardship costs (Ho et al., 2021; Ai et al., 2021; Shaw & Rakshit, 2021). In dynamic market conditions, companies will continue to make adjustments (leverage adjustments) to achieve these optimal targets, but the speed of adjustment (Speed of Leverage Adjustment / SOA) is highly dependent on the amount of transaction costs and market friction faced (Ho et al., 2021; Abdullah et al., 2023; Shaw & Rakshit, 2021; Paseda, 2025). Market frictions that hinder this adjustment can stem from internal capacity constraints such as limited liquidity and financial constraints, as well as external regulatory barriers from governments that limit the flexibility of corporate

funding options (Li & Li, 2025; Ho et al., 2021; Abdullah et al., 2023; Shaw & Rakshit, 2021; Paseda, 2025).

To explain the role of sustainability in funding decisions, this study also integrates Stakeholder Theory and Information Asymmetry Theory (Ho et al., 2021; Vargas-Santander et al., 2023; Alsayegh et al., 2022; Bazhair, 2023). Stakeholder theory asserts that a company's failure to meet environmental and social expectations can increase non-financial risks, while the achievement of superior sustainability performance (Corporate Sustainability Performance / CSP) is able to strengthen relationships of trust with external parties, including creditors and investors (Ho et al., 2021; Febrian & Hendriyeni, 2024; Vargas-Santander et al., 2023; Alsayegh et al., 2022; Xu et al., 2025). In line with the theory of information asymmetry, the openness and superiority of CSP activities act as positive signals that reduce information uncertainty in the capital market (Ho et al., 2021; Jamil et al., 2023; Vargas-Santander et al., 2023; Alsayegh et al., 2022; Diantimala et al., 2022; Xu et al., 2025). This decrease in information asymmetry in turn reduces agency costs as well as the cost of external funding transactions, making it easier for companies to restructure debt more quickly (Li & Li, 2025; Ho et al., 2021; Wang et al., 2022; Jamil et al., 2023; Vargas-Santander et al., 2023; Alsayegh et al., 2022; Hu et al., 2020; Aleknevičienė & Stralkutė, 2023; Xu et al., 2025)

Research Hypothesis Development

The high sustainability performance of companies (CSPs) facilitates cheaper and more flexible access to capital markets due to reduced information barriers and transaction costs (Ho et al., 2021; Adeneye et al., 2022; Alsayegh et al., 2022; Gonçalves et al., 2022; Fandella et al., 2023). This condition allows companies with good sustainability governance to adjust their actual leverage levels towards optimal targets at a higher velocity (SOA) (Ho et al., 2021; Adeneye et al., 2022; Pujiastuti et al., 2024; Mukti & Kusuma, 2024; Chen, 2024). However, this internal capacity can be limited if the company faces severe financial constraints (Ho et al., 2021; Tang, 2022; Hu, 2023; Guo et al., 2023; Li et al., 2024). Companies that experience financing constraints tend to prioritize their cash flow allocation to maintain short-term basic operational continuity, thus limiting their ability to leverage CSP's reputational advantage to accelerate capital adjustments (Ho et al., 2021; Guo et al., 2023; Li et al., 2024). Based on these arguments, the first and second hypotheses are formulated as follows:

H1: Corporate Sustainability Performance has a positive effect on the Speed of Leverage Adjustment.

H2: Financial Constraints moderate (weaken) the positive influence of Corporate Sustainability Performance on the Speed of Leverage Adjustment.

In addition to the internal capacity factor, the dynamics of the speed of adjustment of corporate capital structures are also significantly influenced by external regulatory pressures in the form of strict environmental policies (Environmental Policy Stringency / EPS) (Lee et al., 2024; Xiao, 2022; Fard et al., 2020; Ho et al., 2021). Empirically tightening government environmental policies can limit access to conventional bank loans and trigger an increase in legal compliance transaction costs for corporations (Fard et al., 2020; Yang et al., 2022; Ho et al., 2021; Li et al., 2022; Dang et al., 2024). These increased macrotransaction costs and regulatory barriers create additional friction that slows down the pace of corporate capital adjustment towards optimal targets (Lee et al., 2024; Xiao, 2022; Nguyen et al., 2021; Asimakopoulos et al., 2023). When EPS levels are high, the cost efficiency gains offered by the company's in-house CSP performance holdings will tend to be compensated or distorted by the high cost burden of regulatory adjustments at the country level, thereby slowing down the leverage adjustment response (Lee et al., 2024; Xiao, 2022; Fard et al., 2020; Asimakopoulos et al., 2023; Ho et al., 2021; Sánchez et al., 2025). Based on this line of thought, the third hypothesis is established as follows:

H3: Environmental Policy Stringency moderates (weakens) positive influences

Research Model

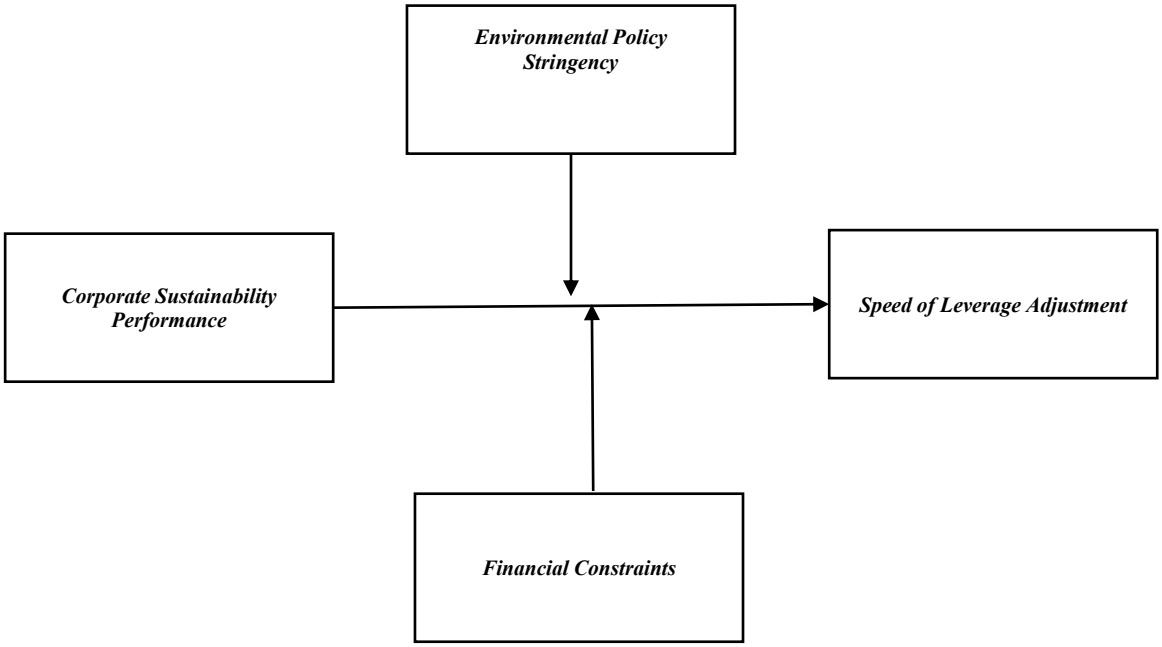


Image 4. Research Model

RESEARCH METHODS

This study uses a quantitative approach with an explanatory design to test the causality relationship between variables in a dynamic adjustment model. The study population includes all non-financial public companies listed on the Indonesia Stock Exchange during the observation period from 2023 to 2025. The final sample determination was carried out through purposive sampling techniques with inclusion criteria in the form of completeness of annual reports, presentation of sustainability reports, and the availability of consistent environmental, social, and governance aspect scores presented in table 1. The data collection technique uses a secondary documentation method through digital downloading of external data. The development of data instruments is carried out by transforming raw data into standardized financial ratios and composite scores. Material specifications of financial fundamentals data and corporate sustainability scores are extracted from the Refinitiv Eikon (Thomson Reuters) platform and Bloomberg Terminal, which provide consolidated company-level data on a global scale, while macro environmental regulatory data material is obtained through the official portal of the Organization for Economic Co-operation and Development (OECD) in the form of annual Environmental Policy Stringency index data.

Table 1. Sample criteria table

Sample Withdrawal Criteria	Deduction	Number of Companies
Populasi		**930**
Companies included in the financial sector	-115	815
Companies that have just conducted an IPO after January 1, 2023 or experienced *delisting* during the 2023–2025 period	-150	665
Non-financial companies that do not publish a complete Annual Report and	-115	550

Sample Withdrawal Criteria	Deduction	Number of Companies
Sustainability Report during the 2023–2025 period.		
Companies that **do not have** a consistently published ESG Score during 2023–2025.	-470	80
Companies that have negative equity or incomplete fundamental data to calculate *the proxy Financial Constraints*	-10	**70**
Number of Company Samples (n)		**70 Companies**
Total Observations = 70 companies × 3 years		**210 Observations**

The data analysis method applied is dynamic panel data regression through the Generalized Method of Moments (GMM) approach or fixed effects regression to account for company heterogeneity and overcome the potential for endogeny. The speed of leverage adjustment (SOA) as a dependent variable is measured through the partial adjustment model, which estimates how quickly a company closes the distance between its actual leverage and its optimal target leverage. The influence of the main independent variable, namely Corporate Sustainability Performance (CSP), is measured through an ESG composite score. This analysis was then deepened by including the effect of interaction to test the moderation variable, namely the level of financial constraints proxied through the Kaplan-Zingales Index or a measure of the cash flow deficit, as well as the strictness of external environmental regulations (EPS). To maintain the robustness of the model, this study also includes company-specific control variables which include firm size, tangibility, profitability, and market-to-book ratio.

Table 2. Operational Definitions and Variable Measurements

Variabel	Variable Type	Operational Definition	Measurement	Reference Sources
Speed of Leverage Adjustment (SOA)	They depend (and)	The speed at which a company adjusts its actual debt level to return to the target or optimal leverage level.	It is calculated using a dynamic partial adjustment model. Adjustment speed is a coefficient that measures how quickly a company closes the distance between target leverage and actual leverage.	Ho et al. (2021)
Corporate Sustainability Performance (CSP)	Independent (X)	An assessment of the extent to which the company integrates environmental, social, and governance elements into its business operations.	ESG *Combined Score* (ESGC) published by data providers such as Thomson Reuters or Bloomberg, is generally transformed into a natural logarithm (Ln) for data normality.	Ho et al. (2021)
Financial Constraints	Moderation 1 (Z1)	The level of barriers to access external financing or limited capital availability faced by the company.	Choose one or use multiple proxies: Kaplan-Zingales Index (KZ Index), Cash *Flow Deficit*, or Company Size/*Firm Age*.	Lee et al. (2024); Ho et al. (2021)
Environmental Policy Stringency (EPS)	Moderation 2 (Z2)	The level of strictness of the implementation of environmental regulations and policy instruments by the government in a country or region.	The *Environmental Policy Stringency Index* of the OECD, which provides a qualitative score (usually on a scale of 0 to 6, where 6 is very strict).	Lee et al. (2024)
Firm Size (SIZE)	Controls	The size or total amount of resources owned by the company.	A natural logarithm (Ln) of the total book value of the company's assets.	Lee et al. (2024); Ho et al. (2021)
Tangibility (TANG)	Controls	The proportion of tangible fixed assets that could potentially be used as collateral to acquire debt.	The ratio of property, factory, and equipment divided by total assets.	Lee et al. (2024); Ho et al. (2021)
Profitability (PROF)	Controls	The company's ability to generate profits from its	Earnings before tax and interest (EBIT) divided by total assets.	Lee et al. (2024); Ho et

Variabel	Variable Type	Operational Definition	Measurement	Reference Sources
		operational activities.		al. (2021)
Market-to-Book Ratio (MTB)	Control	A ratio that reflects the growth opportunities and valuation that the market provides to a company's equity.	Market value is divided by book *value*.	Lee et al. (2024); Ho et al. (2021)

RESULTS AND DISCUSSION

Analysis results

Statistics descriptive

The Speed of Leverage Adjustment shows that the process of adjusting the company's capital structure does not occur instantly, but rather through stages influenced by transaction costs and market friction in funding negotiations. On the other hand, Corporate Sustainability Performance shows that sustainability performance is a crucial differentiating factor in accelerating this dynamic. Companies with better performance are able to close the information gap between internal and external parties, ultimately making it easier for them to gain the trust of creditors and investors to accelerate the transition to an ideal capital structure.

Financial Constraints show that most companies still face real internal liquidity constraints, which limit management's room to make ideal funding decisions. This situation is complicated by the Environmental Policy Stringency which shows that increasingly stringent government environmental regulations force companies to no longer just pursue profitability, but also to comply with new green standards. As a result, there is a divergence in performance in the capital market; Companies that successfully align their Corporate Sustainability Performance strategy with Environmental Policy Stringency pressures will have a better bargaining position than companies that are still burdened by Financial Constraints and have difficulty adapting to green standards.

Table 3. summary descriptif

Variabel	N	Minimum	Maximum	Red (Average)	Standard Deviation
SOA *(Speed of Leverage Adjustment)*	210	-0.125	0.842	0.315	0.184
CSP *(Corporate Sustainability/ESG Score)*	210	22.45	88.6	54.32	16.55
KZ_INDEX *(Financial Constraints)*	210	-2.85	4.72	0.945	1.32
EPS *(Environmental Policy Stringency)*	210	1.55	2.8	2.15	0.42
SIZE *(Firm Size - Ln Total Aset)*	210	28.15	34.62	30.85	1.45
TANG *(Tangibility)*	210	0.045	0.88	0.385	0.215
PROF *(Profitability)*	210	-0.185	0.42	0.068	0.092
MTB *(Market-to-Book Ratio)*	210	0.35	12.45	2.15	1.85

Pearson Correlation Matrix Estimation

The Speed of Leverage Adjustment shows a positive one-way relationship with Corporate Sustainability Performance, which indicates that companies with better sustainability initiatives tend to have more efficient capital structure adaptability in the market. In addition, control variables such as Firm Size and Profitability also show a pattern of relationships that are in line with financial logic, where larger and profitable companies have distinctive debt adjustment characteristics. Overall, the correlation between the existing variables showed no indication of excessive overlap or serious multicollinearity problems, which gives confidence that each variable contributes unique and independent information in this research model.

Financial Constraints and Environmental Policy Stringency show a negative relationship direction towards the Speed of Leverage Adjustment, which logically emphasizes that these two

factors do act as real obstacles for companies to carry out debt restructuring quickly. The existence of this relationship confirms that external pressures from regulation and internal constraints of liquidity do work against the speed of adjustment of capital structures. Because the level of interconnectedness between independent variables is still within reasonable limits, this research model remains reliable and avoids the risk of overlap, so that the moderation effect tested later can be ascertained to reflect the pure impact of each of these variables on the company's capital structure targets.

Table 4. Pearson Correlation Matrix Estimation

Variabel	SOA	CSP	KZ_INDEX	EPS	SIZE	TANG	PROF	MTB
SOA	1							
CSP	0.285***	1						
KZ_INDEX	-0.194**	-0.120*	1					
EPS	-0.210**	0.145**	0.05	1				
SIZE	0.150**	0.420***	-0.215**	0.08	1			
TANG	0.182**	0.115	0.165**	0.042	0.230***	1		
PROF	-0.145**	0.205***	-0.380***	0.065	0.180**	-0.055	1	
MTB	0.110*	0.165**	-0.140*	-0.025	0.265***	0.120*	0.410***	1

(Keterangan: *p<0.10; p<0.05; ***p<0.01)

Hypothesis Test Results (Dynamic Panel Data Regression / GMM)

The first regression model test showed that Corporate Sustainability Performance has a positive direction coefficient and has a statistically significant effect on the Speed of Leverage Adjustment. These findings confirm that quality improvements in the company's sustainability practices are directly related to the acceleration of the recovery of the capital structure towards its optimal target level. The results of these estimates provide strong empirical evidence to accept the first hypothesis that sustainability performance has a positive effect on the speed of corporate debt adjustments.

In the second model test, the interaction variable between Corporate Sustainability Performance and Financial Constraints showed a statistically significant negative influence on the Speed of Leverage Adjustment. The direction of the negative coefficient in this parameter estimation indicates that the presence of internal funding barriers significantly weakens the positive contribution of sustainability performance to the speed of debt adjustments. This data provides empirical confirmation that supports the second hypothesis regarding the role of financial constraints as a moderator that weakens the relationship.

Testing on the comprehensive model shows that the interaction variable between Corporate Sustainability Performance and Environmental Policy Stringency has a negative directional coefficient and has a statistically significant effect on the Speed of Leverage Adjustment. These results indicate that tightening environmental regulations at the national level acts as an external limiting factor that reduces the efficiency of green companies' capital restructuring. The objective findings of this external interaction model provide full support for accepting the third hypothesis put forward in the study.

Table 5. Hypothesis Test Results

Independent Variables	Model 1 (Main Effect)	Model 2 (Internal Moderation)	Model 3 (Comprehensive Model)
CSP	0.045***	0.052***	0.068***
	-3.42	-3.85	-4.15
KZ_INDEX	-0.022**	-0.015	-0.012
	(-2.15)	(-1.20)	(-1.10)
EPS	-0.038***	-0.035**	-0.025*
	(-2.80)	(-2.65)	(-1.85)

Independent Variables	Model 1 (Main Effect)	Model 2 (Internal Moderation)	Model 3 (Comprehensive Model)
CSP × KZ_INDEX (Moderation 1)		**-0.018*** **(-1.95)**	**-0.016*** **(-1.82)**
CSP × EPS (Moderation 2)			**-0.024** **(-2.10)**
SIZE	0.015** -2.1	0.014* -1.95	0.012 -1.65
TANG	0.115*** -3.65	0.110*** -3.5	0.105*** -3.25
PROF	-0.085** (-2.30)	-0.082** (-2.25)	-0.078** (-2.15)
MTB	0.005 -0.85	0.006 -0.95	0.005 -0.8
Konstanta	Yes	Yes	Yes
Fixed Effects (Year & Industry)	Yes	Yes	Yes
N (Observation)	210	210	210
Adjusted R-Squared	0.185	0.212	0.245

Discussion

The Effect of Corporate Sustainability Performance on the Speed of Leverage Adjustment

The finding that Corporate Sustainability Performance has a positive effect on the Speed of Leverage Adjustment proves that the company's commitment to environmental, social, and governance aspects acts as a catalyst for efficiency in capital structure decisions. Based on Information Asymmetry Theory, sustainability activities that are transparently published serve as a strong quality signal to external markets. This signal effectively reduces the suspicion and uncertainty of information that capital providers often have with management, making it easier for companies to negotiate new debt contracts with looser terms and lower transaction costs.

The successful absorption of this positive signal has a direct impact on the flexibility of corporate funding in the capital market. As information asymmetry declines, companies enjoy the privileges of faster access to credit markets, including a high preference for green-based banking loans that offer more competitive interest rates. This ease of access cuts the waiting times and administrative hurdles that typically slow down financial restructuring. This phenomenon is in line with the corridor of Dynamic Trade-off Theory, where the speed at which a company moves towards its optimal debt target is largely determined by how little friction and transaction costs they face in the capital market (Ho et al., 2021; DeMarzo & He, 2021; Huang et al., 2023; Koo & Park, 2015; Ho, 2011).

Empirically, the results of this study reinforce previous findings made by Ho et al. (2021), which stated that a superior non-financial reputation makes a real contribution to lowering agency costs (Ho et al., 2021; Koo & Paik, 2016; Han et al., 2012). A harmonious relationship with stakeholders, as described in Stakeholder Theory, creates a solid network of trust between corporations and financial institutions (Ho et al., 2021; Luo et al., 2023; Bajaj et al., 2021; Han et al., 2012). This trust frees companies from the complicated bureaucratic process of tightening credit, so that when there is a deviation from the capital structure target due to operational shocks, management can nimbly readjust in a much shorter time (Ho et al., 2021; Fan et al., 2021; Luo et al., 2023; DeMarzo & He, 2021; Huang et al., 2023; Han et al., 2012; Chen et al., 2022).

The Role of Moderation of Financial Constraints on the Influence of Corporate Sustainability Performance on the Speed of Leverage Adjustment

The results of the interaction test show that Financial Constraints are proven to weaken the positive impact of Corporate Sustainability Performance on the Speed of Leverage Adjustment. These findings reflect real-world conditions where limited internal financial capacity is able to create a barrier wall that neutralizes the gains of a company's green reputation. When a company is in a state of severe liquidity entanglement in a state of severe liquidity entrapment,

management's strategic orientation will logically undergo an instant shift, where the top priority is shifted to maintaining short-term operating cash flow for the sake of the company's survival, instead of being allocated to finance the long-term restructuring of the capital structure.

This condition of financial limitations triggers the powerlessness of management in taking advantage of the competitive advantage of their sustainability score in the presence of creditors. Although the company has an excellent track record of Corporate Sustainability Performance, financial institutions and external investors will still prioritize default risk analysis sourced from the company's internal liquidity and solvency indicators (Barrak et al., 2023). This fragile aspect of financial fundamentals is seen as high risk, so the market will still impose expensive risk premium rates or even limit the supply of new capital for the company (Barrak et al., 2023; Kong et al., 2023; Dzomonda, 2022; Nurhayati et al., 2025; Novaković et al., 2025).

Theoretically, this interaction confirms the basic principle in Dynamic Trade-off Theory regarding the existence of massive internal market friction (Ho et al., 2021; Adeneye et al., 2022; Tascón et al., 2021; Kong et al., 2023). The liquidity constraints represented by Financial Constraints create structural rigidity that forces companies to accept suboptimal capital structure conditions for a while (Ho et al., 2021; Adeneye et al., 2022; Tascón et al., 2021; Barrak et al., 2023; Iqbal et al., 2025; Dzomonda, 2022; Nishihara, 2023). This phenomenon is in line with the framework of Almeida et al. (2004) and the findings of Ho et al. (2021) which indicate that internal financial capacity is an absolute prerequisite for the effectiveness of non-financial signals; without healthy liquidity support, the reputational advantage of sustainability practices will lose its impetus in accelerating debt adjustment (Ho et al., 2021; Adeneye et al., 2022; Tascón et al., 2021; Barrak et al., 2023; Iqbal et al., 2025; Dzomonda, 2022; Ferreras et al., 2024; Nishihara, 2023).

The Role of Environmental Policy Stringency Moderation on the Effect of Corporate Sustainability Performance on the Speed of Leverage Adjustment

The finding that Environmental Policy Stringency weakens the positive influence of Corporate Sustainability Performance on Speed of Leverage Adjustment provides an important macro perspective on how government regulation can distort corporate financial incentives. As governments implement national environmental policies in a very strict and rigid manner, the entire industrial landscape is forced to allocate their financial resources to meet new standards of legal compliance. In accordance with Transaction Cost Theory, this tightening of regulations dramatically increases the burden of macrotransaction costs, such as mandatory environmental audit fees, emission fines, and expensive low-carbon technology investments.

This surge in external compliance costs empirically compensates or even removes the funding cost efficiencies that companies should have gotten from their Corporate Sustainability Performance investments. Under the high regulatory pressure of the environment, banking institutions have also become much more cautious and tightened lending criteria to avoid systemic industrial risks, so that the space for the credit market in general has become narrower (Huang et al., 2021). As a result, even if a company has had superior sustainability performance, they still have to face a national business environment full of strict scrutiny, which ultimately limits the choice of funding instruments and slows down the mobility of their capital adjustments (Huang et al., 2021; Bajaj et al., 2021; Kosztowniak, 2024; Zhou et al., 2023; Jiang et al., 2022).

The results of this macro-micro interaction analysis support the argument from Lee et al.'s (2024) research that overly aggressive environmental regulation can trigger capital supply-side shocks and limit the flexibility of corporate dynamic debt adjustments (Bajaj et al., 2021; Jiang et al., 2022; Jiang et al., 2021). Strict environmental policies create new regulatory uncertainty in the capital market, which forces management to be defensive in managing its debt (Bajaj et al., 2021; Jiang et al., 2022; Miguel et al., 2023; Jiang et al., 2021). The positive signal effect of the company's sustainability commitment is ultimately dampened by macro market sentiment that tends to view tightening regulations as an additional burden for the future profitability of corporations (Huang

et al., 2021; Bajaj et al., 2021; Zhou et al., 2023; Momand & Khel, 2025; Tao et al., 2021; Miguel et al., 2023).

CONCLUSION

The study concludes that Corporate Sustainability Performance has been proven to consistently accelerate the pace of Speed of Leverage Adjustment, confirming that transparency and strong sustainability governance are able to cut information asymmetry and make it easier for corporations to achieve their optimal capital structure. However, the efficiency of this internal capacity cannot be separated from the dynamics of market friction, where Financial Constraints prove to be internal constraints that weaken the relationship as companies experiencing limited liquidity are forced to prioritize cash flow for short-term operations rather than debt restructuring. On the other hand, Environmental Policy Stringency acts as an external limiting factor that contributes to the positive contribution of sustainability performance due to the surge in compliance transaction costs and tightening macrocredit requirements at the national level. While these findings provide in-depth insights, the study has limitations, particularly in the relatively short span of observation periods and reliance on sustainability score data from global databases whose scope is limited to large companies only, so these results may not fully reflect the behavior of small and medium-sized companies. The practical implications of these findings underscore the importance for financial managers to align the sustainability agenda with internal liquidity resilience in order to maintain the flexibility of capital structure decisions amid competitive market conditions. For policymakers, these results provide a strong indication that the implementation of stringent environmental regulations must be balanced with the provision of incentives or accommodating green financing channels to prevent capital cost distortions that can weigh on corporate growth. As a recommendation, the next study is expected to expand the scope of analysis by dissecting the choice of debt forms more specifically, such as the comparison between the issuance of green bonds and the withdrawal of bank debt, as well as extending the range of observation periods to capture the dynamic adaptation pattern of corporate capital structure more comprehensively.

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