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SUSTAINABLE FINANCE AND THE COST OF CAPITAL: EMPIRICAL EVIDENCE FROM ESG COMPLIANT FIRMS

PEMBIAYAAN BERKELANJUTAN DAN BIAYA MODAL: BUKTI EMPIRIS DARI PERUSAHAAN YANG PATUH ESG

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ABSTRACT
This study examines the relationship between compliance with Environmental, Social, and Governance (ESG) principles and firms' cost of capital. Although ESG is theoretically associated with lower cost of capital through reduced risk perception, empirical findings show varying results depending on industry sector and institutional context. Using a narrative literature review approach, this study analyzes empirical studies from 2010 to 2025 obtained from various indexed databases. The results show that ESG, especially the governance dimension, is consistently negatively correlated with cost of capital, while the influence of environmental and social aspects is contextual. The effect of ESG tends to be stronger in high-risk industries and in countries with strict ESG regulations. This study confirms the importance of ESG as a financial strategy, while strengthening the relevance of Signaling, Stakeholder, and Institutional theories in understanding these dynamics.
Keywords: ESG, Cost of Capital, Sustainable Finance, Governance, Institutional Context

ABSTRAK
Penelitian ini meninjau hubungan antara kepatuhan terhadap prinsip Environmental, Social, and Governance (ESG) dan biaya modal perusahaan. Meskipun ESG secara teoritis dikaitkan dengan penurunan biaya modal melalui pengurangan persepsi risiko, temuan empiris menunjukkan hasil yang bervariasi tergantung pada sektor industri dan konteks institusional. Dengan pendekatan tinjauan literatur naratif, kajian ini menganalisis studi empiris dari tahun 2010 hingga 2025 yang diperoleh dari berbagai database terindeks. Hasil menunjukkan bahwa ESG, khususnya dimensi governance, secara konsisten berkorelasi negatif dengan biaya modal, sementara pengaruh aspek lingkungan dan sosial bersifat kontekstual. Efek ESG cenderung lebih kuat dalam industri berisiko tinggi dan di negara dengan regulasi ESG yang ketat. Studi ini menegaskan pentingnya ESG sebagai strategi keuangan, sekaligus memperkuat relevansi teori Signaling, Stakeholder, dan Institusional dalam memahami dinamika tersebut.
Kata kunci: ESG, Biaya Modal, Keuangan Berkelanjutan, Tata Kelola, Konteks Institusional

1. INTRODUCTION

The increasing global attention to sustainable finance and the integration of ESG (Environmental, Social, and Governance) aspects in investment decision-making is reflected in global trends in fund management and capital market regulation. According to the Global Sustainable Investment Alliance (GSIA, 2023), total assets managed with a sustainable approach have reached USD 30.3 trillion globally, or around 36% of total assets managed professionally, indicating that ESG is no longer a marginal approach, but has become mainstream.

ESG is not only considered an ethical commitment, but also has direct economic implications for a company's capital structure and cost of capital. A study conducted by MSCI (2022) shows that companies with high ESG scores consistently experience a 10–20 basis point decrease in cost of capital compared to companies with low ESG scores. This is due to the market's perception that ESG-compliant companies have lower risks in the long term. In

addition, based on a report from Morningstar (2024), more than 75% of global institutional investors now state that ESG is one of the main considerations in evaluating investment risk, especially in the energy, technology, and financial sectors.

Cost of capital itself is an important indicator in funding efficiency, risk management, and company valuation. When a company is able to reduce the cost of capital, the company's value (firm value) can increase, and competitiveness in accessing external financing sources also improves. Therefore, understanding the influence of ESG on the cost of capital is very relevant from both a managerial and investor perspective.

The increasing integration of Environmental, Social, and Governance (ESG) principles within corporate strategies poses critical considerations for investors, regulators, and academics alike. A significant area of focus pertains to the relationship between ESG compliance and the cost of capital, which reflects investors' risk assessments and affects corporate financing efficiency. Empirical studies yield mixed results on this relationship, highlighting the complexity of factors involved in how ESG influences capital costs across diverse contexts.

Research indicates a consensus that robust ESG performance can lead to a decrease in the cost of capital for firms. For instance, Gholami et al. emphasize that sustainability disclosures can directly impact capital costs and idiosyncratic risks, suggesting that improved ESG practices enhance corporate reputations, thereby increasing trust among investors and resulting in lower capital costs (Gholami et al., 2022). Similarly, Possebon et al. find that Brazilian companies with higher ESG scores experience a reduction in their cost of capital due to the perceived lower risks associated with such firms (Possebon et al., 2024). This is consistent with findings from Berk et al., who argue that firms demonstrating strong ESG momentum are often viewed as less risky, which drives investors' willingness to pay a premium, further contributing to a lower cost of capital (Berk et al., 2023). Additional evidence from Ramirez et al. demonstrates a negative correlation between overall ESG scores and the cost of capital within Latin American companies, reinforcing the notion that meaningful engagement with ESG factors can lead to financial benefits (Ramirez et al., 2022).

However, other studies present a contrasting viewpoint, suggesting that costs associated with ESG compliance can inflate the cost of capital. For instance, Li et al. discuss the transition risks and financial burdens high ESG compliance can impose, potentially leading to an increased cost of borrowing for certain firms, especially in sectors with stringent regulations. Research by Nazarova and Lavrova posits that some firms may not see significant changes in their cost of capital relative to their ESG performance, implying that the costs associated with improving ESG scores may deter investment in ESG activities (Nazarova & Lavrova, 2022). Additionally, the nuanced impacts of ESG compliance vary by industry sector; firms in high-risk environmental sectors may experience different financial dynamics than those in less regulated industries, as explored by Kumawat and Patel, who highlight the implications of ESG disclosures on the cost of capital in their research (Kumawat & Patel, 2022).

The inconsistency in findings underscores a critical gap in the literature concerning not only the general relationship between ESG and the cost of capital but also the sector-specific and region-specific variations. To comprehensively address these disparities, future research must systematically explore how industry characteristics and institutional settings shape the dynamics of ESG compliance and its subsequent impact on the cost of capital. The findings of this study aim to fill this gap, offering a more holistic perspective on the interplay between ESG factors and corporate financing costs.

Based on the background and formulation of the problem that has been described, the main question that will be answered in this study is "**To what extent does ESG compliance affect the cost of capital for firms across different industries and institutional contexts?".** These questions are exploratory and analytical in nature, with the aim of exploring causal and correlational relationships between compliance with ESG principles and the amount of capital

costs borne by companies, while identifying contextual determinants that strengthen or weaken these relationships.

This study has several interrelated and mutually supportive objectives. First, this study aims to analyze and synthesize empirical findings from various studies that examine the effect of ESG compliance on the cost of capital. Using a narrative review approach, this study will filter relevant literature and categorize the results based on their respective findings, methodological approaches, and research contexts. The second objective is to identify variations in ESG effects based on industry sectors and institutional contexts, including differences in regulation, capital market maturity levels, and social and environmental expectations that apply in various countries. This analysis is important to understand whether the impact of ESG is universal or only applies under certain conditions. Furthermore, this study also intends to offer a conceptual contribution in the form of a framework that can explain the dynamics of the relationship between ESG and cost of capital theoretically. In addition, this study will provide direction for future research, both in the form of further empirical studies, exploration of causal relationships, and development of ESG evaluative models in financial decision making. Thus, this study is not only descriptive, but also normative and analytical, so that it can be a strong basis for the formation of corporate policies, investment strategies, and the development of contemporary financial theories.

To understand the relationship between ESG compliance and cost of capital comprehensively, this study uses a multi-theoretical approach that combines four main theories.First, Signaling theory proposes that Environmental, Social, and Governance (ESG) performance serves as a vital signal to investors, conveying a company's commitment to robust risk management, effective governance structures, and long-term sustainability strategies. Companies exhibiting high ESG scores tend to be perceived favorably by stakeholders, indicating lower risk profiles and better management of potential ESG-related controversies (Tailor, 2025; Galletta & Mazzù, 2022). This positive perception helps to alleviate information asymmetry in financial markets, fostering increased investor confidence (Kim & Li, 2021). Empirical studies indicate that firms with superior ESG performance are rewarded with lower risk premiums and a reduction in their overall cost of capital, directly linking effective ESG practices to enhanced financial stability (Ramadhan et al., 2024; (Tommaso & Thornton, 2020).

Moreover, recent research underscores that ESG compliance not only improves corporate risk management but also enhances firm valuation. Firms that successfully integrate ESG factors into their operational strategies demonstrate reduced risk exposure and increased sustainable growth, reflecting a broader market acknowledgment of the financial benefits associated with responsible corporate practices (Li, 2024)(Landi et al., 2022). For instance, a study analyzing the relationship between ESG performance and corporate valuation highlighted that effective ESG practices correlate with more favorable evaluations from investors, as they signify lower risks and a stronger commitment to sustainable practices (Li, 2024). This is particularly evident in sectors like banking, where ESG performance can significantly alter risk-taking behavior and influence overall financial metrics (Tommaso & Thornton, 2020).

Furthermore, consistent with signaling theory, the impact of ESG performance on reducing perceived risk among investors is crucial. It allows firms to communicate their commitment to sustainability effectively and engage with both institutional and retail investors, who increasingly prioritize ESG concerns (Neitzert & Petras, 2021). By signaling reduced risk through strong ESG metrics, companies can enhance their appeal in increasingly competitive markets that prioritize ethical governance and sustainable business practices (Landi et al., 2022). The interplay between ESG disclosures and firm performance reveals that companies positioned as responsible actors in the market cultivate engaging investor relationships which can ultimately lead to a more favorable financial outlook and diminished capital costs (Angir & Weli, 2024). In conclusion, the application of signaling theory in the context of ESG indicates that companies with high ESG scores effectively communicate their risk management

capabilities and operational stability to investors, thus playing a pivotal role in influencing market perceptions and financial outcomes.

Second, Stakeholder theory posits that companies must consider the interests of all stakeholders—including employees, customers, suppliers, and the community—in addition to shareholders, thereby altering the contextual lens through which corporate responsibility is viewed. This theory is fundamental in understanding how Environmental, Social, and Governance (ESG) criteria serve as mechanisms for corporate accountability and ethical conduct within the broader socio-economic fabric (Donaldson & Preston, 1995; , Wallace, 2003). By embedding ESG practices, firms cultivate relationships that enhance their reputations, which is vital for attracting investment and securing operational stability (Dell'Atti et al., 2017).

Research indicates that corporations actively engaging their stakeholders and fulfilling their ESG commitments often experience a reduction in perceived risks from external parties, such as creditors and investors. A study highlights that improved corporate social performance (CSP) can be treated as an insurance mechanism that mitigates risk perceptions—especially before negative events take place—because stakeholders may regard such performance as a buffer against potential losses (Koh et al., 2013). Furthermore, organizations that embrace high standards of CSR are more transparent and accountable, thus lessening informational asymmetries and facilitating trust within financial markets (Cheng et al., 2013).

Empirical evidence suggests that companies with superior ESG ratings benefit from operational advantages such as lower capital costs, enhanced market valuations, and robust financial performance (Yang & Shen, 2022; , Zhang, 2024). These benefits underscore the instrumental value of stakeholder engagement, which not only promotes firm resilience in the face of economic volatility but also strengthens relationships with key actors in the business ecosystem (Deng & Karia, 2025). Moreover, as organizations align their objectives with stakeholder interests, they enhance their operational stability and adaptability, allowing for effective resource reconfiguration and risk management strategies (Deng & Karia, 2025).

Correctly prioritizing stakeholder interests informs not only the ethical dimensions of corporate governance but also offers significant economic benefits. A reciprocal relationship often exists where higher stakeholder satisfaction translates into better financial outcomes, thus reinforcing the long-held belief that ethical conduct can drive profitability (Di & Wang, 2019). In this manner, stakeholder theory not only redefines corporate responsibility but also positions ESG criteria as essential to sustainable business strategies.

In summary, stakeholder theory provides a robust framework for understanding the complexities of corporate governance in contemporary contexts, emphasizing that firms engaged in thoughtful ESG practices are likely to experience enhanced stability and reduced risks associated with investor perceptions.

Third, Institutional theory elucidates the influence of the regulatory and normative contexts on Environmental, Social, and Governance (ESG) adoption and its consequent financial performance. In environments characterized by robust regulatory pressures and strong social norms, ESG behaviors become essential prerequisites, promoting a competitive edge. Conversely, in settings with weaker institutions, ESG often remains merely symbolic, failing to translate into significant financial benefits, thus aligning with DiMaggio and Powell's assertion regarding institutional isomorphism (Jorgji et al., 2024) Kalani et al., 2024).

Empirical evidence supports that firms with strong ESG performance typically experience enhanced financial outcomes, especially in markets where transparency and disclosure are prioritized. For instance, Jorgji et al. found that ESG disclosures can significantly amplify the link between ESG performance and financial success, demonstrating that transparency is pivotal for realizing the benefits of sustainability initiatives (Jorji et al., 2024). Additionally, Gholami et al. discuss how a firm's ESG performance can bolster its reputation and

accountability, leading to improved financial metrics, thereby underscoring the nexus among ESG, legitimacy, and financial performance (Gholami et al., 2022).

On the institutional investor front, Wang et al. argue that certain institutional investors can significantly enhance corporate ESG disclosures, thereby improving the relationship between firm practices and market expectations. This dynamic can foster a conducive environment for realizing financial gains aligned with robust ESG strategies (Wang et al., 2023). Furthermore, Li and Chengshu detail how long-term institutional investors show a preference for companies with superior ESG performance, which not only influences firm stock prices but can also lower the cost of capital, thereby enhancing financial viability (Li & Chengshu, 2023). The insights suggest that investment behaviors driven by ESG considerations are shaped significantly by the institutional context in which companies operate.

In regions where regulatory guidance is stronger, such as the European Union, firms that adhere to stringent ESG standards notably benefit from lower costs of capital due to perceived lower risks from lending institutions. Evidence indicates that companies failing to adequately address ESG issues may encounter higher capital costs, reflecting investor skepticism about their long-term viability (Eliwa et al., 2021). Thus, the intersection of institutional theory and ESG performance illustrates a complex interplay where institutional strength not only influences ESG adoption but also impacts overall financial performance. Therefore, the operational context plays a crucial role in determining whether firms leverage ESG factors as a fundamental aspect of their strategic orientation or whether they treat ESG adherence as a superficial endeavor. This dualism highlights the need for robust institutional frameworks to bolster genuine ESG engagements that translate into tangible financial outcomes.

Fourth, The trade-off theory of capital structure is a foundational concept in corporate finance, positing that firms strive to balance the tax advantages of debt against the costs associated with potential bankruptcy. This balance fundamentally influences how companies structure their financing. In this framework, companies that adopt strong Environmental, Social, and Governance (ESG) practices can lower perceived credit risks and enhance their financing strategies. Firms conveying high ESG standards are often rewarded with lower interest rates, reflecting reduced risk premiums, thereby mitigating their overall capital costs.

Kraus and Litzenberger's seminal work established the basis for assessing how tax liabilities are alleviated through leverage based on optimal financial structures that maximize firm value (Kraus & Litzenberger, 1973). This foundational understanding has been extended to financial mechanisms that assess risk, including those associated with ESG compliance. Firms with favorable ESG standings may experience improved access to capital markets, underscoring how contemporary financial practices can influence traditional theories such as the trade-off theory. Furthermore, research demonstrates that companies with rigorous ESG policies attract more favorable financing conditions, thereby affirming the incentive for businesses to engage in sustainable governance practices, although details on this aspect remain evolving and multifaceted (Tharavanij, 2021).

The substantial costs incurred when facing bankruptcy serve as a key counterbalance to the benefits associated with debt financing (Lindset et al., 2024). Companies that score low on ESG metrics may find themselves subjected to increased risk premiums due to the higher perceived likelihood of financial distress. Studies corroborate that adverse conditions, such as poor ESG performance, lead to a marked increase in financing costs, fostering a climate wherein strategic financial decision-making must account for risks related not just to traditional capital structure considerations, but also to rapidly evolving societal expectations regarding corporate responsibility (Castanias, 1983). In summary, the interplay between capital structure decisions and ESG compliance epitomizes the realities and complexities firms face within today’s financing landscape. Low ESG scores can lead to inflated capital costs as lenders factor in the heightened credit risk associated with a company's sustainability failures, while robust

ESG practices can markedly alleviate financial burdens and enhance competitive standing in capital acquisition (Chatzinas et al., 2018; ,Antoniou et al., 2008).

These four theories are used as analytical lenses to evaluate the findings in the literature and formulate an integrative understanding of how and why ESG compliance may affect a firm's cost of capital differently, depending on the industry sector and institutional context in which the firm operates.

2. METHOD

2.1 Type of Study

This research uses an approach narrative literature review, which aims to explore, synthesize, and evaluate in depth the published empirical findings related to the effect of ESG compliance on the cost of capital. Unlike systematic literature reviews that rely on very rigorous and quantitative search and selection procedures, narrative reviews allow researchers to interpret relevant literature with greater flexibility, especially in elaborating themes, theories, and relationships between concepts. This approach is particularly appropriate when existing studies show mixed results and there is a need to bring together different theoretical perspectives and research contexts (Baumeister & Leary, 1997; Ferrari, 2015).

The main objective of this study is to provide a broader and deeper understanding of the extent to which ESG compliance affects the structure of corporate capital costs across various industry sectors and institutional environments. Therefore, this narrative review not only describes the results of previous studies, but also evaluates the methodologies used, identifies thematic patterns, and highlights research gaps that can be used as a basis for further studies.

2.2 Literature Search Strategy

To ensure that the reviewed literature is of high academic quality and relevant to the research focus, the search process is carried out systematically even within the framework of a narrative review. The main data sources used include highly reputable international scientific databases, namelyScopus, Web of Science, ScienceDirect, JSTOR, And SSRN (Social Science Research Network). These five databases were selected because they cover leading peer-reviewed journals in finance, economics, management, and environmental policy studies.

Literature search was conducted using a combination of keywords arranged based on the main variables and research context. The keywords used include:**"ESG compliance"**, **"cost of capital"**, **"cost of equity"**, **"cost of debt"**, **"ESG and WACC"**, **"institutional context"**, **"industry variation"**, And **"sustainable finance"**. These keywords are used in combination with Boolean operators (AND, OR) to expand and filter search results effectively.

The search period is limited to a range of years.2010 to 2025. The year 2010 was chosen as the starting point because it was during this period that ESG began to receive serious attention in the context of corporate finance and the availability of ESG data began to increase significantly. The end point of 2025 takes into account the latest literature that is still in the process of publication or preprint. In addition, only articles peer-reviewed based included to ensure the scientific quality and validity of the methodology used in the reviewed studies..

2.3 Inclusion and Exclusion Criteria

In the article selection process, use inclusion and exclusion criteria strictly to maintain the relevance and validity of the study results.

- **Inclusion Criteria:**
    - Academic journal articles are of a nature empirical(both quantitative and mixed) and explicitly measure the impact of ESG on cost of capital, good in shape cost of equity, cost of debt, and weighted average cost of capital (WACC).

- Studies that use standardized ESG indicators, such as data from MSCI, Sustainalytics, Refinitiv, or Bloomberg.
- Cross-industry or cross-country studies containing contextual analysis.

- **Exclusion Criteria:**
  - Articles On-academic, such as editorial opinions, internal corporate reports that have not undergone a peer-review process, and grey literature.
  - Conceptual or normative studies that do not present empirical analysis.
  - Studies that only discuss ESG without explicit linkage to the cost of capital variable.

By applying these criteria, the research focuses only on scientific works that are directly relevant and make a substantive contribution to the understanding of the relationship between ESG and corporate cost of capital.

2.4 Analysis Techniques

Once relevant articles have been identified and classified, thematic and conceptual analysis to synthesize the main findings. This analysis was conducted in three main stages:

1. Thematic Analysis Based on ESG Sub-dimensions
   Each study was evaluated to identify whether the influence of ESG on cost of capital was derived from the aspectEnvironmental, Social, or Governance. This analysis allows mapping the relative contribution of each ESG dimension to the reduction or increase of a company's cost of capital.
2. Classification Based on Industry and Institutional Context
   The studies reviewed will be grouped by industry sector (e.g. energy, financials, technology, manufacturing) and the geographic location or legal jurisdiction in which the company is located. This aims to identify how ESG effects vary by sector characteristics and institutional strengths.
3. Identification of Causal Mechanisms, Mediators, and Moderators
   The study also analyzes whether there are intermediary mechanisms (mediators) such as corporate reputation, disclosure quality, or operational efficiency, as well as moderator variables such as company size, leverage level, or financial market maturity level that affect the strength and direction of the ESG–cost of capital relationship.

With this approach, narrative reviews not only summarize the literature descriptively, but also offer a conceptual map which allows for a comprehensive and in-depth understanding of the complexity of the relationship between ESG compliance and cost of capital, while providing a solid foundation for the development of theoretical models and policy recommendations in the future.

3. RESULTS

3.1 General Trends in Literature

The review of relevant literature provides evidence indicating a significant negative relationship between Environmental, Social, and Governance (ESG) compliance and the cost of capital. Companies demonstrating higher ESG performance are generally observed to incur lower capital costs. This outcome is supported by studies indicating that organizations adhering to sustainability principles often exhibit superior risk management, enhanced reputational standing, and more accountable governance practices (Ramirez et al., 2022;, (Possebon et al., 2024;. Such attributes are likely to mitigate investors' and creditors' risk perceptions, consequently leading to reduced financial expenses related to capital acquisition.

Moreover, while there is a substantial body of research supporting the negative correlation between ESG adherence and the cost of capital, variability exists in the reported strength of this relationship. It is crucial to note that differences in research methodologies, sample sizes, types of ESG scores (for instance, MSCI versus Sustainalytics), and the geographical or sectoral contexts significantly influence outcomes (Eliwa et al., 2021;, Kräussl et al., 2023). Some investigations present either no significant relationship or report a weak correlation, particularly in environments where ESG factors lack prominence in investment decision-making or where capital markets have not fully matured to adequately price in sustainability considerations (Possebon et al., 2024;, Peace, 2019). This underscores challenges faced by empirical studies aiming to correlate ESG and cost of capital metrics.

Furthermore, the literature suggests a growing recognition of ESG as a valuable indicator of a company's intrinsic quality, especially regarding risk management and operational efficiency. Research indicates that this perception influences how capital costs are structured, where proactive ESG strategies can improve access to funding while also potentially decreasing the cost of debt (Rattanakom et al., 2023; , (Almeyda & Darmansya, 2019). This concept is vital for understanding the integrated relationship between ESG practices and financial performance, especially in light of the findings from studies like that of Li et al. and Kräussl et al., which illustrate how ESG investments correlate with positive market perceptions and financial metrics (Li & Chengshu, 2023;, Kräussl et al., 2023). The overall conclusion affirms that high ESG compliance not only signals good governance but also translates into tangible financial benefits due to lower capital costs, which is an increasingly significant factor in investor decision-making.

3.2 Findings Based on ESG Components

An analysis of the Environmental, Social, and Governance (ESG) dimensions indicates that each plays a unique role in determining the cost of capital, which varies by sector and the characteristics of individual companies.

1. **Environmental**
   The importance of the environmental component is most pronounced in sectors such as energy, mining, and heavy manufacturing, which face significant environmental scrutiny. (Eliwa et al., 2021) provide evidence that companies with strong environmental practices can achieve lower costs of debt, illustrating how better environmental performance can mitigate financing risk (Eliwa et al., 2021). Furthermore, (Gjergji et al., 2020) support the notion that robust environmental disclosure practices correlate with lower capital costs, signaling that companies neglecting environmental factors may face greater capital costs (Gjergji et al., 2020). This correlation is critical in sectors where environmental liabilities are a pressing concern.

2. **Social**
   including labor practices, community relations, and corporate social responsibility, significantly impact industries such as public services and consumer goods. (Makhija et al., 2023) highlight that strong social ESG initiatives can positively influence investors' attitudes, enhancing a company's appeal to risk-averse investors (Makhija et al., 2023). Additionally, Przychodzeń et al. (2016) indicate that incorporating ESG factors into investment decisions can mitigate risk, which has implications for the company's cost of equity (Przychodzen et al., 2016). The cumulative effect of these social dimensions underscores the importance of reputation management in sectors where consumer perception is pivotal—a notion reinforced by the research of (Duuren et al., 2015),

which emphasizes the strategic importance of social governance alongside environmental factors (Duuren et al., 2015).

3. **Governance**
   The governance dimension consistently manifests a pronounced impact on the cost of capital across numerous sectors. Effective governance, characterized by independence in board composition, equitable compensation frameworks, and transparent financial reporting practices, enhances investor confidence and decreases perceived risks associated with moral hazards. Bauer et al. (2004) and Bhojraj & Sengupta (2003) both affirm that strong governance structures are crucial in mitigating investor concerns and lowering capital costs (Gjergji et al., 2020). Additionally, (Taylor et al., 2018) argue that governance issues are increasingly prioritized by asset managers, suggesting that firms exhibiting good governance practices can attract investments more easily and enjoy reduced costs of capital relative to their less-governed counterparts (Taylor et al., 2018).

In conclusion, the relative importance of each ESG dimension on the cost of capital is nuanced and sector-specific. The various interdependencies between environmental strategies, social responsibility, and governance practices create a complex landscape where companies must navigate their ESG profiles thoughtfully to optimize capital costs.

3.3 Variation Between Industries

The mediating effect of industry sector differences on the relationship between Environmental, Social, and Governance (ESG) practices and the cost of capital is a crucial consideration in understanding how these factors interact. Recent research indicates that industries facing higher external risks, such as energy, basic materials, and heavy industry, exhibit a robust negative correlation between ESG performance and cost of capital. This is attributed to investor behavior, where superior ESG efforts are perceived as effective mitigators against systemic risks and potential regulatory changes (Possebon et al., 2024;, Yu et al., 2018; , Ramirez et al., 2022). For instance, companies in high-risk industries can lower their cost of capital by demonstrating adherence to ESG principles, enhancing their appeal to cautious investors (Adeneye et al., 2022; , Raimo et al., 2021).

Conversely, in sectors like technology and financial services, the dynamics shift. Research suggests that governance and transparency within these industries hold significant sway over investor perception. Unlike their counterparts in higher-risk industries, firms in these sectors frequently contend with reputational and strategic risks that necessitate strong governance practices to attract investment (Şerban et al., 2022; , Moussa & Elmarzouky, 2024). This shift suggests that in lower-risk contexts, positive ESG performance not only enhances corporate reputation but also serves as a critical signal of long-term resilience and stability, leading to improved market valuations (Gietzmann & Ireland, 2005; , Piechocka-Kałużna et al., 2021).

As various studies have noted, ESG practices tend to reduce information asymmetry in capital markets, making firms appear more transparent and accountable. This transparency is particularly valuable in sectors where corporate governance is paramount, as it can lead to lower borrowing costs and a reduced cost of equity capital (Gholami et al., 2022;, Ellili, 2022; , Jorgji et al., 2024). For example, companies that disclose high-quality ESG information are often rewarded by investors with more favorable financing terms, further underscoring the differential impact of ESG based on industry (Priem & Gabellone, 2024;, Mulchandani et al., 2022). In summary, the relationship between ESG practices and the cost of capital is mediated significantly by industry sector dynamics. High-risk industries benefit greatly from robust ESG practices as these serve as a buffer against investment risks, while firms in lower-risk industries

derive more value from governance and transparency in attracting capital. The nuanced understanding of these dynamics is essential for investors and corporate strategists aiming to optimize financial performance through strategic ESG initiatives.

3.4 Variation of Institutional Context

The relationship between Environmental, Social, and Governance (ESG) practices and the cost of capital is heavily influenced by institutional context, which varies significantly across countries. In nations with robust ESG regulations, financial markets demonstrate a heightened responsiveness to sustainability information, often leading to a reduction in the cost of capital associated with strong ESG compliance. This dynamic is supported by (Eliwa et al., 2021), who emphasize that stringent ESG frameworks enable better integration of sustainability into investment decisions, thereby benefiting firms in terms of lower capital costs (Eliwa et al., 2021).

Conversely, in developing countries or emerging markets, the impact of ESG on the cost of capital tends to be less straightforward. Research indicates that the positive effects of ESG initiatives are primarily observable when companies are exposed to international investors or are listed on global exchanges that uphold rigorous sustainability standards. (Liu & Jin, 2023) highlight that local firms without such connections often struggle to gain recognition for their ESG efforts, resulting in a weaker correlation between ESG performance and financing costs (Liu & Jin, 2023). Key barriers, such as deficiencies in regulatory infrastructure, poor ESG reporting quality, and limited market awareness regarding ESG issues, significantly hinder this relationship in less developed contexts (Hong, 2023).

Furthermore, the variability of the ESG–cost of capital relationship underscores the notion that ESG factors are not universally impactful; rather, they are significantly shaped by the broader institutional ecosystem, including legal frameworks, market dynamics, and governance cultures. (Eliwa et al., 2021) conducted a study revealing that firms in the European Union with exemplary ESG practices and disclosures tend to enjoy a lower cost of debt (Eliwa et al., 2021). This finding aligns with the observation that institutional environments conducive to high-quality ESG practices can significantly diminish the perceived risks by investors, which, in turn, translates to more favorable financing conditions (Possebon et al., 2024). In conclusion, the institutional context plays a critical role in mediating the influence of ESG on the cost of capital. The implications for policymakers and companies are clear: enhancing regulatory frameworks and improving ESG disclosure quality are essential steps toward realizing the full economic benefits associated with sustainable business practices, particularly in markets that have thus far been less responsive to ESG initiatives (Rastogi et al., 2023).

4. DISCUSSIONS

4.1 Synthesis of Findings

The study results show that ESG compliance plays an important role in reducing the cost of capital by increasing investor perceptions of the company's stability, transparency, and long-term responsibility. Within the framework of signaling theory, ESG functions as a quality signal that can reduce information asymmetry and strengthen the company's reputation in the eyes of investors. With a good sustainability reputation, companies are seen as more reliable, face lower environmental and social risks, and are more responsive to stakeholder pressure.

Of the three pillars of ESG, dimension governance emerged as the most consistent factor influencing the cost of capital across sectors and jurisdictions. Strong governance indicates accountable management, sound decision-making, and a commitment to transparency—all of which lower investors' risk expectations. In contrast, the environment And society show more contextual effects. Environmental factors are more influential in carbon-intensive industries such as energy, mining, and manufacturing, while social factors are stronger in sectors that are vulnerable to reputational pressures, such as consumer and public

services. This suggests thatESG influences are not homogeneous, but rather are heavily influenced by industry exposure and institutional context.

4.2 Theoretical Implications

The findings of this study broaden and deepen the relevance of several classical theories in finance and strategic management. First,signaling theory(Spence, 1973) is strengthened because ESG has proven to be an important signal regarding the internal quality of the company, especially in terms of risk management and long-term orientation. Investors view ESG as an indicator of the company's commitment to sustainability principles and sound governance, which in turn affects the financing structure. Second,stakeholder theory(Freeman, 1984) acquires a new dimension, where ESG compliance shows the company's ability to respond and balance the interests of various parties, from investors, consumers, to the wider community. This strengthens the argument that sustainability is not only a normative value, but also a competitive business strategy. Third,institutional theory(DiMaggio & Powell, 1983) explains why the effect of ESG on the cost of capital is highly dependent on the external context, such as regulatory systems, market norms, and social pressures. Countries with strong institutions show a more significant relationship, while in developing countries, the effect of ESG is more limited and tends to depend on openness to global investors. Thus, this study highlights the importance of a theoretical approach that is multi-level and cross-disciplinary to understand the complexity of ESG dynamics in the context of modern corporate finance.

4.3 Research Gaps

Although the ESG and cost of capital literature has developed rapidly in the last decade,Finally, there are a number of important gaps which is still not widely explored:

1. Limitations of longitudinal studies: Most studies still use cross-sectional designs that are unable to capture the dynamics of ESG and cost of capital in the long term. In fact, the effects of ESG are likely to be accumulative and only become significantly visible after a certain period of time.
2. Lack of exploration of ESG dimensions separately as moderating variables: Although many studies assess ESG as an aggregate construct, very few analyze how each of the dimensions (E, S, and G) function as an aggregate construct.moderator or mediating variable in the relationship between company characteristics and its capital structure.
3. Lack of integration of cross-disciplinary theories: ESG studies are still very fragmented between traditional finance theory and sustainability management approaches. There are not many studies that integrate financial psychology, sustainability accounting, And risk management in explaining how ESG is translated into investor and creditor decisions.

Filling these gaps will enrich the academic discourse and provide a more comprehensive understanding of the role of ESG in the global financial system.

4.4 Practical Implications

This study not only has theoretical implications, but also provides important practical insights for stakeholders:

- For companies, ESG cannot be seen simply as a compliance obligation or an image marketing tool. In contrast, ESG is a financial strategy which has a real impact on capital structure and access to financing. Investment in sustainable practices can generate economic benefits in the form of reduced cost of capital and increased company value.
- For investors, ESG can be used as a long term risk evaluation tool, especially in screening companies that are more resilient to changes in the regulatory, social, and climate environment. ESG is a non-financial indicator that has substantial financial relevance.

- For regulators and policy makers, the results of this study emphasize the importance of harmonization and standardization of ESG reporting. Inconsistency of ESG data and lack of transparency can weaken the effectiveness of ESG as a financial signal. Therefore, policies are needed that encourage consistency of reporting and higher accountability, so that the market can optimally appreciate ESG.

5. CONCLUSION

5.1 Summary of Findings

This study confirms thatESG compliance has a significant impact on a company's cost of capital, but the direction and strength of these effects vary widely. This variation depends on the ESG dimension studied—where governance consistently shows the strongest effect on the cost of capital, while the environmental and social dimensions have effects that are more dependent on the characteristics of the industry sector and the institutional context of the country in which the company operates. These findings confirm that the ESG–cost of capital relationship is not a universal phenomenon, but rather is contextual and multidimensional.

5.2 Contribution of the Study

This research makes a significant contribution to the development of financial science and practice, particularly in the context of sustainability and the structure of corporate capital costs. One of the main contributions of this study is the provision of comprehensive literature mapping on the relationship between ESG compliance and cost of capital, covering various industry sectors and institutional contexts in several countries. Through this approach, the study is able to identify general patterns and variations in ESG effects that emerge under certain conditions, thus providing deeper insights into the factors that influence the effectiveness of ESG in reducing corporate capital costs.In addition, this study also presents a more integrative theoretical understanding by combining four main theoretical approaches: signaling theory, stakeholder theory, institutional theory, and trade-off theory. With this multidimensional approach, the study not only explains the relationship between ESG and cost of capital from a single perspective, but also unites various perspectives to build a more holistic and robust conceptual foundation. This approach also bridges the gap that has existed in corporate finance literature, which tends to be fragmented in explaining the impact of sustainability on performance.corporate financial statements.

5.3 Limitations of the Study

This study has several limitations that need to be considered in interpreting the results and contributing to the findings. First, there is the same potential bias in literature selection used, mainly due to limited access to proprietary ESG data sources. Such data, which are generally only available to institutional clients or through special subscriptions, may contain more detailed information and different evaluation methodologies than open sources. These limitations may affect the overall representation of the empirical findings in this study.Second, this study does not cover grey literature, such as industry reports, policy documents, and internal research conducted by companies or non-academic institutions. In fact, these sources have the potential to provide additional insights into how ESG principles are applied in practice in the business world, especially in the context of financial decision-making and business strategy that are not always expressed in formal scientific publications. Third, this study does not specifically involve private company case studies, which often have different reporting structures and ESG strategies than public companies. As such,generalization of findings is more relevant to the context of public companies that have more transparent and standardized ESG reporting obligations. To broaden the scope and depth of understanding, further research needs to consider the inclusion of non-public company literature.conventional and deeper

exploration of various types of business entities, including private companies and startups that are starting to integrate sustainability principles.

5.4 Recommendations for Further Research

Based on the findings and limitations identified in this study, there are several future research directions that are worth developing to strengthen scientific understanding of the relationship between ESG compliance and cost of capital. First, it is necessary to conduct quantitative meta-analysis which aims to estimate the average effect of ESG on the cost of capital more precisely. This meta-analysis can also be used to test the heterogeneity of ESG effects based on variables such as industry sector, geographic region, and ESG measurement methods used in various empirical studies.Second, it is advisable to do longitudinal or panel data-based studies which can observe the dynamics of the relationship between ESG and cost of capital over a certain period of time. Such studies are important to capture the influence of regulatory changes, the evolution of ESG practices, and non-static market responses, so that they can provide a more accurate picture of the effects of ESG in the long term.Third, further research needs to dig deeper.mediation and moderation mechanismsin the relationship between ESG and cost of capital. In particular, it is important to examine separately the role of each ESG dimension (environmental, social, and governance) and their interaction with contextual factors such as firm size, leverage level, ownership structure, and capital market maturity.Fourth, to gain a more comprehensive and in-depth understanding, it is suggested that future studies adopt cross-disciplinary approach. Combining perspectives from fields such as financial psychology, environmental accounting, and risk management can enrich the analysis of how ESG is perceived by stakeholders and how these perceptions influence investment decisions and risk assessments. The integration of these approaches will help build a stronger theoretical and practical foundation in explaining the influence of ESG on corporate financing structures.

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