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ESG Disclosure and the Cost of Capital: Is There a Ratcheting Effect over Time?

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Abstract: In recent years, the CSR disclosure–firm risk relationship has raised the acute interest of capital providers, regulators, debtholders, and academic researchers. In addition to the mounting corporate social responsibility (CSR) disclosure issues, one particular area that has increasingly attracted the attention of academics, practitioners, and policymakers is the dynamic of CSR disclosure. The effects of institutional pressures and the relative nature of reputation have amplified expectations over time, resulting in a dynamic CSR disclosure strategy to meet those expectations. However, studies on the relationship between CSR disclosure and firm risk over time are still in their premature stages. Thus, this paper seeks to contribute to the literature on firm risk and CSR disclosure by examining the effect of ESG disclosure on the cost of capital over time. The study examines a sample of 430 S&P 500 US firms observed over the 2011 to 2019 period. Our results indicate that the three dimensions do not have the same effect. Governance disclosure decreases the cost of capital during the first years, and in later years, the effect becomes positive. Over time, social disclosure increases the cost of capital. However, environmental disclosure shows a negative and significant effect on the cost of capital during the first years but no significant effect later in time. Our results contribute to explaining the dynamic effect of CSR disclosure. A predominant feature to consider is the evolution of CSR disclosure over time. Steadily, US firms are moving away from some CSR disclosure activities to others. However, firms that abandoned some existing CSR disclosure commitments may face aggressive responses from stakeholders. US firms have to be more cautious when linking CSR disclosure to firm risk over time, recognizing the long-term benefits and drawbacks of CSR disclosure.

Keywords: cost of capital; ESG disclosure; firm risk



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1. Introduction

Corporate responsibilities have evolved over time as companies themselves have changed. Before, the environment was very stable, whereas today, companies are facing much more dynamic situations requiring greater maturity to face them. As far as corporate responsibility issues are concerned, the public (society) expects more, and companies themselves give more. Companies are forced to adjust their CSR practices to face these issues [1]. This brings us back to the dynamics of CSR and refers to the earliest discussions of CSR in that “social responsibility is a moving target” [2], p. 6. Subsequently, a stream of research has supported this idea and described CSR as an “unstable arena of exploration” [3], “much different than it was five or ten years ago” [4], and “in constant flux” [5]. However, what was considered “good” CSR behavior three years ago may no longer be acceptable today [6], p. 102. Since decision making is closely linked to the needs of stakeholders, CSR disclosure helps to meet those needs. Firms disclose reports on CSR practices and try to establish more convenient and meaningful relationships with stakeholders to integrate them into the information transparency process and by doing so they take into consideration their interests.

More specifically, environmental, social, and governance (ESG) reporting is a consequence of CSR activities [7,8]. ESG disclosure addresses many issues that bear on environmental dimensions such as energy, water, pollution, emissions, waste, and emissions waste; social dimensions such as social equity, consumer safety, human rights, gender policies, products, and their impact on communities; and governance dimensions such as board structure and function and executive compensation. ESG disclosure provides a holistic view of the business and therefore mitigates information asymmetries. Over time, some companies have moved away from some CSR disclosure activities to others [9]. It is clear that CSR disclosure items are changing in response to research findings, regulatory constraints, and changing corporate values [1,10,11]. Thus, we argue that ESG reporting is also dynamic over time [1]. Given the dynamic nature of CSR disclosure, it is not very surprising that some companies do not make the best long-term decisions for two main reasons. *First*, companies that abandoned some existing CSR disclosure commitments face aggressive responses from stakeholders [12]; *Second*, CSR topics are also dynamic [13]. In some cases, legal behavior may be considered ethical behavior (such as environmental disclosure), leading to the risk of being overtaken by competitors when legal standards change.

Despite the emphasis on ESG disclosure, scholars have yet to reach a consensus on its financial value, considering its dynamic nature. From a corporate point of view, ESG reporting is a fundamental mechanism that is likely to enhance firm value, providing accountability to stakeholders but also increasing reputational benefits [10,14,15]. However, as stakeholder expectations on environmental, social, and governance issues are constantly evolving, managers need to be aligned with these expectations through their CSR disclosure policies to maintain their legitimacy and reputation and therefore to manage firm risk [16,17]. Firm risk can be approximated by the cost of capital, the main point of interest in any investment decision made by both investors and firms. Nevertheless, previous studies have not addressed this issue under a dynamic approach. Bearing on this approach, it is therefore interesting to examine the relationship between CSR disclosure and the cost of capital. Thus, managers are encouraged to align their CSR disclosure activities with core values and competencies and to be aware of the expectations of key stakeholders (especially debtholders and equity capital providers) to reduce firm risk. In this study, we argue that the focus on the role of CSR disclosure has resulted in a slow ratchet effect over time that may affect firm risk.

Some studies (e.g., [18]) have shown that a favorable overall ESG score decreases firm risk. For the separate effect of each CSR disclosure attribute, other studies [19,20] have shown that good disclosure policy about environmental, social, and governance issues reduces firm risk. In this line of thought, Suto and Takehara [21] conducted their study on Japanese-listed companies and called for a more empirical examination of this relationship. Moreover, the growing topic of dynamic CSR disclosure raises questions about its role in reducing firm risk. Thus, this paper is motivated by a lack of research that examined this topic under a dynamic approach. A predominant feature to consider in this study is the evolution of CSR disclosure over time. We then suggest that the relationship between firm risk and ESG reporting should consider the dynamics of the latter. Our study therefore tries to contribute to the previous literature.

Thus, the following question is formulated: Is the effect of ESG disclosure on the company's economic risk the same in the short term as in the long term?

Our paper differs from previous studies at several important levels. *First*, whereas most of the previous research on CSR disclosure has focused on an overall index of reporting, our paper focuses on CSR disclosure dimensions (environment, social, and governance) separately to check which dimension is the most relevant for reducing the cost of capital. *Second*, we argue that CSR reporting may intrinsically affect firm risk differently in the short than in the long run. *Finally*, by crossing CSR disclosure dimensions and time horizons, we test if these three dimensions may intrinsically affect firm risk differently in the short run than in the long run.

Under this perspective, few studies have shown that CSR disclosure is often dynamic. One most relevant study pursuing this line of research is that of [22]. Studying analysts' perceptions of risk in CSR reporting, Ioannou and Serafeim [22] adopted a dynamic approach. They estimated a model on different windows of years to detect how the relationship changes over time. Their estimation shows that analysts' unfavorable reactions to CSR scores fade over time, becoming favorable. Thus, their study shed light on the moderating effect of time. Their results are meaningful for our study.

We build on [22]'s study to check the effect of ESG disclosure on the cost of capital. More specifically, we assume that it takes time for the responsiveness of key stakeholders (equity capital providers and debtholders) to translate into lower levels of risk resulting in lower costs of capital. More explicitly, corporate CSR disclosure must be reviewed consistently over time to achieve its benefits through lower risk.

Our contribution goes beyond [22] in at least four ways: (1) Whereas the study of [22] was carried out also in a US context, our study period is different. Ref. [22] examined a large sample of publicly traded US firms during the period stretching from 1993 to 2007, whereas in our study we focus on a more recent period (2011 to 2019). The economic, environmental, and regulatory contexts present many dissimilarities between the two periods. Economic development, institutional environments, and corporate environmental practices are different during these two periods, leading to different CSR disclosure behavior. (2) In addition to the agency and stakeholder perspectives considered by [22] to hypothesize and discuss the dynamic of CSR, the legitimacy and signaling approaches are used in this study to investigate the effect of the evolution of CSR disclosure overtime on firm risk. (3) The CSR scores of [22] are provided by KLD. This paper, however, builds up ESG disclosure scores obtained from the Bloomberg database. In doing so, we take into account the recent debate about the careful use of the KLD database, as it aggregates strengths and concerns across dimensions to generate a composite CSP score that muddies our understanding of firms' social practices, as firms can present strengths and concerns simultaneously (Oikonomou, Brooks and Pavelin, 2014). (4) A composite measure of CSR is considered in the [22] study to test its dynamic effect. In the current study, we make some interesting contributions with our breakdown design that considers the three dimensions of CSR disclosure to test which dimension has a larger dynamic effect.

Therefore, our study examines 430 US firms listed on the S&P 500 index and observed during the 2011 to 2019 period.

The remainder of this paper is structured as follows. In the following section, we present our theoretical framework and develop the main hypotheses. In Section 3, we describe our data, define our variables, and present our methodology. In Section 4, we discuss our results, and in Section 5, we conclude.

2. Theoretical Framework: The Impact of ESG Disclosure on Firm Risk

As we examine firm risk, it would be relevant to discuss its link with capital structure. The tradeoff between debt cost and equity cost is therefore relevant. At this level, it is worth mentioning that the interest rate is the basis for calculating the cost of capital. Then, it will be useful for a firm to consider the effect of interest rate on some key financial metrics such as the economic value added [23] and the net present value [24]. These two metrics are widely affected by the interest rate and affect consequently the cost of capital. Moreover, solving the win-win puzzle is important when dealing with ESG disclosure. In attempting to solve the win-win puzzle, CEOs have to answer the question of what opportunities and threats are involved in ESG disclosure [25]. A cost-benefit analysis calculating the expected net present value of the future cash flow and the effect on the economic value added would likely be appropriate in making this decision [26,27]. Thus, the economic value added and the net present value as financial metrics fit well when dealing with the firm risk and ESG disclosure.

Research on the CSR disclosure-firm risk nexus has recently received considerable attention from finance and management practitioners [28,29]. Nowadays, companies do

not have to focus exclusively on maximizing wealth for shareholders, but they also should take into consideration the well-being of all stakeholders to avoid external pressure. CSR disclosure has therefore superseded its role as an indicator of a company's commitment to environmental, social, and governance issues to gain investors' trust. The aim is to reduce uncertainty and firm risk. The new wave of corporate sustainability awareness allowed investors to question which CSR disclosure attributes have the most impactful effect on firm risk. According to the risk mitigation view, initiatives enhancing CSR disclosure reduce firm risk.

Previous studies [30] have shown that CSR disclosure became a signaling tool for investors and acted as a transparency mechanism to diminish information asymmetry. Therefore, CSR has relevant implications for the equity and bond markets.

For the equity market, motivated by firms' CSR disclosure, investors engage in a favorable evaluation of the financial market [31]. More specifically, a high level of CSR disclosure leads to a higher level of firm value, profitability, growth, and sales from one side and lower idiosyncratic risk from another side [32]. In this line of thought, ESG disclosure is well perceived by investors as a sign of a good reputation in the equity market, inducing lower risk or perceived risk by investors, reducing the firm's actual financial risk [33].

For the bond market, firms with higher CSR disclosure are rewarded with lower bank costs [34–36] since it is negatively associated with information asymmetry [37]. Moreover, CSR disclosure positively correlates with credit ratings [38]. Accordingly, CSR reporting can significantly reduce perceived financial distress and consequently improve credit ratings.

Litigation risks are another form of risk that firms could lessen through CSR disclosure. Firms with a high CSR disclosure policy face lower total risk, consisting of both market risk and firm-specific risk, caused by low sensitivity to governmental sanctions [39]. Banks would also want to lend money to a firm having higher CSR disclosure since it is negatively associated with information asymmetry.

According to the above arguments, CSR disclosure as a risk mitigator closely relates to the cost of capital. However, today, CSR disclosure is becoming institutionalized with its own rules, norms, and beliefs about what companies should or should not disclose. This is happening at three levels: at the organizational level, across sectors, and organizational domains [40]. Reciprocal and reinforcing effects can be observed at each of these levels. Both the industry and the organizational domains can influence firms. Moreover, as firms evolve, their activities have consequences on the rules, norms, and beliefs of the industry and organizational domains to which they belong [40]. We argue that a dynamic process occurs in the CSR disclosure activities of companies to maintain a reputation at this level which in turn affects the level of corporate risk differently. Furthermore, the positioning of the company against its competitors has led to a slow ratchet effect. The actions of other companies lead to a gradual raising of company expectations over time, resulting in "CSR creep". Companies can no longer stagnate in terms of CSR disclosure, especially since it is seen as a means to guarantee their legitimacy [41]. Finally, the global drivers of CSR (like environmental conditions, socio-cultural issues, technology users, and political rights) are highly relevant to explaining the dynamics of CSR disclosure [42]. These drivers change over time because of the nature of the behavior (active or passive) of leaders and the power structure in society. This leads us to believe that there is no status quo for CSR disclosure.

2.1. Environmental Disclosure and Firm Risk

Environmental disclosure reports on many issues related to the company's impact on its natural living and non-living environment (including air, land, and water). It addresses many issues representing a company's commitment and effectiveness towards reducing environmental emissions, supporting research and development of eco-efficient products or services, and achieving an efficient use of natural resources in its production process [43]. Firms with good environmental disclosure policies tend to reduce the probability of lawsuits against them from regulators or NGOs and support fewer ecological fines and litigation

costs. These saved funds would be strategically converted into potential investment opportunities [44].

First, Freeman [45] states that through CSR commitment, firms might assimilate economic achievements with social, environmental, and ethical commitments. Stakeholder theory encourages environmental disclosure, since by addressing issues about, for example, CO₂ emissions, the amount of waste, the use of nuclear energy, the amount of environmental R&D expenditures, total water withdrawal, and environmental supply chain, firms would build long-term trust with all their stakeholders, which would help in creating a basis for a sustainable business model and an environment where companies would be ethical and profitably evolve with fewer conflicts of interest between stakeholders. In addition, with greater compliance to environmental regulations and the credibility of the reporting mechanisms, firms would enhance their stakeholders' engagement and reduce the information asymmetry and ultimately agency costs. Therefore, and bearing on stakeholder theory, environmental disclosure is associated with a convenient and meaningful way with which firms develop their relationships with different groups of stakeholders, which contributes to reducing their risk [45,46].

Second, based on signaling theory, several companies have decided to report environmental information to receive good reactions from investors who perceive this engagement as a "good signal". In this line of thought, much environmental information can be hidden by firms (such as CO₂ emissions, energy consumption, and energy efficiency policy) to avoid the negative reactions of investors. Therefore, and according to signaling theory, there are different measures to be taken to reduce information opacity. These actions could take the form of a premium that the agent would offer to the company to disclose hidden attributes through signals. In this regard, firms with good environmental disclosure policies would use reports to convey a positive signal and act as "good citizens" [47]. Credibility and inimitability attributes stated in signaling theory have a fundamental role in considering environmental disclosure as a signaling tool since firms would benefit from a positive valuation from all stakeholders. Meanwhile, firms with poor environmental disclosure policies would be punished by their stakeholders. The latter would support more social and fiduciary costs and consequently access to capital is more expensive and therefore the cost of capital is high.

As for legitimacy theory, good environmental disclosure provides a favorable opportunity for companies facing global campaigns criticizing their operations. Therefore, environmental disclosure may be perceived as a mechanism for repairing or maintaining legitimacy, which in return will increase profitability in the long run and reduce firm risk [25].

However, from an opposite point of view, the extent of the disclosure may vary depending on society's perception of companies' products (non-sinful or sinful such as tobacco and alcohol) [48]. In this line of thought, facing environmental scrutiny, "sinful" companies (persecuted companies) tend to increase their environmental disclosure by reporting positive information about their environmental engagements to offset the negative consequences of the scrutiny [49]. In this regard, managers may use environmental disclosure as a cover tool to hide their unethical reporting activities or to respond to their narcissistic behavior [50].

Environmental disclosure in this case does not satisfy stakeholders, thus increasing firm risk and subsequently the cost of capital. This argument is attributed to the authors of [51,52], who argued that engaging in CSR activities would be a threat to the foundations of a free society. Social disclosure and especially environmental issues should be dealt with by the government. This highlights the divergence between both shareholder theory and environmental disclosure objectives.

Finally, the effect of regulatory pressures and the role of image tend to amplify expectations about environmental disclosure over time, resulting in a dynamic environmental disclosure strategy to meet those expectations.

Hypothesis 1a (H1a). *Over time, corporate environmental disclosure increases the cost of capital.*

Hypothesis 1b (H1b). *Over time, corporate environmental disclosure decreases the cost of capital.*

2.2. Social Disclosure and Firm Risk

Social disclosure represents “a company’s capacity to generate trust and loyalty with its workforce, customers, and society [. . .]. It is a reflection of the company’s reputation and the health of its license to operate” [43]. Social disclosure refers to customer safety, the preservation of human rights, the maintenance of diversity and equal opportunity in the workforce, high-quality working conditions, a healthy and safe workplace, and training and development opportunities [8]. However, social disclosure does not respond to companies’ moral obligations to report about this issue but to companies’ concerns with sustainability. Social disclosure has become a judgmental criterion used by investors to foresee companies’ prospects.

According to stakeholder theory, social disclosure remains a fundamental asset in increasing firm competitiveness, since internal and external stakeholders have direct relationships with firms, through social engagement. It enables the better anticipation of firms’ overall risk and allows businesses to take advantage of the variability of social expectations. Thus, the social disclosure of key factors, such as employee well-being and enriched relationships with the community and especially between the firm and its capital providers, can lead lending institutions and shareholders to better appreciate firm value, building a long-term trust between these parties [53]. This would result in a low cost of capital. Consequently, firms improving such relationships with their capital providers create an intangible asset that supports their competitiveness and encourages their sustainable financial performance [54–56], which decreases firm risk. Moreover, by focusing on all stakeholders’ welfare, firms enhance their social disclosure by reporting information on salient concerns for society such as fair-trade policies, the amount of donations, human rights, flexible working schemes, and trade union representation. Thus, firms showcase their credibility to their stakeholders and consequently gain attraction, leading to positive evaluations by investors and cheaper capital access. In this regard, proponents of value creation achieved through the relationship between social disclosure and stakeholder theory assume that such disclosure leads to a better firm image [57] and improved productivity resulting from improved employers’ concern with the working environment [58,59]. This will gradually be reflected in stock prices leading to positive future returns and therefore less risk.

From the point of view of legitimacy theory, firms need to seek approval from communities. To do so, they align themselves with social values. This approval is fundamental since it would ensure corporations’ existence and continuity. Then, noncompliance with social expectations would be severely sanctioned by the community, which may even lead to their failure [60]. Consequently, business continuity is guaranteed through good social disclosure and without jeopardizing the values of the society in which it operates. In this line of thought, achieving a better image through an enhancement of legitimacy holds the promise of reducing the cost of capital.

However, according to agency theory, engaging in CSR disclosure leads to conflicts between social and shareholders’ interests and may undermine the ethical principles recognized in Friedman’s free-market economy [61,62] and which may lead to expensive capital access. Therefore, any social contribution should be covered by the corporate tax, meaning that shareholder theory prohibits the use of firm funds to engage in unprofitable investments such as charitable projects or social disclosure practices.

The environmental dynamic is forcing companies to focus on key social disclosure topics. Some companies are doing better than others in this dynamic environment [13] because they consider social disclosure as a moving target.

Hypothesis 2a (H2a). *Over time, corporate social disclosure increases the cost of capital.*

Hypothesis 2b (H2b). *Over time, corporate social disclosure decreases the cost of capital.*

2.3. Governance Disclosure and Firm Risk

Governance disclosure denotes a company's systems and processes that intend to ensure that the board of directors and executives act in the best interests of a company's long-term shareholders [50]. This type of disclosure bears on the best governance practices [43]. Thus, governance disclosure promotes transparency about firms' engagements with all their stakeholders. Achieving firm objectives is reflected in the value creation process since stakeholder theory specifies that efficient stakeholder accountability leads to creating value for all stakeholders. Consequently, governance disclosure would enhance firms' financial performance by mitigating risk and establishing strategic responses to pressure groups to unfortunate events and consequently decreasing risk.

According to signaling theory [63], information asymmetry could exasperate conflicts between managers and shareholders. Governance disclosure then brings visibility to stakeholders on firms' wide-range commitments and effectiveness towards following best-practice corporate governance principles, leading to a reduced firm risk. From a signaling theory perspective, entrenched managers would convey positive signals to the market through the governance disclosure of the effectiveness of board activities and functions as well as the political involvement of the company, leading to higher investor confidence and greater liquidity for securities and consequently covering suspicions of managers' opportunistic behavior, which reduces the perception of firm risk [64]. Therefore, governance disclosure is an essential contributor to firm risk since managers can mitigate information asymmetry between the company and its stakeholders by disclosing information on board structure and functions, executive compensation, and the political involvement of the company. Firms would then engage in governance disclosure if the benefits would outweigh the associated costs. Therefore, it would be hard for firms with poor governance disclosure to possibly mimic the operation.

From the point of view of legitimacy theory, governance disclosure is viewed as a legitimacy technique in response to possible threats to a corporation's reputation and mainly a defensive tool against pressure groups. Then, corporations use such disclosure to mitigate their specific problems, attenuate their risk, or protect their current reputation from possible unethical allegations [65]. Therefore, governance disclosure leads firms to slowly regain their legitimacy. Accordingly, the issue of legitimacy is crucial to explaining the relationship between firm risk and governance disclosure. The strengths of firms with good governance disclosure include their legitimacy, dense networks, and knowledge of issues. These strengths can lead these firms to be more transparent, resulting in a low cost of capital.

However, from an opposite point of view, the ethical and moral vision would be used as a defensive shield against conflicts that could arise between the principal and the agent. According to agency theory, other opponents of the governance disclosure–risk relationship argue that governance disclosure may lead managers to reinforce their opportunistic behavior and enhance their objectives. Therefore, managers use governance disclosure practices unethically as a self-defense strategy. This supports the assumption that agents would protect themselves from powerful stakeholders by committing to governance disclosure, and paying attention to the latter requires decreasing stakeholders' pressure.

It is worth noting that as corporate needs change over time, corporate and stakeholder expectations for governance disclosure change as well, leading to a dynamic governance disclosure strategy over time.

Hypothesis 3a (H3a). *Over time, corporate governance disclosure increases the cost of capital.*

Hypothesis 3b (H3b). *Over time, corporate governance disclosure decreases the cost of capital.*

3. Sample Selection, Variable Measurement, and Empirical Methodology

3.1. Sample

We examined a sample of US firms listed on the S&P 500 observed from 2009 to 2019 initially. We excluded regulated firms as well as financial institutions (SIC codes between 4900 and 4999 and those between 6000 and 6999). Financial and accounting data were downloaded from Thomson Reuters's DataStream with some additional data that were manually retrieved from the firms' annual reports and different internet sites. For ESG scores, data were obtained from the Bloomberg data set. After merging the latter databases and due to missing observations, we retained a final sample of 430 firms observed from 2011 to 2019.

Industry classification was based on the Global Industry Classification Standard (GICS), which is an industry taxonomy developed by Standard and Poor's in 1999.

3.2. Variable Measurement

3.2.1. Dependent Variable: The Cost of Capital

The cost of capital (COK) is the expected return rate that market participants require to attract funds to a particular investment [66]. COK is considered an opportunity cost since it is incurred by any entity willing to invest against an alternative similar-risk-and-liquidity investment [67]. In simpler terms, the cost of capital is the reward that an investor expects to receive from a company in the future. Ref. [66] states that COK is a fundamental tool in pricing risk and it can only be measured indirectly. The authors of [68] considered a simple firm as a set of assets. These assets may be financed partly out of borrowed money (debt) and partly by shareholders (equity financing). Both fund providers are considered capital providers. The firm capital structure consists of debt capital and equity capital. Each of these components has its own cost related to its respective risk. Capital is a key input received by corporations; understandably, the more costly this input is, the harder it will be for firms to generate profits regardless of the revenues they make.

Several authors have defined the cost of capital as the weighted average cost of capital (COK), an average cost of both capital components, thus an average cost of ownership interest and debt interest. From investors' standpoints, El Mehdi [69] considers that investors are generally risk-averse entities; consequently, they require a certain return that depends on investment risk. Ibbotson et al., [67] states that COK represents investors' expectations which are divided into two: a free risk rate which is mainly assimilated to government bonds and a risk premium which is a return required by an investor for a perceived level of risk.

We follow previous research [21,44] and estimate the firm cost of capital through the weighted average cost of capital model, presented by [68] as follows:

$$\text{COK} = \text{COE} \times \frac{\text{Equity}}{\text{Debt} + \text{Equity}} + \text{COD} \times \frac{\text{Debt}}{\text{Debt} + \text{Equity}} \times (1 - t)$$

where:

COK: the cost of capital estimated through the weighted average cost of capital model.

COE: the cost of equity.

COD: the cost of debt.

Equity: the market value of firm equity.

Debt: the market value of firm debt.

t: the effective corporate tax rate.

3.2.2. Independent Variable: ESG Disclosure

Empirically, to measure ESG disclosure, we use a panel dataset with environmental, social, and governance (ESG) disclosure scores obtained from the Bloomberg database. Bloomberg rates a firm's ESG disclosure level [8,70,71]. The scores assess companies' CSR

disclosures of their environmental, social, and governance activities. Each activity is given a score from 0 to 100 so that the score increases with an increase in disclosed information.

The environmental score (E) addresses many issues intrinsic to the business environment and the relationship between the business and society (CO₂ emissions, energy consumption, energy efficiency policy, total waste, and emissions reduction policy). The environmental disclosure score (E) is used as a measure of environment-oriented CSR disclosure.

The social score (S) captures sensitive and salient concerns for society such as human rights, social equity, consumer safety, relationship with the community, etc. The social disclosure score (S) is used as a measure of social-oriented CSR disclosure.

Finally, the governance score (G) captures practices that do not primarily affect the public and take place primarily within the company. The governance disclosure score is used because it reflects information such as board diversity, anti-competitive practices, corruption within the company, cumulative voting, executive compensation, shareholders' rights, takeover defense, and staggered boards. The governance disclosure score (G) is used as a measure of governance-oriented CSR disclosure.

In this study, we examine the effect of CSR disclosure through each ESG individual dimension on the cost of capital.

We follow the methodology of both [14] and [72] and transform each ESG disclosure score into indicator variables (0, 1) (environmental Score (ENV_SC), social score (SOC_SC), and governance score (GOV_SC)). We first calculate the median of each disclosure score every year, then we give the value of one if firm has a disclosure score higher than the median and zero otherwise. This methodology has two advantages [14]. It mitigates bias in data coding, and it is more suitable for a large sample which is beneficial in our case since Bloomberg's ESG scores presented several missing values for the firms listed on the S&P 500 during the 2011 to 2019 period.

3.3. Control Variables

To control for company characteristics that are expected to have a direct or an indirect impact on the cost of capital and for firm risk profile, our review of the cost of capital literature suggests that five factors are most likely to affect the cost of capital. The following factors are used in our study.

The first is financial leverage (LVRG) measured by "the ratio of long-term debt to total assets". It represents a source of funding that a corporation needs to ensure its continuity. We include leverage in the model for two reasons. *First*, increasing leverage is the result of additional scrutiny from financial institutions, which affects the cost of capital [73]. *Second*, leverage has a direct impact on the cost of capital since it relates to financial distress [68]. Therefore, high leverage is expected to relate to a higher cost of capital. Previous studies [21,33,44,74,75] have shown that leverage positively relates to the cost of capital.

The second is firm size (SIZE) measured by the "logarithm of total assets". Previous studies [14,33,44,72] have shown that firm size has a negative and significant impact on COK; small firms are perceived as riskier than their larger peers. Large firms attract more media and analyst coverage [76], which could mitigate information asymmetry risk since they dispose of more information to disclose than their smaller peers [77].

The third is firm profitability (PROFI), which is considered a key determinant of future investment. Then, higher expected profitability will lessen frictions the firm faces in the market. We include return on assets approximated by the ratio "operating income before depreciation divided by total assets". Firms with a high return on assets enjoy a low cost of capital [78].

The fourth is information asymmetry and agency conflicts. Information asymmetry (INF_ASY) is approximated by the market-to-book ratio measured by the market value of equity/the book value of equity. This ratio depends on the extent to which a firm's returns on existing assets and expected future investments exceed its required rate of return on

equity [79]. We argue that the larger the MB ratio is, the larger information asymmetry between the market and the firm [79]. Firms with a high market-to-book ratio have a higher cost of capital [14]. Agency conflicts are measured by free cash flows (FCF), approximated by the ratio “[operating income before depreciation – interest expense – total taxes – dividends]/total assets” [79,80]. As indicated in the literature, a higher proportion of free cash flows can lead to agency conflicts between managers and shareholders [79–82]. We expect a positive relationship between firms’ free cash flows and their costs of capital.

Finally, firm age (FIRM_AGE) was also added to the research model because, as predicted by firm lifecycle theory, the cost of capital tends to fall for older firms [83]. We expect a negative relationship between the firm age and the cost of capital

Table 1 summarizes the measurements of variables, their definitions, and their expected signs.

Table 1. Variables’ definitions.

Variables	Definition	Expected Sign	Measurements
COK	Cost of capital		The weighted average cost of capital
ENV_SC	Environmental disclosure	+ / –	Equal to 1 if the firm disclosure score is higher than the median score for the current year, and zero otherwise
SOC_SC	Social disclosure	+ / –	
GOV_SC	Governance disclosure	+ / –	
LVRG	Financial leverage	+	Long-term debt/total assets
SIZE	Size	–	The logarithm of total assets
PROFI	Firm’s return on assets	–	Operation income before depreciation/total assets
INF_ASY	Market to book ratio	+	The market value of equity/the book value of equity
FCF	Free cash flows	+	(Operating income before depreciation – interest expense – total taxes – dividends)/total assets
FIRM_AGE	Firm age	–	Years since the company’s incorporation date

3.4. Empirical Methodology

Our empirical methodology aims at checking the above hypotheses and whether CSR disclosure leads to cheaper capital access or not over time. Thus, we examine the effect of each of the three main dimensions of ESG disclosure on the cost of capital. We run the following regressions:

$$COK_{i,t} = \beta_0 + \beta_1 ENV_SC_{i,t} + CONTROL\ VARIABLES + YEARS + INDUSTRIES + \varepsilon_{i,t}. \quad (1)$$

$$COK_{i,t} = \beta_0 + \beta_1 SOC_SC_{i,t} + CONTROL\ VARIABLES + YEARS + INDUSTRIES + \varepsilon_{i,t}. \quad (2)$$

$$COK_{i,t} = \beta_0 + \beta_1 GOV_SC_{i,t} + CONTROL\ VARIABLES + YEARS + INDUSTRIES + \varepsilon_{i,t}. \quad (3)$$

We use panel data methodology in our analysis. Indeed, unlike pooled regression, which neglects the time dimension and treats the data as cross-sectional by pooling across years [84], panel data models test group (individual-specific) effects, time effects, or both to deal with heterogeneity or individual effects that may or may be unobserved [85,86].

Furthermore, the panel data approach has several advantages over the analysis of individual time series or cross-sectional data. It gives more information with less collinearity among the variables, more degrees of freedom, and more efficiency, and it can control for individual heterogeneity [87,88]. Both fixed and random effects estimators were applied and distinguished on the basis of the Hausman test, which suggested that the random effects specification was more appropriate.

4. Empirical Results

4.1. Descriptive Statistics

Table 2 reports the descriptive statistics. First, the mean of the cost of capital (COK) is 0.076. The results of the ESG scores show that American firms seem to be more focused on environmental disclosure (61.3% of firms exceed the industry median ENV_SC), followed by governance disclosure (half of the firms exceed the industry median GOV_SC) and then social disclosure (31.3% of firms exceed the industry median SOC_SC).

Table 2. Descriptive statistics.

Variables	Mean	Std. Dev.	Min	Max
COK	0.076	0.401	0	1
ENV_SC	0.613	0.202	0	1
SOC_SC	0.313	0.202	0.002	0.689
GOV_SC	0.505	0.613	0	1
LVRG	0.264	0.18	0	0.878
SIZE	7.616	1.434	3.655	15.62
PROFI	0.076	0.072	−0.614	0.721
INF_ASY	1.931	76.68	0.314	15.438
FCF	0.107	0.073	−0.492	0.684
FIRM_AGE	81.03	55.64	8	224

For the control variables, shows that the average firm year in our sample has a financial leverage (LVRG) of 0.264, a firm size (SIZE) of 7.616, a return on assets (PROFI) of 7.6%, a market-to-book ratio (INF_ASY) of 1.931, a free cash flow (FCF) of 0.107, and a firm age (Firm_AGE) of 81.03.

4.2. Multivariate Analysis: Impact of ESG Disclosure on the Cost of Capital

We examine the impact of the individual dimension of CSR disclosure on COK. Panels (A), (B), and (C) of Table 3 summarize the effect of ENV_SC, SOC_SC, and GOV_SC on COK, respectively. For the effect of each dimension of ESG disclosure, the effect of the social dimension is the most important effect. The increase in the cost of capital is mostly explained by this dimension. By attributing a rank to the effect of each of the CSR disclosure dimensions on the cost of capital, the social dimension would be in the lead, followed by the governance dimension and then the environmental dimension, which has little influence.

Table 3. Regression results of ESG disclosure and cost of capital.

Panel A: COK–environmental disclosure relationship						
	Time period					
	2011–2014	2011–2015	2011–2016	2011–2017	2011–2018	2011–2019
ENV_SC	−0.06 ***	−0.0431 ***	−0.046 **	−0.057 *	0.027	0.053
LVRG	0.043 **	0.044 **	0.041 ***	0.033	0.021 ***	0.067 ***
SIZE	−0.022 ***	−0.021 ***	−0.011 ***	−0.012 ***	0.024 ***	−0.014 ***
PROFI	−0.007 ***	−0.003	−0.002 ***	−0.003 ***	−0.024 ***	−0.006 ***
INF_ASY	0.015 **	0.021	0.021	0.004	0.02	0.003
FCF	0.021 **	0.014 **	0.014	0.011	0.05 ***	0.022
FIRM_AGE	−0.02	−0.013	−0.013	−0.012 **	−0.049 ***	−0.023 ***
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R-squared	0.185	0.177	0.196	0.209	0.311	0.326
Number of Observations	1701	2133	2569	3002	3429	3851

Table 3. Cont.

Panel B: COK–social disclosure relationship						
	Time period					
	2011–2014	2011–2015	2011–2016	2011–2017	2011–2018	2011–2019
SOC_SC	0.061 *	0.034 **	0.041 **	0.03 **	0.044 ***	0.05 ***
LVRG	0.044	0.041 **	0.045 **	0.049 *	0.068	0.074
SIZE	−0.001 **	−0.001 **	−0.002 **	−0.003 ***	−0.004 ***	−0.005 ***
PROFI	−0.013 ***	−0.006 ***	−0.011 ***	−0.018 ***	−0.044 ***	−0.036 ***
INF_ASY	0.014 ***	0.02 ***	0.002 ***	0.002 ***	0.003	0.023
FCF	−0.014	−0.007	−0.01	−0.016	−0.044	−0.036
FIRM_AGE	−0.007	−0.003	−0.001	−0.009 **	−0.006 **	−0.011 **
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R-squared	0.144	0.165	0.184	0.211	0.259	0.363
Number of Observations	1701	2133	2569	3002	3429	3851

Panel C: COK–governance disclosure relationship						
	Time period					
	2011–2014	2011–2015	2011–2016	2011–2017	2011–2018	2011–2019
GOV_SC	−0.073 *	−0.055 *	0.072 **	0.074 ***	0.074 ***	0.073 ***
LVRG	0.053 ***	0.045 ***	0.043	0.05	0.067	0.074
SIZE	−0.002 **	−0.001 **	−0.003 **	−0.003 ***	−0.004 ***	−0.005 ***
PROFI	−0.003 *	−0.004 *	−0.001 **	−0.007 ***	−0.005 ***	−0.011 ***
INF_ASY	−0.008	−0.002	−0.006	−0.007	−0.009	−0.016
FCF	−0.02 ***	−0.009 ***	0.039 ***	−0.017 ***	−0.039 ***	−0.036 ***
FIRM_AGE	−0.024	−0.013	−0.042	−0.014 ***	−0.042 **	−0.034
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R-squared	0.159	0.155	0.196	0.206	0.355	0.361
Number of Observations	1701	2133	2569	3002	3429	3851

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3 Panel A reports the main results of the OLS regression of the COK-ENV_SC relationship. We note that only in the first four columns of Table 3 (Panel A), the coefficient of environmental disclosure is negative. However, in the subsequent columns, the coefficient becomes statistically insignificant. This leads us to reject hypotheses H1a and H1b. Our estimations are very interesting since they put in evidence that the effect of environmental disclosure on firm risk changes over time. Legitimacy theory explains our results for the first four windows of years. There is a huge appeal from stakeholders and a positive reaction from the financial market for green products and environmental practices. This ecological commitment would then be translated into a competitive advantage since managers would use environmental disclosure to convey a proactive environmental image to maintain or increase the legitimacy of their firms. Therefore, given the growing stakeholder interest and media focus on environmental activities, it represents the perfect opportunity for CEOs to build a strong positive picture for stakeholders and society. The CEO, therefore, incites the firm into engaging in environmental disclosure. Such disclosure is a good way of increasing the legitimacy of the firm and consequently decreasing firm risk. Moreover, in the last decade, the request of investors to disclose environmental information (climate change, green environment, etc.) has become more pronounced. This awareness has been translated by a new environmental regulatory disclosure framework in the United States. More precisely, in 2010 the SEC issued guidance to help firms to assess the effect of their mandatory disclosure on climate change. Moreover, in 2011 the Environmental Protection Agency (EPA) issued requirements for disclosing some environmental activities. Consequently, firms have complied with this requirement and thus have gained the trust of stakeholders [50], especially equity capital providers and debtholders, leading to a decrease in the cost of capital. Thus, the compliance of most firms with these requirements could neutralize the effect of environmental disclosure on firm risk during the last two windows of years. Finally, with the improvement of consciousness on environmental issues and disclosure for government, companies, and investors, we can conclude that environmental

disclosure effect on firm risk changes over time. For the control variables, a positive effect is observed for financial leverage in almost all sub-periods except 2011–2017. However, a negative effect is observed over time for PROFI and firm size. Information asymmetry (INF_ASY) is significant only for the 2011–2014 period. Free cash flow exerts a positive effect on the cost of capital during the 2011–2014, 2011–2015, and 2011–2018 periods. Finally, a negative effect is observed for firm age during the 2011–2017, 2011–2018, and 2011–2019 periods.

Hypothesis 2a (2b) predicts that the social disclosure coefficient will initially be positive (negative) and increasingly positive (negative). Results are reported in Table 3 Panel B. We note a significant effect on firm risk for sub-periods starting with the first period, 2011–2014, with a more significant effect in the two last periods. Over time, social disclosure becomes increasingly more favorable for increasing firm risk, which lends support to H2a. Although in the US there is a limited number of mandated requirements for corporate social disclosure, the California Transparency in Supply Chains Act of 2010 (CTSCA) is one among these requirements intended for manufacturing and retail firms doing business in California (with worldwide sales over \$100 million) and having to address issues related to slavery and human trafficking issues in corporate supply chains. This act took effect on 1 January 2012. Although this act is specific for some firms, it has generated a great deal of awareness about social disclosure among investors and the stakeholders of other sectors. Even though this wave of awareness is increasing, the costs–benefits trade-off of disclosing social information explains our results. Thus, some firms’ huge recourse to bank financing somehow calls off the role of social disclosure and therefore increases firm risk. Our results are in line with the assumptions of agency theory. This leads us to conclude that the more the companies improve their social disclosure, the less likely they attract debtholders and equity capital providers, thus increasing the cost of the capital over time. From 2018, we observe the strengthening effect of social disclosure on the cost of capital; a more significant relationship is observed. The main reason that explains this result is that social disclosure has evolved over time. To reduce the cost of capital, firms have to go beyond social disclosure by focusing on the global drivers of CSR as presented in the theoretical framework. For the control variables, financial leverage has a positive effect on firm risk during the 2011–2015, 2011–2016 and 2011–2017 periods. The effect of firm size is negative and more pronounced over time. Our results show also that there is a negative and significant relationship between the firm’s accounting performance (PROFI) and the cost of capital, but in this case, the effect remains stable over time. The coefficient of the market-to-book ratio is significant only for the first four windows of years. However, the free cash flow variable is not significant for all columns of Panel B of Table 3. The effect of firm age remains almost the same as in the regression of environmental disclosure: negative and significant for the last three windows of years.

Turning now to the governance disclosure effect, our results (Table 3 Panel C) show a negative and significant effect on firm risk for the first two windows of years. These results are significantly different from those of the subsequent sub-periods. We see that until 2015, the governance disclosure coefficient is still negative, and the negative coefficient in the first two sub-periods becomes positive starting from the 2011–2016 period, which supports H3a. More precisely, until 2015, governance disclosure decreases firm risk. From 2016, we observe an opposite effect: the firm risk increases. Our estimations are very interesting since they put in evidence that the effect of governance disclosure on firm risk changes over time. Following the SEC disclosure rules on diversity and other governance matters, firms’ governance practices converge quickly to such requirements. Thus, firms move from the first level of compliance to a higher level in few years. As observed in our study, until 2015, the enhancement of governance disclosure decreased the cost of capital. Consequently, governance disclosure is a relevant issue for the key stakeholders. Beyond this period, an opposite effect is observed. This result is mainly explained by downturns in governance reforms during the last years. Thus, as firms comply with the previous requirement, the key stakeholders (debtholders and equity capital providers)

are not sensitive to the enhancement of governance disclosure when negotiating the cost of their funds. Overall, our results highlight the dynamicity of governance disclosure over time. For the control variables, our results show that the coefficient of the financial LVRG variable is significant only during the two first windows of years: there is a positive relationship between the company's leverage and cost of capital during the 2011–2014 and 2011–2015 periods. The effect of firm size is negative and more pronounced over time. Our results show that there is a negative and significant relationship between the firm's accounting performance (PROFI) and the cost of capital, and this effect becomes more favorable over time. The coefficients of the market-to-book ratio are not significant over time. The negative coefficient of the free cash flow (FCF) variable over time denies the assumption that firms having a high proportion of FCF would be exposed to more conflicts of interest and hence higher incentives for managers to engage in opportunistic behavior, thus increasing cost of capital. Finally, the coefficient of firm age is negative and significant during the 2011–2017 and 2011–2018 periods.

We can conclude that over time, internally oriented CSR activities such as social and governance disclosure exerts a more acute undesirable effect on firm risk than externally oriented CSR activities such as environmental disclosure.

4.3. Robustness Checks

To ensure the robustness of our primary findings, several robustness tests are conducted. One of the most prominent issues in related papers that deal with CSR disclosure is endogeneity bias. *First*, for reverse causality in our regression equations, we examine the impact of ESG score on the future cost of capital (Columns (1) to (3) of Table 4) by taking the dependent variables at time ($t + 1$). Our findings based on regression reaffirm our main findings. (We report results for the full sample period. In unreported results, we have also rerun our specifications using the sub-periods.)

Table 4. Robustness check results: ESG disclosure and cost of capital.

	COK $t + 1$			GMM		
	(1)	(2)	(3)	(4)	(5)	(6)
ENV_SC	−0.012			0.097		
SOC_SC		0.023 **			0.039 ***	
GOV_SC			0.016 ***			0.074 ***
LVRG	0.072	0.064	0.074	0.051	0.02	0.053
SIZE	0.027	0.032	0.026	−0.004	0.004	−0.002
PROFI	−0.016 ***	−0.002 ***	−0.014 ***	−0.014 ***	−0.006 **	−0.013 **
INF_ASY	−0.036 ***	−0.004 ***	−0.044 ***	−0.032 **	−0.019 *	−0.032 **
FCF	−0.012 *	−0.006 *	−0.047 *	−0.026	−0.007	−0.025
FIRM_AGE	0.071	−0.013 *	−0.045	−0.04	−0.007	−0.038 *
COK $t-1$				0.012 ***	0.023 ***	0.016 ***
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.326	0.311	0.209			
Number of Observations	3429	3429	3429	3429	3429	3429
AR(2) p -value				0.455	0.326	0.232
Hansen Test p -value				0.265	0.881	0.987

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Second, to control the potential concerns regarding endogeneities, simultaneities, and firm-specific heterogeneities in our main regressions, we employ the system Generalized Method of Moments (GMM) in re-estimating our results. We report the results in Table 4 (Columns (4) to (6)). Our results meet the threshold of the standard tests for the system GMM that AR (2) tests for second-order autocorrelation and Hansen tests for instrumental validity. Furthermore, our findings in these models corroborate the main findings and

highlight that our results are robust to potential spurious correlations that may arise from heterogeneities or endogeneities.

5. Conclusions

The financial literature has examined the relationship between CSR disclosure and firm risk. However, little attention has been given to the dynamic behavior of CSR disclosure. Some studies show that CSR disclosure changes over time [13,22,30]. We try to fill in this gap by investigating the impact of CSR disclosure on the cost of capital over time. To that end, we examined a sample of 430 US firms belonging to the S&P 500 observed over 9 years, from 2011 to 2019.

Like [22], we put in evidence that CSR disclosure effects change over time. More specifically, [22] shows that the reactions to CSR scores are unfavorable during the first few years of the study but over time become less and less unfavorable. In our study, the empirical findings are generally in line with agency theory assumptions. Although we have put in evidence that the reaction to CSR disclosure changes over time, the dynamic effect of each dimension of CSR disclosure on the cost of capital is different. Over time, the effect of social disclosure is more important. The effect of governance disclosure is negative during the first two windows of years, but during the subsequent windows, the effect becomes positive. Finally, the effect of environmental disclosure on the cost of capital is observed during the first four windows of years. After that time span, no significant effect is observed. This highlights the dynamic effect of each component of CSR disclosure on the cost of capital. Our results are consistent with the stream of the literature viewing firms as more reluctant to engage in social and governance practices because they perceive them as a threat or a burden and because these two dimensions do not decrease firm risk. Moreover, over time, debtholders and shareholders do not place enough emphasis on social and governance activities (ESG) in assessing firm risk. Our results on environmental disclosure are useful. Business managers have no incentives to enhance the levels of environmental disclosure since the conformity of most firms to the Environmental Protection Agency requirements (2011) attenuates the effect of this disclosure on firm risk in the years following the adoption of these requirements. However, during the last year, firms' environmental disclosure was largely driven by political/social factors rather than economic factors, leading managers to increase the levels of such disclosure. For economists, a trade-off between the cost and the benefit of environmental disclosure is valuable over time. Moreover, over the past years, disclosing environmental information has been more costly than disclosing information on other dimensions (social and governance) [8]. For academics, the environmental disclosure–firm risk relationship should be more at the forefront by integrating factors that moderate this relationship such as green intellectual capital, manager attributes, etc.

The implications of our results for the literature dealing with CSR disclosure and cost of capital are both interesting and quite straightforward.

For the CSR disclosure literature, this study has several implications. First, our study elucidates the dynamic of CSR disclosure. Second, it puts in evidence the flip side of CSR disclosure. Finally, over time, CSR disclosure is not the best strategic decision taken to reduce firm risk.

For the cost of capital literature, its assessment cannot be correctly achieved without taking into consideration the impact of the three dimensions of CSR disclosure: the environmental, the social, and the governance dimensions. Second, we add to the studies on the cost of capital a new obstacle: social and governance disclosure.

The managerial implications of our study include the consideration of whether enhanced CSR disclosure is a good strategy for reducing risk over time, the need to focus on low levels of the cost of capital when attempting to produce informative CSR disclosure experiences and potentially distinct strategies for inducing stakeholder satisfaction and especially shareholders' and debtholders' satisfaction. We have also identified some managerial implications of our conceptualization and analysis that can be used by managers

to review their strategies for improving CSR disclosure. Moreover, we stress that the CSR disclosure strategy requires the support of the whole organization, not only of the CEO. Finally, when establishing a CSR disclosure strategy, managers need to answer five questions: To whom does the CSR disclosure strategy need to be conducted? What should be done for key stakeholders such as equity capital providers and debtholders regarding CSR disclosure? In what way it should be accomplished? How formalized should the strategy be? Should the strategy be the same over time?

The findings from this study could also encourage further research and some managerial solutions.

A further study is needed to provide the excuse to take the strategic action we already thought was right regarding the level of CSR disclosure. In addition, more research is needed, as our results suggest that some assessment should be made about the trade-off between debt cost and equity cost. More precisely, it is interesting for future research to study the separate effect of CSR disclosure on each component of the cost of capital. Moreover, our results are important initial results that need to be replicated in other countries in a different setting to strengthen their generalizability. Because we limited our sample to 430 US firms listed on the S&P 500, it would be more interesting for future research to extend the CSR disclosure–cost of capital relationship on a global sample, including European markets and several emerging markets such as China, Brazil, Mexico, and India where CSR practices are flourishing. Finally, it is interesting to study the effect of CSR disclosure on the cost of capital during a turbulent period and especially during the COVID-19 pandemic, as this crisis is unprecedented and firms were found to be vulnerable.

As for managerial solutions, strong but prudent CSR disclosure policies are required. The role of equity capital providers and debtholders is to be more concerned over time. More precisely, *first*, firms have to be more aware of CSR disclosure benefits and be updated on new and better changes in such a policy. *Second*, a careful CSR disclosure strategy is important to avoid a high firm risk. Thus, the proper planning of CSR disclosure engagements may prevent a high cost of capital. Third, an adaptation of firms to stakeholders' interests is crucial to gain their trust, but CSR disclosure does not have to play only a self-defense strategy. *Fourth*, as we have identified some undesirable outcomes of CSR disclosure activities on equity capital providers and debtholders, firms have to be more cautious when adopting CSR disclosure strategies.

Regardless of our findings, this study has some limitations. Because of the lack of good instruments, our findings may be biased and subject to variable omissions. This study would have provided better results using the amount of analyst coverage as a control variable, for instance.

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