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ESG, readability and the cost of financing

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Abstract

In recent years, research on business sustainability and the readability of financial reporting has surged. This study examines the relationship between the cost of financing and both ESG performance and financial reporting readability, using a panel of U.S. firms. Additionally, we investigate whether there is an interplay between Environmental, social and governance (ESG) performance and the readability of annual report narratives, and if these factors have complementary or substitutive effects on the cost of financing. Interestingly, our findings reveal a positive correlation between ESG performance and the cost of financing, which contradicts much of the existing literature. Furthermore, we observe that increased reporting readability reduces the cost of financing, aligning with previous studies. However, we do not find any interplay or associated interaction between ESG performance and readability in relation to the cost of financing.

Key words: ESG performance; Annual report readability; BOG index; WACC; cost of equity; cost of debt

1. Introduction

A rise in importance of sustainability in business has led to a focus on Environmental, Social and Governance (ESG) performance. There are several required sustainability targets from the Environmental Protection Agency (EPA) in the U.S such as "*100% carbon free by 2030"*, increasing the demand on sustainable companies[1]. Requirements such as these, force companies to restructure and engage in ESG while still managing to produce value. Moreover, since 2014, both the Non-Financial Reporting Directive (NFRD) and the Corporate Sustainability Reporting Directive (CSRD) have been introduced as EU directives, increasing corporate sustainability reporting.[2] It is evident that the pressure from different regulatory domains has a large impact on the decision making in financial management within companies. However, the growing emphasis on ESG is not only driven by regulatory factors but also from the long-term positive value effects of ESG investments. The literature proves that efficient implementation of ESG practices enhances financial performance and adds firm value (Friede et al., 2015; Velte, 2017; Ahmad et al., 2021). Additionally, most of the prior research has consistently highlighted a negative correlation between ESG performance and cost of financing, demonstrating the benefits of prioritizing the sustainability module in business (Ng and Rezaee, 2015; Eliwa et al., 2021; Ghoul et al., 2011; Wong et al., 2021). With literature underscoring the value creation of engaging in sustainability activities, firms, in addition to the regulatory pressure, also receive pressure from other stakeholders. As sustainability investments receive increasing attention, the demand for transparent information on ESG practices has also risen (Cohen and Simnett, 2015; Amel-Zadeh and Serafeim, 2018). Nevertheless, companies see disclosure of sustainability activities as an opportunity for legitimate reasons to add additional value on their sustainability work, motivating the increased attention on transparency.

Given the significant attention ESG has received, financial reporting transparency and readability as a whole, not limited to ESG disclosure, has also garnered considerable focus. The importance of information in financial decision-making has heightened interest in this topic, highlighting the exclusion of information risk in pricing for investments (Ghoul et al., 2013; Johnstone, 2016). This exclusion of information in asset-pricing models has led to a surge in research on this topic. Easley and O'hara (2004) highlights that information plays a significant role on cost of capital, as informed investors can better adjust their portfolios to incorporate new information, whereas uninformed

[1] EPA, 2023
Federal Sustainability Requirements and Guidelines | US EPA
[2] European Commission, 2023
https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

investors are at a disadvantage, indicating information asymmetry. Additionally, Core (2001) underscores the importance of examining the disclosure of financial reports for understanding the role of accounting information in firm valuation. Core argues that even though managerial incentives and manipulation of disclosing biased information could affect the validity of the relationship between reporting disclosure and cost of capital, in equilibrium it is still credible. Therefore, empirical studies of disclosure credibility will find disclosure to be creditable (Core, 2001).

Accounting standards set by the Financial Accounting Standard Board (FASB) create expectations for the information disclosed in annual reports on U.S firms.[3] However, when examining narrative disclosure, expectations do not rely on any specific factors, as complexity in the texts varies across annual reports. Narrative disclosure's effect on cost of capital is not a new phenomenon. In recent years there has been a substantial interest in research examining the transparency of financial reports (Bonsall et al., 2017; Ertugrul et al., 2017; Rjiba et al., 2021). The focal point of this expanding body of literature predominantly revolves around market reactions and cost of financing in relation to annual report readability. There is clear evidence of a positive relationship between complexity in annual reports and cost of capital (Rjiba et al., 2021). Bloomfield (2002) anticipates that when information extraction becomes more challenging from extensive and intricate disclosures, it leads to reduced trading activity and incomplete reflection in market prices. Furthermore, on average, people tend to invest more in companies that provide clear and straightforward financial disclosures (Lawrence, 2013).

ESG performance and financial report readability, two literature pillars, highly important for cost of financing both through debt and equity outlay the base of this study. Despite the fact that these topics have been highly researched separately, there still remains uncertainty regarding their interplay towards cost of capital and this study aims to counter this knowledge gap. By investigating this interplay, new insights can be spotted, whether the observed benefits, such as decreased cost of financing and stakeholder favor, could be a direct result of transparency or effective implementation of ESG practices with reporting disclosure. Nevertheless, It prompts questions about the potential trade-offs or synergies between prioritizing transparency in financial reporting and maintaining a high ESG performance.

To counter this knowledge gap, and to shed light on which of financial reporting transparency and sustainability performance has the greatest effects on firm value, this study aims to conduct a dual investigation. It aims to answer the interplay between sustainability performance and annual report

[3] FASB (2024)
FASB Accounting Standards Codification®

readability and if they act as substitutes or complement each other in relation to the cost of capital, equity and debt on U.S listed companies.

The study tests the influence of Environmental, Social, and Governance ratings and the readability of financial reports on the cost of financing for American companies, using data spanning from 2017 to 2022. This analysis seeks to understand how these two factors, ESG performance and financial report readability, affect the costs companies face when raising capital. The main regression analysis demonstrates two central insights. Firstly, it shows that higher ESG performance is associated with lower borrowing costs for companies. In other words, firms with superior ESG ratings tend to encounter lower interest rates when taking on debt financing.

Secondly, the study discovers that the readability of financial disclosures plays a crucial role in equity financing. Companies that produce clearer and more comprehensible financial reports can secure equity financing at lower costs. This implies that transparent and easily understandable financial reporting enhances investor confidence, reducing the perceived risk and hence the cost of equity capital.

To address the potential endogeneity of the ESG and transparency variables, where these factors could be influenced by other variables that also affect the cost of capital, a two-stage least squares model has been used. This methodological approach helps isolate the true impact of ESG performance and financial report readability on the cost of financing by controlling endogenous factors. The results from this deviate from the initial findings: ESG performance raises the costs of financing. These counterintuitive findings suggest that while ESG initiatives are often supported for their long-term benefits and risk mitigation, they might also lead to higher short-time operational expenditures or increased scrutiny from lenders, leading to increased borrowing expenses. The two-stage least squares model also differs and is shown significant in terms of readability and the effect of transparency on cost of financing.

Despite these significant findings, the study acknowledges that the effects of ESG performance and financial report readability on the cost of capital are relatively modest. However, even modest effects are noteworthy in the context of corporate finance, where incremental changes can have substantial implications for a company’s overall financial strategy.

The study underscores the critical importance of transparent reporting in corporate financing decisions. It suggests that while companies will need to continue to invest in ESG initiatives to enhance long-term sustainability and stakeholder trust, they must also prioritize the clarity and readability of their financial reports. By doing so, they might be able to mitigate some of the increased

borrowing costs associated with high ESG performance and take full advantage of the reduced financing costs that come with better reporting transparency.

2. Theoretical framework, literature review and hypothesis development

2.1 Shareholder theory and Stakeholder theory

Understanding the interplay between transparency, ESG performance, and company's cost of capital requires navigating the contrasting perspectives of shareholder theory and stakeholder theory. These two frameworks offer fundamentally different approaches to both sustainability effects and information disclosure, with significant implications for how companies manage information asymmetry.

Shareholder theory's core principle is maximizing shareholder value, achieved through actions that directly increase short-term profits and dividends (Friedman, 1970). As financial reporting disclosures primarily focus on providing information for the short term, potentially neglecting the needs and interests of other stakeholders like employees, communities, and the environment. Transparency, from this perspective, is merely a tool. Companies might disclose only the minimum financial information required by regulations, as long as it satisfies shareholder information needs. Information asymmetry, the gap between what a company knows and what investors know, is a secondary concern (Akerlof, 1970).

Stakeholder theory presents a more balanced perspective. It emphasizes considering the needs of various stakeholders beyond just shareholders. Investors remain important, but their interests are weighed against the needs of employees, customers, the environment, and other groups impacted by the company's operations (Freeman, 1984). Information asymmetry is a critical roadblock in this framework. Unclear financial reporting and complex ESG metrics can hinder all stakeholders, not just investors, from accurately assessing a company's risk profile and long-term sustainability.

A core difference between these theories lies in the perceived importance of information asymmetry. Shareholder theory views it as a hurdle that can be overcome by providing enough information for shareholders to make investment decisions. Transparency, in this context, serves the goal of shareholder value maximization. Stakeholder theory, however, considers information asymmetry a major obstacle for all stakeholders. It advocates for clear and comprehensive communication in both financial reporting and ESG disclosures. This transparency fosters trust with a wider range of

stakeholders, leading to better decision-making beyond just short-term financial gains. Companies that prioritize transparency can potentially attract investors who value long-term sustainability and environmental/social responsibility, potentially lowering their cost of capital.

This research delves into how these contrasting views on transparency might influence cost of capital. We will examine whether companies prioritizing transparency in both financial reporting and ESG disclosures experience a lower cost of capital compared to those focusing solely on shareholder information needs. By analyzing these relationships, we can gain valuable insights into how companies can manage information asymmetry to potentially improve their financial standing and appeal to a wider range of investors, ultimately impacting their cost of capital.

2.2 ESG performance

The body of literature on ESG performance and its effects on financial performance is robust and well-studied. Researchers have concluded a positive correlation between sustainability performance and financial performance (Velte, 2017; Zhou et al., 2022; Zhao et al., 2018). Friede et al., (2015) made an aggregated study of 2000 empirical studies where the results showed that roughly 90% of studies found a nonnegative relation between ESG and Financial performance. Moreover, the majority of the 2000 studies found that ESG and financial performance correlated positively. This confirms the empirical relevance of investing in sustainability. However, an important notion regarding the increase in financial performance is that the time horizon is vital. Eccles et al., (2014), discuss this, looking at the increase in ESG benefits utilization in the long term rather than in a shorter time period, this due to short term costs outbalance the benefits. However, existing research regarding the influence effects of ESG on cost of capital is inconsistent. Dividing the cost of capital into cost of debt and cost of equity is not a new phenomenon when investigating the impact of ESG on companies' cost of capital. In fact, there are several recent studies separating the study to either cost of debt or cost of equity against sustainability performance with mixed results.

2.2.1 ESG performance and cost of financing

Nazir et al., (2022) looks at the relationship between ESG performance and cost of- capital, debt and equity. The authors found a significant negative correlation between ESG and the independent variables. Ng and Rezaee (2015) concluded that sustainability performance has a negative association with cost of equity. These studies illustrate that ESG disclosure- and performance reduces the cost of equity.

Eliwa et al., (2021) investigate whether ESG performance and disclosure reduce the cost of lending in 15 European countries. The authors conclude that lending-institutions highly value both sustainability

performance and disclosure, thus reducing the companies' cost of debt. Apergis and Antonopoulos (2022) employed a framework to assess companies' ESG performance and determine if those with high ESG-scores lowered their bond spreads and increased their bond ratings. The findings highlighted a noteworthy link between higher ESG-ratings and lower costs of unsecured debt in the primary bond market. However, these findings are contradicted by papers such as Gigante and Manglaviti (2022) do not find any significant relationship between ESG performance and cost of debt. Other studies such as Humphrey et al., (2012) found that firms with high ESG ratings do not see higher returns compared to firms with low ESG ratings, thus having to comply with strict ESG criteria may limit investment options and lead to opportunity costs. This can translate into higher operational costs and a perception of lower financial returns, which can ultimately increase the firm's financing costs.

Research indicates that the compliance and reporting costs associated with mandatory ESG disclosures can be substantial, and these costs may not always be offset by immediate financial benefits (Christensen et al., 2021). Furthermore, the focus on ESG issues that are not material to the firm's core business can divert management's attention and resources away from more critical operational aspects. This distraction can lead to inefficiencies and increased risks, possibly contributing to a higher cost of capital. Gonçalves et al., (2022) finds that although sustainability performance reduces cost of equity, cost of debt increases. Although most of the research favors a relationship between ESG performance and cost of financing, there is still uncertainties, which is why the following hypotheses have been formulated:

***H1a**: There exists a significant relationship between the ESG and the cost of capital.*

***H2a**: There exists a significant relationship between the ESG and the cost of equity.*

***H3a:** There exists a significant relationship between the ESG and the cost of debt.*

2.3 Readability

Although there are many definitions of plain English writing, language experts generally agree it's about effectively communicating information to readers. Recently, there's been a surge in research on readability in financial reports. This increase coincides with Core's (2001) suggestion to use computational linguistics to check disclosure quality in large datasets. The annual report, known as form 10-K, is a key disclosure document for the public, incorporating both the operations and financials of a company. Despite regulations and guidelines outlining the content that should be included, there are gray areas giving the company's discretion to choose what and how much they disclose to the public. A lot of researchers and regulators struggle to agree upon a tool for readability to measure how transparent companies are in their annual reports (Loughran and Mcdonald, 2014).

There have been conflicting measurement tools of readability in financial reporting over the years where measurement tools such as Fog-index and 10-K file size have both been used and certified. The most known index for plain English readability of financial reports is the Fog-index. Several studies have been using the fog-index for evaluating readability and transparency in annual reports (Li, 2008; Biddle et al., 2009; Miller, 2010; Lawrence, 2013). However, Loughran and Mcdonald (2014) criticize the Fog-index as it poorly specifies any financial application. The paper conclusively shows that sentence length and word complexity, which are the two components in the Fog-index, does not accurately measure readability. Instead, the authors suggest using the size of the filing in megabytes as an alternative measure for financial reporting transparency, with a larger file-size indicating greater complexity and less transparency. Bonsall et al., (2017) counters this alternative by arguing that file size is not an entirely reliable tool for assessing complexity in an annual report. They argue that larger files might include several unrelated factors such as images, PDF- and HTML-files which increase the file size but do not necessarily affect the text itself. By taking in consideration both the Fog-index and the Loughran and Mcdonald (2014) approach of measuring by file size of the report, Bonsall et al. (2017) suggests a new and a more comprehensive approach, the Bog-index.

2.3.1 Bog Index

The Bog score, computed by software, evaluates plain English attributes including passive and hidden verbs, complex, abstract and legal terminology, aligning with SEC's plain English guidelines in 1998[4] (Bonsall et al., 2017). Unlike the Fog index which relies on syllable counts in words, the Bog index utilizes a proprietary dictionary of 200,000 words to assess the words familiarity and ease of understanding (Bonsall et al., 2017). This new methodology directly addresses the flaws on the multisyllabic counts which Loughran and Mcdonald (2014) raised regarding the Fog index. Furthermore, the Bog index also challenges the Loughran and Mcdonald (2014) approach of looking at file size as a measure of reliability. This is, as mentioned before, because file size can be influenced by factors such as images, PDF:s and other text unrelated factors, thereby deviating from the intended goal of text complexity assessment. The Bog index is structured in such a way that the higher the index, the more complex and less readable the document is. Financial statements can often be cryptic with a language that is hard to understand. This impairs readability and can create language barriers for investors and other stakeholders trying to assess the financial health of the company. Nevertheless, an increase in complexity might reduce investor attraction (Bonsall et al., 2017). Companies that promote plain English in their financial reporting can encourage transparency and accountability and play a crucial role in reducing information asymmetry.

[4] SEC (1998)
A Plain English Handbook (sec.gov)

2.3.2 Readability and cost of financing

Li (2008) revealed that the 10-K SEC filings of underperforming companies tend to be lengthier and more difficult to comprehend. Additionally, Li observed a negative correlation between the readability of annual reports and the persistence of earnings. Moreover, Rennekamp (2012) offers experimental proof that when disclosure is less readable, investors are less confident in relying on the information provided. This lack of confidence influences their subsequent judgments and decisions. There is an interest among researchers with a belief that greater disclosure results in lower cost of capital as investors and financial institutions highly value transparency. Rjiba et al. (2021) examines how readability in annual reports affects the cost of equity. They applied the Bog index as the measurement tool for evaluating the transparency level. The study shows a significant reduction in cost of equity among companies with low Bog scores (low complexity and high transparency). They also examine if the relationship between readability and cost of equity is dependent on the tone of the annual report. Interestingly, the study shows that the impact of complexity of annual reports on the cost of equity increases when the disclosure tone is either negative or more ambiguous. This study differs from ours as they only look at the effects of readability on the cost of equity whilst our study aims to examine any substitute- or complementary effects between ESG performance and readability.

Lambert and Verrecchia (2007) concluded that the quality of accounting information affects the cost of capital directly. The direct effect stems from the fact that high-quality disclosures influence the investors' perceptions of the risks associated with the company. Hence, investors can more accurately understand the company's cash flows related to other firms. This could be explained by Armitage and Marston (2008) that found that higher rates of disclosure enhance the overall reputation of companies, as they seem more open and lack hidden agendas thus reducing information asymmetry. This underscores the legitimate approach of increasing disclosures to wanting to be seen as an open and trustworthy company. Raimo et al. (2021) saw a negative correlation between ESG disclosure and cost of debt suggesting that greater ESG transparency leads to cheaper debt financing as the risk for the lending institutions decreases. According to Schaltegger and Hörisch (2017), firms are primarily increasing their transparency for legitimacy reasons rather than being profit oriented. The readability of financial disclosures has emerged as an important factor in corporate communication, yet its impact on the cost of financing remains underexplored. Financial documents that are easier to read can enhance understanding among investors and other stakeholders, potentially reducing perceived risks and uncertainty. This, in turn, could influence a company's cost of financing by improving investor confidence and broadening the investor base. Hence, the following hypotheses will be tested.

***H1b**: There exists a significant relationship between readability and the cost of capital.*

***H2b**: There exists a significant relationship between readability and the cost of equity.*

***H3b**: There exists a significant relationship between readability and the cost of debt.*

2.4 Relationship between ESG and readability

Investors are increasingly supporting their decision making based on ESG performance alongside traditional financial metrics. Opaque financial disclosures can have a negative impact here making it difficult for investors to assess the ESG commitments and actions of a company. This can be mitigated by clear and concise reporting, as measured by the Bog index. As found by Hummel and Schlick (2016), companies with high ESG performance generally tend to disclose more, reflecting their robust initiatives. Christensen et al., (2022) explored the prevalence of disagreement among rating agencies regarding ESG ratings for individual firms. Interestingly, their analysis suggests that higher levels of ESG disclosure actually correlate with greater divergence in ESG ratings. Furthermore, they examined the implications of ESG rating divergence and discovered that greater disagreement is associated with higher return volatility, larger absolute price movements, and a reduced likelihood of external financing issuance. However, Christensen et al., (2021) found that enhanced corporate social responsibility (CSR) information can positively impact capital markets by increasing liquidity, reducing the cost of capital, and enhancing capital allocation efficiency. Furthermore, a comprehensive review of CSR literature reveals that the factors influencing voluntary CSR reporting overlap considerably with those affecting financial reporting.

The introduction of mandatory CSR reporting holds promises for enhancing information accessibility for investors and other stakeholders. However, the effectiveness of such a mandate in delivering information benefits hinges significantly on the degree to which companies currently withhold relevant CSR information. In essence, the article suggests that while mandatory CSR reporting can potentially improve information transparency, its success depends on addressing existing gaps in CSR disclosure practices among firms. (Christensen et al., 2021).

Hypothesis C:

***Hc**: Readability and ESG performance have competing effects on cost of financing*

3.Methodology and Research Design

3.1 Data

Data for all variables, except for readability data, was retrieved using LSEG Eikon. The study utilizes year-end data from 2017 to 2022, starting from 2017 due to limited available data in prior years. The sample includes listed Small, Medium, and Large Cap companies in the US across all sectors, chosen because the Bog-index currently applies only to American companies. From an initial sample of 2,630 companies over 10 years, the study refined the selection to 739 companies over 6 years, resulting in 4,434 firm-year observations. LSEG Eikon has clustered these companies into 18 sectors which we have chosen to keep.

All variables have been sourced through LSEG Eikon, except for the Bog readability index. The Bog readability index data was obtained from Brian Miller's page on Kelley University's website.[5] The Bog-index has also been used in previous research, underscoring its relevance and applicability (Rjiba et al., 2021; Bonsall, 2017). Secondary data offers significant advantages over traditional data collection methods, as described by Bryman and Bell (2017). It provides a comprehensive collection of pre-compiled financial and company data, including extensive ESG ratings and tracking. This approach eliminates the need for time-consuming manual data collection from various sources. Additionally, LSEG Eikon, known for its data accuracy and consistency, ensures the reliability of the analytical foundation.

3.2 Variables

This section explores the variables employed in the quantitative study investigating the influence of ESG rating and the Bog Index on a company's cost of financing.

3.2.1 Dependent Variables

Cost of Capital (WACC)

The weighted average cost of capital is a key financial measure that reflects a company's overall funding cost. It considers the proportion of each capital source, like common stock, preferred stock, and debt, as provided by LSEG Eikon. WACC is the product of combining cost of equity and cost of debt, weighted by the capital structure in each company. More specifically, WACC is calculated by multiplying the proportion of equity financing with the cost of equity and the proportion of debt

[5] Bog Data
https://sites.google.com/iu.edu/professorbrianpmiller/bog-data

financing with the cost of debt from which you deduct the tax rate. WACC reflects the overall cost of capital a company has, taking the tax benefits of debt into account.

Cost of Equity (COE)

Computed as the theoretical investor return. Values for cost of equity have been obtained from LSEG Eikon. The cost of equity has been calculated using the capital asset pricing model (CAPM) which considers the risk-free rate, the company's beta, and the expected market return. The formula states that cost of equity equals the risk-free rate plus the beta of the company's stock multiplied by the difference between expected market return and the risk-free rate. In this context, cost of equity reflects what kind of return investors expect in order to compensate them for both the time value of money and the risk associated with investing in the company's equity.

Cost of Debt (COD)

To test our hypotheses, cost of debt capital has been used as one of the dependent variables. Data has been retrieved from Refinitiv for each firm in the panel, focusing on the last trading day of each year between 2017 and 2022. LSEG Eikon calculates the marginal cost of issuing new debt by considering both short-term and long-term debt. This calculation involves weighing the costs of these debt types based on the relevant points (1-year and 10-year) of a suitable credit curve. To calculate the cost of debt total interest expense is divided by the total debt. This approach ensures that the calculation reflects the current market conditions and the specific characteristics of the company's debt profile.

3.2.2 Independent Variables & Control Variables

ESG rating (ESG)

ESG scores are retrieved from LSEG Eikon. 186 company-level ESG measures are compared and grouped into 10 brackets which are finally combined to create three overall pillar scores: environment, social, and corporate governance. The ESG pillar scores are calculated by summing the weighted category scores. The weights for the environmental and social categories vary by industry, reflecting different industry priorities. (LSEG, n.d.) However, the weights for the governance category are consistent across all industries.[6] The ESG ratings used in this study have been collected from LSEG Eikon.

[6] LSEG, ESG Scores
ESG Scores | LSEG

Bog Index (BOG)

Bog is a readability score created by the software StyleWriter. The index assesses how easy a text is to understand. It considers factors like sentence length, sentence structure (active vs. passive voice), verb strength, word choice (avoiding overuse of common words and complex jargon), and overall clarity. The specific code for the Bog-index calculations is unknown. A low Bog score indicates low complexity and high transparency.

Continuing the analysis of variables used in our quantitative study, we incorporate control variables to isolate the effects of ESG rating and the Bog score on a company's cost of financing. Debt ratio, beta, market capitalization, and interest coverage ratio will be included. Debt ratio (LEV) captures a company's capital structure, potentially influencing the cost of financing through its impact on the cost of debt and equity. Beta (BETA) reflects a company's systematic risk relative to the market, potentially affecting the cost of equity. Market capitalization controls for firm size, a known factor influencing cost of financing. For Market cap (SIZE) the natural logarithm has been used because of the skewed normal distribution of the variable. Finally, interest coverage ratio (ICR) assesses a company's ability to pay its debt obligations, potentially impacting investor perceptions of risk and the cost of debt. By considering these control variables alongside ESG rating and the Bog Index, the analysis aims to isolate the specific effects of transparency and ESG practices on a company's overall cost of capital.

Beyond the previously discussed variables, our regression analysis incorporates year and industry fixed effects as control variables. This approach controls for any unobserved time-specific or industry-specific factors that might influence the cost of financing. By including these fixed effects, we aim to isolate the specific effects of year and industry on cost of financing, enhancing the robustness of our findings.

Table 1. Variable Definitions

	Symbol	Name	Definition
Dependent Variable	*WACC*	Weighted Average Cost of Capital	Overall funding cost, calculated as a weighted average of cost of equity and cost of debt
	COE	Cost of Equity	Cost of equity capital, calculated using the Capital Asset Pricing Model
	COD	Cost of Debt	Cost of debt capital, calculated as interest expenses divided by debt
Independent Variable	*ESG*	Environmental, Social & Governance Score	Environmental, social and governance performance, calculated as a weighted average based on industry
	BOG	The Bog Index	Readability index, based on sentence bog, word bog and pep
Control Variable	*SIZE*	Market Capitalization	Company size, as determined by market capitalization
	BETA	Market Beta	A company's systematic risk, calculated using historical stock returns
	ICR	Interest Coverage Ratio	Determines how easily a company can pay of their debts, calculated as EBIT divided by interest expenses
	LEV	Debt Ratio	Amount of leverage used by a company, calculated as debt divided by assets

3.3 Regression Model

We employed a fixed-effects regression model to analyze the determinants of the cost of capital, cost of equity and cost of debt, using the following specifications:

$$WACC = \beta_0 + \beta_1 * ESG + \beta_2 * Bog + \beta_3 * ESG * Bog + \beta_4 * SIZE + \beta_5 * BETA + \beta_6 * ICR + \beta_7 * LEV + \varepsilon$$

$$COE = \beta_0 + \beta_1 * ESG + \beta_2 * Bog + \beta_3 * ESG * Bog + \beta_4 * SIZE + \beta_5 * BETA + \beta_6 * ICR + \beta_7 * LEV + \varepsilon$$

$$COD = \beta_0 + \beta_1 * ESG + \beta_2 * Bog + \beta_3 * ESG * Bog + \beta_4 * SIZE + \beta_5 * BETA + \beta_6 * ICR + \beta_7 * LEV + \varepsilon$$

A Hausman test was conducted to choose between fixed-effects and random-effects models. The test results indicated that the fixed-effects model was appropriate, suggesting that individual-specific effects are correlated with the independent variables. Thus, the fixed-effects model controls for time-invariant characteristics within entities, ensuring unbiased and consistent estimators.

Panel data analysis offers valuable insights in accounting research, but it's crucial to address issues that can mislead interpretations. The first apparent challenge is from fixed effects inherent to panel data. Year-specific effects create correlations between observations from the same year, while firm-specific effects lead to correlations within a firm over time which can affect t-statistics, making results unreliable (Gow et al., 2010).

Previous researchers have addressed this by employing fixed effects regressions that control for industry and year effects (Ng and Rezaee, 2015). We present our main results using regressions with year fixed effects consistent with previous research in the field (Ng and Rezaee, 2015; Rjiba et al., 2021), however industry fixed effects have been omitted from the results.

The second challenge concerns endogeneity. In studies analyzing the relationship between practices such as sustainability performance or transparency and the cost of financing, addressing endogeneity is crucial. Endogeneity can occur from omitted variables, reverse causality, or measurement errors. The cost of equity could be influenced by the ESG and readability, but all factors might also together be determined by other aspects such as financial performance. This results in a situation where the independent variables of ESG and BOG and the dependent variables of WACC, COE and COD might be influencing each other, leading to biased estimates.

These endogeneity effects can be mitigated using different techniques. In this study, we address endogeneity by following Ferreira and Laux (2007) and Ghoul et al., (2011) by implementing a lead-lag regression where ESG, BOG and all the control variables are lagged (placed at time t-1) relative to the dependent variables (at time t). This time difference helps mitigate the endogeneity effect as past sustainability measures are less likely to be influenced by the current cost of equity. To further address this problem, we follow the example from Ng and Rezaee (2015) and Ghoul et al., (2011) and implement a two-stage least squares (2SLS) regression model with instrumental variables (IV) using average ESG by industry and average BOG by industry as instrumental variables. Using industry averages of ESG performance and the BOG-index as IVs offers several advantages. These industry averages are likely correlated with the practices of individual firms, as companies within the same industry usually adopt similar standards due to shared regulatory environments and competitive pressures. Also, these industry averages are less vulnerable to direct influences from firm-specific

factors affecting the cost of financing, making them suitable IVs. Moreover, they help mitigate concerns about reverse causality, as industry norms, standards and regulations drive the collective level of ESG performance and transparency rather than individual firms' financial conditions.

4. Results

4.1 Univariate Analysis

4.1.1 Descriptive Statistics

Table 2 presents descriptive statistics for 4,434 firm-year observations from 739 companies across 18 different sectors over a six-year period from 2017 to 2022. The dependent variables used in the study—WACC, COE, and COD—have mean values of 6.88%, 8.32%, and 3.30%, respectively, which align with findings from previous research (Richardson et al., 2021, Gonçalves et al., 2022). The data in table 2 indicates that in the US market, the cost of equity is substantially higher than the cost of debt. This is evident from the fact that the average cost of equity exceeds the maximum cost of debt, and the standard deviation of the cost of equity is notably higher than that of the cost of debt. As expected, the WACC falls between the cost of equity and cost of debt across all metrics. Additionally, the dataset shows a heavier reliance on equity financing, as indicated by the WACC being closer to the cost of equity than to the cost of debt.

The ESG scores range from 11.23 to 88.03, with a mean of 48.83, which is reasonable given the theoretical range of 0 to 100. To ensure robustness, all variables used in the regression analyses have been winsorized at the 1st and 99th percentiles to mitigate the influence of outliers.

Table 2. Descriptive Statistics

Table 2 presents the variables used in the regressions, forming the foundation of the study. The dependent variables are WACC, COE and COD while the independent variables are ESG and BOG. The control variables include BETA, LEV, ICR and SIZE. The dependent variables are expressed as percentages, whereas the independent variables are represented as scores, especially ESG score and BOG score. Size is measured as the logarithm of the market capitalization of the 739 companies.

VARIABLES	Number	Mean	Min	First Quartile	Median	Third Quartile	Max	Standard Deviation
WACC	4,434	0.0688	0.0232	0.0529	0.0529	0.0830	0.139	0.0229
COE	4,434	0.0832	0.0251	0.0619	0.0619	0.100	0.181	0.0304
COD	4,434	0.0330	0.00627	0.0224	0.0224	0.0417	0.0742	0.0143
ESG	4,434	48.83	11.23	33.15	33.15	64.33	88.03	19.18
BOG	4,434	92.64	75	88	88	97	115	7.681
BETA	4,434	1.151	0.115	0.785	0.785	1.442	2.919	0.547
LEV	4,434	0.317	0.00695	0.166	0.166	0.443	0.932	0.202
ICR	4,434	11.64	-14.91	2.565	2.565	12.11	174.7	23.25
SIZE	4,434	22.83	19.63	21.76	21.76	23.81	26.50	1.451
Number of Companies	739	739	739	739	739	739	739	739

4.1.2 Pearson's Correlation

The correlation matrix reveals that ESG has a negative correlation with WACC, COE, and COD, suggesting that strong ESG performance is associated with lower financing costs. This early indication of a negative relationship between ESG and all three dependent variables supports the idea that good ESG performance can lead to reduced financing expenses, aligning with our hypothesis.

Regarding Bog, the results are mixed: it shows a positive correlation with COD but a negative correlation with both WACC and COE. This implies that simple language in financial reports might be associated with higher financing costs, which is contrary to our initial hypothesis.

The correlations among the independent and control variables are generally at acceptable levels, apart from the relatively high correlation between SIZE and ESG. This correlation was anticipated, but we conducted a VIF test to ensure that there is no multicollinearity among our independent and control variables.

Table 3. Pearsons's Correlation Matrix

Table 3 presents the Pearson's correlation matrix where the relationship between the variables is shown. All dependent variables exhibit negative correlation with both the ESG- and BOG score, except the COD and BOG relationship as it has a correlation of 0,0723.

VARIABLES	WACC	COE	COD	ESG	Bog	BETA	LEV	ICR	SIZE
WACC	1.0000								
COE	0.8435	1.0000							
COD	0.3761	0.3659	1.0000						
ESG	-0.1171	-0.1003	-0.1259	1.0000					
BOG	-0.1293	-0.0611	0.0723	0.0861	1.0000				
BETA	0.6443	0.7727	0.2254	-0.0744	0.0204	1.0000			
LEV	-0.1202	0.0474	0.2528	0.0114	0.0900	0.0405	1.0000		
ICR	0.0185	-0.0965	-0.1554	0.0395	-0.1155	-0.1146	-0.3073	1.0000	
SIZE	-0.1583	-0.2440	-0.2552	0.5838	0.0310	-0.2481	-0.0181	0.1508	1.0000

4.2 Multivariate Analysis

Table 4 depicts the results from the regression analysis with fixed effects showcasing the impact of ESG score and Bog index on cost of capital, debt and equity.

The results show a negative significance in the relationship between ESG score and cost of debt, illustrating that higher ESG performance reduces the cost of debt on U.S companies. However, when looking at the impact of ESG performance on WACC and cost of equity, interestingly, there is no significant relationship.

Observing the results on the link between the Bog score and the dependent variables, the opposite outcome occurs. The regression depicts a significant correlation between the Bog index and cost of equity, exhibiting that better readability reduces the cost of equity. However, in contrast to ESG, readability does not affect the cost of debt as there are no significant relationships between the variables apparent in the regression. Furthermore, the Bog score and WACC lack any substantial relationship. With an explanatory factor (R-squared) ranging from 0.46-0.75, these results on all dependent variables show a reasonable high validity.

Table 4. Fixed effects model

Table 4 presents the panel fixed effects regression where all dependent variables are set against the independent variables. It is controlled for year fixed effects, where ***, **, * indicate significance at the 1% level, 5% level and 10% level, respectively. The VIF test shows values <10, indicating that multicollinearity is not present.

	(1)	(2)	(3)
VARIABLES	WACC	COE	COD
ESG	-0.0000181	0.0000325	-0.0000397***
	(-0.65)	(0.88)	(-2.63)
BOG	0.0000221	0.000140**	0.00000997
	(0.44)	(2.13)	(0.37)
BETA	0.0191***	0.0255***	-0.000243
	(31.39)	(31.69)	(-0.74)
LEV	-0.0117***	-0.00176	0.00762***
	(-4.18)	(-0.48)	(5.04)
ICR	-0.0000584***	-0.0000416*	-0.0000144
	(-3.58)	(-1.93)	(-1.63)
SIZE	0.000339	-0.00375***	-0.000695**
	(0.63)	(-5.31)	(-2.40)
Constant	0.0430***	0.125***	0.0461***
	(3.27)	(7.18)	(6.47)
Observations	4,434	4,434	4,434
R-squared	0.537	0.459	0.749
Nr. of Companies	739	739	739
Year effects	Yes	Yes	Yes
Max VIF	1.67	1.67	1.67

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The regression analysis presented in Table 4 sheds light on the influence of ESG scores and Bog index on various financial metrics such as the cost of debt, cost of equity and WACC for U.S. companies. The findings reveal a noteworthy negative association between ESG scores and the cost of debt, indicating that higher ESG performance correlates with lower borrowing costs for companies aligning with finding from Eliwa et al., (2021).

However, the analysis does not uncover a significant relationship between ESG performance and the cost of equity, contradicting with studies such as Ng and Rezaee (2015). This suggests that investors may not systematically incorporate ESG factors into their valuation aligning with Humphrey et al., (2012). The different impacts of ESG scores on the cost of debt and the cost of equity potentially highlight the different priorities and risk perceptions between debt lenders and equity investors. Lenders prioritize risk reduction and long-term stability, which are directly enhanced by strong ESG performance, leading to lower borrowing costs (Nazir et al., 2022; Eliwa et al., 2021). Companies with high ESG scores are perceived as more stable, less prone to environmental and social risks, and better managed overall. This perception translates into improved credit ratings and lower interest rates from lenders, who are increasingly pressured to support sustainable investments (Nazir et al., 2022). However, equity investors might not require the same long-term stability indicating that ESG does not significantly reduce cost of equity.

The findings of the readability and the Bog index reveal a significant correlation with the cost of equity, aligning with Rjiba et al. (2021) indicating that better readability of financial reports is associated with lower equity costs. This finding suggests that clearer, more comprehensible financial disclosures reduce information asymmetry between companies and equity investors and thus reduce uncertainty for investors. When financial reports are easier to read and understand, investors can more accurately assess a company's financial health and prospects, leading to greater confidence and reduced perceived risk (Lambert and Verrecchia, 2007). According to shareholder theory, these findings suggest that companies benefit from disclosing information as it reduces the information asymmetry towards shareholders and increases confidence from them (Friedman, 1970). This enhanced transparency can attract a broader base of investors and improve market perceptions, thereby lowering the cost of equity. Additionally, an increase in readability of annual reports might radiate confidence from the firm which according to Armitage and Marston (2008) enhances the overall reputation for companies. However, an interesting point suggested by Schaltegger and Hörisch (2017) is that companies may increase their transparency in financial reporting for legitimacy reasons, which could explain the significance observed with the cost of equity but not with the cost of debt. Shareholders, who have relatively restricted information channels, rely heavily on the annual report as their primary source of information. This makes it difficult for them to evaluate and validate the

information provided. In contrast, banks and other lenders have additional sources of information, reducing information asymmetry and allowing them to identify any flaws and legitimacy motives in the firm's reporting. Unlike the ESG-WACC relationship, the association between the Bog index and WACC does not yield any substantial findings, suggesting that financial report readability may not have a consistent impact on the overall cost of capital.

4.2.1 Endogeneity

As previously discussed, we have in table 5 and table 6 performed 2SLS regressions to control for any eminent Endogeneity. These tests have been specifically controlled for industry related endogeneity. The 2SLS test lays ground for the effects between the dependent and independent variable since it controls for endogeneity which increases the robustness of the study. Tabel 5 and 6 is therefore considered as the base of this study, answering both hypothesis 1 and 2. We include all previous variables in the OLS regression in Table 4. In table 5 we control for endogeneity with ESG as the endogenous variable, and Table 6 with BOG as the endogenous variable.

Compared to table 4, we find that for all three dependent variables of WACC, COE and COD, ESG is significantly positive, whereas only COD was significant in the Main model. The output from table 5 shows that high ESG leads to higher WACC, cost of equity, and cost of debt respectively with significance at the highest level. In table 6 we see a similar story where Bog is now positively significant at the highest level for all the dependent variables, whereas Bog in table 4 only showed significance for COE.

Noteworthily, we find that the results in the 2SLS differ significantly compared to the output in table 3. The results in table 5 and table 6, compared to the OLS in table 4, indicate that both ESG and Bog are endogenous. One possible explanation for this could be that there might exist reverse causality between the variables. Companies with already low cost of financing might invest more in ESG initiatives, hence reversing the cause and effect between ESG and cost of financing. The 2SLS mitigates this as it shows how much the independent variable affect the dependent variable, regardless of size and reverse causality.

Table 5. Two-stage least squares model, using ESG as the endogenous variable.

Table 5 presents a 2SLS regression model controlling for endogeneity with instrumental variables (IV) using average ESG by industry. This mitigates the potential bias caused by reverse causality and omitted variables bias, providing a more accurate estimation of the relationship between ESG score and the dependent variable. ***, **, * indicate significance at the 1% level, 5% level and 10% level, respectively.

	(1)	(2)	(3)
VARIABLES	WACC	COE	COD
ESG	0.000761***	0.000782***	0.00164***
	(11.35)	(9.23)	(23.87)
BOG	-0.00000614	0.000113	-0.0000511
	(-0.11)	(1.59)	(-0.89)
BETA	0.0188***	0.0252***	-0.000803
	(28.01)	(29.63)	(-1.16)
SIZE	-0.000657	-0.00470***	-0.00285***
	(-1.06)	(-6.03)	(-4.49)
ICR	-0.0000587***	-0.0000420*	-0.0000152
	(-3.27)	(-1.85)	(-0.82)
LEV	-0.0116***	-0.00164	0.00788**
	(-3.76)	(-0.42)	(2.50)
Constant	0.0354**	0.117***	0.0297**
	(2.50)	(6.54)	(2.03)
Observations	4,434	4,434	4,434
Number of ID	739	739	739

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 depicts a significantly positive relationship between ESG across all dependent variables. These results are indeed interesting since it contradicts a majority of previous literature (Nazir et al.,

2022; Ng and Rezaee, 2015; Apergis and Antonopoulos, 2022). However, there are still studies in line with these results suggesting that concentrating on ESG issues that are not central to the firm's core business might divert management from more critical areas (Christensen et al., 2021). Hence, this could affect the cost of both equity and debt since the risk for investors and lenders increase when companies invest and reduce their liquidity. Moreover, as shareholder theory suggests that profit maximization comes from increasing shareholder value, investing in ESG might not initially create profit maximization as the motivation for the investment lay upon long-term anticipated value, reducing the appetite for investing (Friedman, 1970). However, these results align with the stakeholder theory as several stakeholders might benefit from increased ESG (Freeman, 1984).

Explanatory factors for these results may be linked to the short period time in this study as the long-term effect might not be visible in a 6-year period. Furthermore, there is a smaller body of literature finding positive correlation between ESG and cost of capital arguing that there exist trade-offs in value creation when investing in ESG. Shareholder theory supports this. Since shareholders are mainly interested in profit maximization, this suggests that in the short term, the investment on ESG might not be optimal as the benefits are seen on long term periods, hence these results. This is line with Eccles et al., (2014) discussing that costs invested in ESG exceed the benefits in the short term. Moreover, looking at the actual results, the coefficients ranging from 0.000761 to 0.00164 are all low across all dependent variables, indicating that the positive correlation between ESG and cost of financing does not have a sizable impact necessary for concluding any substantial effects.

Table 6. Two-stage least squares model, using Bog as the endogenous variable.

Table 6 presents the 2SLS regression model controlling for endogeneity with instrumental variables (IV) using average BOG by industry. This mitigates the potential bias caused by reverse causality and omitted variables bias, providing a more accurate estimation of the relationship between BOG score and the dependent variable. ***, **, * indicate significance at the 1% level, 5% level and 10% level, respectively.

	(1)	(2)	(3)
VARIABLES	WACC	COE	COD
BOG	0.00124***	0.00132***	0.00265***
	(12.46)	(10.33)	(27.85)
ESG	-0.0000320	0.0000190	-0.0000699**
	(-1.04)	(0.48)	(-2.39)
BETA	0.0184***	0.0248***	-0.00171***
	(27.67)	(29.20)	(-2.70)
SIZE	0.000392	-0.00369***	-0.000582
	(0.68)	(-5.04)	(-1.06)
ICR	-0.0000508***	-0.0000344	0.00000190
	(-2.89)	(-1.53)	(0.11)
LEV	-0.0126***	-0.00263	0.00565**
	(-4.17)	(-0.68)	(01.97)
Constant	-0.0642***	0.0215	-0.186***
	(-4.71)	(1.24)	(-14.30)
Observations	4,434	4,434	4,434
Number of ID	739	739	739

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6 depicts that readability is highly significant across all dependent variables. However, the coefficients are relatively small, indicating that the economic impact may not be substantial. The results suggest that higher readability reduces investor uncertainty, leading to lower financing costs, aligning with common views and previous literature (Rjiba et al., 2021). Moreover, there are several studies suggesting a positive correlation between narrative complexity in financial reports (Li, 2008, Rennekamp, 2012). The results from table 6 support the idea that when disclosure is more complex, investors tend to rely less on information provided (Rennekamp, 2012).

4.2.2 Joint effect of ESG and Bog

Table 7 depicts an interaction term on ESG score and Bog index which illustrates the joint effect and interplay between the variables. The regression shows that there is no significant interaction between ESG score and Bog index in relation to cost of capital, equity or debt.

Table 7. Panel regression with interaction term

Table 7 presents a panel regression with an additional interaction term (interaction_term) between ESG and BOG by multiplying the variables. The Interaction term constitutes the interplay between ESG and BOG. ***, **, * indicate significance at the 1% level, 5% level and 10% level, respectively.

	(1)	(2)	(3)
VARIABLES	WACC	COE	COD
ESG	0.0000151	0.000289	0.0000536
	(0.09)	(1.33)	(0.60)
BOG	0.0000392	0.000272**	0.0000579
	(-0.40)	(2.12)	(1.10)
BETA	0.0191***	0.0254***	-0.000250
	(31.37)	(31.66)	(-0.76)
LEV	-0.0117***	-0.00177	0.00761***
	(-4.18)	(-0.48)	(0.0)
ICR	-0.0000583***	-0.0000414*	-0.0000143
	(-3.57)	(-1.92)	(-1.62)
SIZE	0.000342	-0.00373***	-0.000687**
	(0.64)	(-5.28)	(-2.38)
interaction_term	-0.000000356	-0.00000276	-0.00000100
	(-0.20)	(-1.20)	(-1.06)
Observations	4,434	4,434	4,434
Number of ID	739	739	739
R-squared	0.545	0.460	0.749

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The findings from table 7 suggest that, while both ESG performance and reporting readability individually significantly affects the cost of financing, positively or negatively (table 5 & 6), the interplay between the variables do not create additional implications for a company's cost of capital, neither complementarian nor substitutive effects. Therefore, companies aiming to improve their cost of capital, equity, or debt in the short term should solely focus on enhancing their readability in their financial reports as it reduces the cost of financing in accordance with results in table 5 & 6.

However, the notion that high readability is a substitute for ESG performance in reducing information asymmetry and hence reducing the cost of equity, is neglected by the results from table 7. This is an important notion since tables 5 & 6 can be interpreted as substitutive effects. Nonetheless, the interaction term showcases no significance declaring that the effect of one variable does not necessarily impact the other and vice versa. Similarly, the idea that shareholders prioritize clear financial information over non-financial ESG metrics, and that high readability and strong ESG performance complement each other in providing comprehensive insights, lacks empirical validation.

5. Discussion & Conclusion

The results of our study underscore the complexity of financial dynamics in the context of ESG performance and transparency in corporate reporting.

On the one hand, strong ESG performance appears to correlate with a higher cost of financing. This may be due to several factors such as the increased costs associated with implementing comprehensive ESG initiatives. Also, the potential for perceived higher risk from investors who may be uncertain about the long-term returns of these investments, hence reducing the appetite for investing, aligning with shareholder theory (Friedman, 1970). Equity investors are influenced by a broader range of factors, including short-term financial performance, growth potential, and market sentiment, which may not be as directly correlated with ESG scores. Many equity investors focus on immediate financial returns and may not systematically incorporate ESG factors into their valuation models. The diverse preferences among equity investors, combined with the inconsistent integration of ESG factors and the focus on earnings volatility and growth prospects, could dilute the impact of ESG scores on the cost of equity, as discussed before.

On the other hand, our findings demonstrate that greater readability in annual reporting contributes to a lower cost of capital. Transparent reporting can reduce information asymmetry between companies and investors, leading to improved investor confidence and reduced perceived risk. This, in turn,

lowers the risk premium demanded by investors and lenders, thereby decreasing the overall cost of financing for the company.

These insights suggest that while companies might face higher immediate costs due to their ESG commitments, they can mitigate these costs through enhanced transparency in reporting practices. By providing clear, comprehensive, and transparent annual reports, companies can foster trust and confidence among investors, which may help offset the higher costs associated with strong ESG performance. Therefore, businesses aiming to optimize their cost of capital should consider balancing their ESG investments while increasing efforts to improve the transparency and clarity of their financial and operational reporting.

The results regarding the interplay between the variables contradicted our third hypothesis. One plausible interpretation of the insignificance of the interaction between ESG performance and readability with cost of financing is the potential existence of information asymmetry between the company and external stakeholders. Despite a company's efforts in ESG initiatives and transparency practices, investors and creditors may not have full access to or understanding of this information, thereby diminishing its influence on their assessment of risk and return. ESG initiatives and reporting transparency neither increase nor reduce value of significance when interacted with each other as they are not fully grasped to be able to have a significant effect. Moreover, the insignificance of the interaction term may also reflect investor perceptions and behavior, where factors beyond ESG performance and transparency hold greater weight in their decision-making processes, which constitutes that other factors could influence the interplay between ESG performance and annual report readability. Nonetheless, these results underscore the critical importance of effective stakeholder communication and transparency practices. By enhancing disclosure and engagement efforts, companies can strive to bridge information gaps, foster trust with investors and creditors, and potentially influence the cost of financing over the long term.

Previous research consistently demonstrates a negative relationship between ESG performance and the cost of equity and debt, indicating that capital costs decrease as ESG activities are recognized. Additionally, readability in annual reports, which serves as the foundation of company information, directly contributes to firms' transparency. High transparency, related to ESG performance, has been shown to be highly correlated with lower cost of capital, as it helps mitigate risks and enhances reputations. Despite the established importance of both transparency and ESG performance in the literature, little has been known about their interplay. This study addresses this gap and finds that there is no significant interaction between ESG performance and transparency concerning the cost of capital. This suggests that the relationship between ESG and transparency does not influence the cost

of raising capital, indicating that they operate independently of each other. While there are compelling reasons to engage in transparent reporting and ESG activities, this study does not find evidence to support the idea that they act as substitutes or complements. Instead, they individually contribute to the firm's overall performance without any additional effect resulting from their interaction.

For corporate managers, the results indicate that while higher financial report readability is associated with a reduced cost of financing, higher ESG performance does not necessarily lead to the same benefit. This challenges the conventional view that high ESG performance automatically results in lower financing costs and suggests that firms may need to balance ESG investments with other strategic priorities. For policymakers, the study implies that regulatory efforts to enhance financial report readability can be beneficial in reducing financing costs for companies. However, simply mandating higher ESG disclosures without addressing how these disclosures are integrated and perceived may not achieve the desired reduction in financing costs. This suggests that even though we could not see a statistically significant joint effect of ESG performance and readability, there might still be a need for more holistic approaches that consider the combined impact of ESG performance and financial report readability.

This study has several limitations that should be acknowledged. One key weakness is the potential for measurement errors in ESG and readability scores, which can vary due to differing methodologies and criteria. Additionally, despite using instrumental variables to address endogeneity between ESG performance and cost of capital, the chosen instruments—industry averages of the ESG and Bog scores, may not fully capture the complexity of the relationship. Moreover, focusing on U.S. listed companies limits the generalizability of our findings to other regions with different regulatory environments. Future research should try to address these limitations and see different dimensions of the relationship between ESG performance, financial report readability, and cost of financing. Expanding the geographical size to include firms from different regions and investigating the impact of specific types of ESG activities and the dynamics of these relationships would provide deeper insights. Additionally, examining factors such as corporate governance quality and stakeholder engagement could offer a more comprehensive understanding of how ESG and transparency practices influence the cost of financing.

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