2023

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Benjamin Lynch
Technological University Dublin, benjamin.lynch@tudublin.ie

Martha O'Hagan-Luff
Trinity College Dublin, Ireland

Funder: This research received no external funding

Received: 8 April 2021 | Revised: 21 December 2022 | Accepted: 17 March 2023
DOI: 10.1002/ijfe.2808

RESEARCH ARTICLE

WILEY

Relative corporate social performance and cost of equity capital: International evidence

Benjamin Lynch[1] | **Martha O'Hagan-Luff**[2]

[1]Department of Finance, Technical University Dublin, Dublin, Ireland
[2]Trinity Business School, Trinity College, Dublin, Ireland

Correspondence
Martha O'Hagan-Luff, Trinity Business School, Trinity College Dublin, Ireland.
Email: ohaganm@tcd.ie

Abstract
This research examines the relationship between firms' corporate social performance (CSP) and the implied cost of equity capital using a sample of 25,938 firm-year observation from 49 countries during the period from 2002 to 2021. Using estimates of the firms' ex ante cost of equity capital, we examine its relationship with industry-relative measures of the firms' CSP, its environmental and social pillars and sub-pillars. We find that increased overall CSP reduces a firm's cost of equity capital up until a point, beyond which the marginal benefits of further CSP investment decrease. We find that the social pillar is the main driver of the reductions in cost of capital, in particular, a firm's performance in relation to its workforce, and that higher performance is increasingly rewarded with a lower cost of capital. Finally, we find that this relationship differs depending on the institutional context, with greater reductions in the cost of capital evident in countries with stronger institutional environments.

KEYWORDS
corporate social performance, corporate social responsibility, cost of equity, ESG, financial performance, sustainable finance

1 | INTRODUCTION

In recent years, investor focus on the non-financial performance of firms has increased, as evidenced by the growth and proliferation of sustainable investment strategies such as ESG integration (Global Sustainable Investment Alliance, 2018).[1] Such strategies have gained broad acceptance in the investment community with 82% of the world's largest professional investment managers surveyed reporting its importance to investment performance (Amir & Serafeim, 2018). Although socially responsible investors may take non-financial metrics into consideration based on a desire to increase the positive impact of firms on society, rising interest by the wider investment community may be the result of an increased awareness of the risk implications of poor performance on these metrics. An increase in sustainable investment may provide an avenue through which capital markets can provide a financial incentive for firms to improve their Corporate Social Performance, reducing the potential negative impacts and improving the positive impacts of business on society.[2] However, the extent to which this exists may be contingent on the perceived trade-off between CSP's costs and benefits at different levels of performance, for its different individual components and in divergent institutional settings.

The impact of increased CSP on a firm's financial performance is the subject of many academic research papers with contradictory theoretical stances and empirical evidence supporting what are often presented as diametrically opposed positions. Stakeholder theory proponents predict a positive relationship between socially responsible business activity and financial performance, arising from increased revenue generation, lower costs, product differentiation, improved access to customers, suppliers, employees and investors, increased efficiencies, elimination of substantial fines and other potential liabilities (Gupta, 2018; Malik, 2015). Proponents of shareholder theory (Aupperle et al., 1985; Friedman, 1962; Jiao, 2010) predict a negative relationship arguing that any benefits that will accrue from these investments in CSP are outweighed either directly by upfront costs, or indirectly by second order costs such as the internalization of negative externalities (Pigou, 1920), opportunity costs (Aupperle et al., 1985) and agency costs (Jiao, 2010).

An inverse relationship between CSP and the cost of equity capital is proposed for two reasons, its effect on the size of a firm's investor base and its effect on a firm's perceived risk. Firstly, according to Merton's (1987) capital equilibrium model a decrease (increase) in the size of a firm's investor base will result in a higher (lower) cost of capital due to the impact on information asymmetries and opportunities for risk diversification. The presence of this cost of capital premium for firms with smaller investor bases, known as the Neglected Stock Hypothesis (Hong & Kacperczyk, 2009), is suggested by El Ghoul et al. (2011) to apply to firms with low CSR due to investor preference and information asymmetry. The second interconnected reason for the negative relation between CSP and cost of capital is its effect on the perceived risk of the firm. Previous research has found that CSP can reduce both a firms idiosyncratic risk (Ayton et al., 2022; Godfrey et al., 2009; Hoepner et al., 2016; Jo & Na, 2012) and systematic risk exposure (Eccles et al., 2011; Godfrey et al., 2009; Gregory et al., 2014; Koh et al., 2014). The presence of a negative and linear relationship between elements of CSR and cost of equity capital has been found in a number of studies (El Ghoul et al., 2011; Gupta, 2018).

However, while some investors engaged in socially responsible investment (SRI) may consistently prioritize social and environmental performance over economic returns (Riedl & Smeets, 2017), other wealth maximizing investors' decision-making process is based on an economic framework that weighs the perceived costs and benefits of varying levels and categories of CSP in a dynamic manner. Furthermore, the level and category of CSP investment that a firm undertakes may contribute to investors' perception of risk in relation to agency problems (Krüger, 2015). Low levels of CSP may indicate a lack of long term investment and an indication of myopic management behaviour (Stein, 2003), while high levels may represent private benefits that managers extract at the expense of shareholders (Jiao, 2010). Therefore, a firm's aggregate level of CSP and performance in individual categories may affect the size of its investor base and perceived risk in a complex non-linear manner, resulting in an optimal level of investment with regards to cost of capital reduction. This optimal level of investment may also be affected by the institutional context in which the firm operates due to its ability to shape the costs and benefits related to different levels of performance.

To explore the nature of this relationship our study uses a sample of 25,938 firm-year observations during the period 2002–2021, and makes five major contributions to the extant literature. First, the use of peer group dummy variables allows us to investigate the presence of a non-linear and stratified relationship between CSP and the implied cost of equity capital. Second, while most previous studies have only examined the effect for U.S. firms (Albuquerque et al., 2019; Boubaker et al., 2020; Chava, 2014; El Ghoul et al., 2011), our dataset includes firms from 49 countries, allowing us to investigate the impact of firms' CSP on their implied cost of equity capital across different institutional and regulatory environments. Third, we also disaggregate the components of CSP into its environmental and social pillars and sub-pillars, overcoming the issue of confounding effects when only using an aggregated score. While prior studies have focused on the impact of disaggregated scores only for a single country (Boubaker et al., 2020; El Ghoul et al., 2011), or only for a single sub-pillar across countries (El Ghoul et al., 2018), our dataset allows us to examine both the environmental and social pillars and sub-pillars across 49 countries, allowing for substantial variation in the institutional environment. Fourth, we use industry-relative Environmental and Social scores which allow us to investigate whether firms that distinguish themselves from their peers are associated with changes in their implied cost of equity capital. If investors believe in an optimal level of CSP investment resulting from a dynamic cost–benefit analysis, it is likely to be industry specific in line with other factors such as cost structures, risk profiles and other financial metrics. Fifth, we use an implied measure of the cost of capital which uses a cross sectional model to estimate forecasted earnings per share rather than using analyst forecasts (Chava, 2014; El Ghoul et al., 2011, 2018), which has been shown to outperform analyst forecasts on a number of dimensions. This is particularly relevant for our international study, given that information about analyst expectations is far less readily available in relatively small financial markets.

Our first main finding is that while financial markets provide an incentive for firms to increase their CSP by lowering their implied cost of equity capital, this relationship is non-linear and stratified, with the impact on the firms' cost of capital varying for different levels of CSP. We find the largest reduction in the implied cost of capital is for firms who move out of the bottom 20% of performers, relative to others in their industry. We also find that the implied cost of capital reduces with increasing CSP up to a point, beyond which it starts to increase again, representing a reverse J-shaped relationship. By increasing CSP firms have been found to attract a wider range of investors (El Ghoul et al., 2011; Hillman & Keim, 2001; Hong & Kacperczyk, 2009), but investors with a primary focus on wealth maximization may perceive the costs of CSP investment to outweigh the benefits beyond a certain level. These results may also be affected by risk perceptions, if negative CSP performance is considered to represent more tangible short term risks (Benabou & Tirole, 2010; Luo & Balvers, 2017), while positive performance may represent intangible future risk reduction benefits. Our second main finding is that the social pillar is the main driver of the reduction in the cost of capital, in particular a firm's workforce score. We suggest that from a risk perspective, social issues may be more likely to present an immediate, tangible effect on firm risk, given the greater legal protections that often exist for labour laws rather than the environmental laws, and therefore will have a larger effect on a firm's cost of equity capital. From an investor preference perspective, investors may be more likely to shun firms with social rather than environmental issues. Our third main finding is that this relationship is stronger for countries with greater Control of Corruption, Property Rights and Educational Attainment. This supports Jackson and Deeg's (2008) suggestion that CSP could be complemented by strong regulatory institutions which empower stakeholders to demand socially responsible behaviour from the firm (Campbell, 2007; Gjølberg, 2010), and this is reflected in financial market outcomes. This provides evidence that financial markets can be moulded by the presence of stakeholder-supporting institutions.

The remainder of this paper is structured as follows. In the next section, we review the prior literature on the relationship between CSP and cost of equity which generates hypotheses to be tested. In the section that follows, we describe our dataset and provide details of our methodological approach used to test our hypotheses. We then present our results, followed by a discussion of the findings, limitations and implications of our study.

2 | LITERATURE REVIEW: CSP AND COST OF CAPITAL

2.1 | CSP and firm value

Within the fields of economics, finance and accounting, the primary perspective on CSR is that firms should engage in CSR only when it maximizes shareholder value as opposed to the perspective held in other areas of research, such as business ethics and social contract theory, that corporate investments benefiting society should occur even when it decreases shareholder value (Moser & Martin, 2012). Within this seemingly common perspective, the argument for or against CSR investments often rests on a disagreement about the potential positive and negative externalities that are internalized by the firm as a result and the trade-offs involved. There are two contrasting theoretical schools of thought on the nature of the relationship between CSP and financial performance, shareholder and stakeholder theory, resulting from their divergent assumptions about the costs and benefits that accrue to firms that increase or decrease their CSP.

Stakeholder theory advocates that improving CSP translates to revenue generation, lower costs, product differentiation, improved access to customers, suppliers, employees and investors, increased efficiencies, elimination of substantial fines and other potential liabilities (Gupta, 2018; Malik, 2015). They argue that these benefits outweigh the costs involved in improving CSP and hence that a positive relationship should exist between CSP-CFP. Stakeholder theory (Freeman, 1984) takes a long-term view of the firm and encourages managers to extend their focus beyond short-term shareholder profits by considering the impact of its operations on the benefits accruing to all stakeholders. Benabou and Tirole (2010) argue that CSR, as a long-term investment, is value enhancing as it makes a firm more profitable over the long run by reducing agency costs and perceived risk.

From a shareholder wealth maximization perspective, acting in a socially responsible manner is considered a cost, with limited or no benefit, and its minimization is considered to be in the best interest of the firm and its shareholders, leading to the minimum level of compliance with regulations and disincentives to act in a socially responsible manner (Aupperle et al., 1985; Friedman, 1962; Jiao, 2010). Shareholder theory states that shareholder are the owners of the firm and that managers have a fiduciary duty to create shareholder value by investing in projects that have a positive net present value. From this perspective, CSP like any other investment should be judged using a cost–benefit analysis approach. There are a number of proposed costs which, from a shareholder theory perspective, are argued to outweigh the benefits involved in improved CSP including the initial cost of the investment, the internalization of negative externalities (Pigou, 1920), opportunity costs (Aupperle et al., 1985) and agency costs (Jiao, 2010). The empirical evidence on the relationship is mixed with contradictory evidence on whether and to what extent CSP affects a firm's financial performance (Margolis et al., 2009; Margolis & Walsh, 2003; Orlitzky et al., 2003; Renneboog et al., 2008; van Beurden & Gossling, 2008).

2.2 | CSP and cost of capital

This study contributes to and extends the literature which examines the relationship between CSP and CFP, by investigating whether the cost of equity capital acts as a conduit through which industry-relative CSP could affect a firm's financial performance. A firm's cost of capital is fundamental to a variety of corporate decisions which influences its operations and profitability, from determining the hurdle rate for investment projects to influencing the composition of a firm's capital structure (Easley & O'Hara, 2004). A firm's cost of capital is constructed by combining its cost of debt and equity. A decrease (increase) in the cost of capital, in debt or equity capital or both, should increase (decrease) the firm's overall financial performance as it increases (reduces) the firm's ability to generate return for a given level of revenue. In this research, we focus on the cost of equity as equity markets are more liquid, contain more active investors and are hence more efficient and informationally complete. Previous research has shown that firms engage in CSR due to institutional pressures, particularly from stakeholders (Agle et al., 1999; Boal, 1985; Sharma & Henriques, 2005) and that the relationship between CSR initiatives and outcomes is stronger as stakeholder salience (power, legitimacy and urgency) increases (Parent & Deephouse, 2007). As shareholders are arguably one of the most important and powerful stakeholders in the current system, a study of their effect on the CSP-CFP relationship through a company's cost of equity capital and whether increased CSP is rewarded is warranted. The cost of capital could be a channel through which capital markets provide an incentive for firms to become more socially responsible (Heinkel et al., 2001).

2.2.1 | CSP and cost of capital—The risk channel

There are two major theoretical arguments as to why the cost of capital could be expected to have a negative relationship with CSP. The first reason relates to the potential reduction in both idiosyncratic and systematic risk. There are several reasons why CSP might be expected to reduce idiosyncratic risk. First, firms with strong CSP typically have above average risk control and compliance standards, lowering business risk and resulting in less-frequent severe incidents such as fraud, embezzlement, corruption, or litigation cases (Godfrey et al., 2009; Hoepner et al., 2016; Jo & Na, 2012). Second, strong CSP requires more disclosure and measurement which leads to more transparency and less informational asymmetry (El Ghoul et al., 2011). Shane and Spicer (1983) show that disclosure of socially oriented information affects a firm's perceived level of compliance. Third, strong CSP can reduce both the probability and the costs of adverse events. Socially responsible firms seek to reduce conflicts with stakeholders, and thus suffer fewer adverse events such as strikes, product recalls, environmental scandals, etc. (Chatterji et al., 2009; Hong & Kacperczyk, 2009). Hoepner et al. (2016) observed that high ESG-rated firms also demonstrated lower financial risk, with statistically significant lower downside risk measures such as volatility, lower partial moments and worst-case loss, while Bae et al. (2011) find that firms with greater stakeholder orientation take on less financial risk, in the form of lower leverage. Using monthly data, Ayton et al. (2022) find a strong negative relationship between CSP and idiosyncratic financial risk. Merton's (1987) model demonstrates that idiosyncratic risks can be priced in equilibrium if some investors are under diversified and do not hold the market portfolio.

Eccles et al. (2011) and Gregory et al. (2014) argue that firms with strong CSP are less vulnerable to systematic market shocks. This systematic risk reduction is shown to occur for reasons related to improved resource utilization and intangible assets. For example, firms that are more resource efficient due to CSP are less exposed to input price changes than their less-efficient competitors. Firms with good customer relations can reduce their elasticity of demand, making sales more durable in an economic downturn (Albuquerque et al., 2019). Godfrey et al. (2009) and Koh et al. (2014) have provided some evidence that good relationships with stakeholders build goodwill, and thereby reduce the cash flow shock, offering "insurance-like" protection in market downturns. Albuquerque et al. (2019) find that stocks with higher environmental and social ratings were more resilient during the covid market downturn in early 2020, which they attribute to greater customer and investor loyalty. Oikonomou et al. (2012) measure the relation between systematic risk and CSR and find a weak negative association with high CSP and a strong positive association with low CSP. Hence, if investors perceive a firm's level of risk to differ depending on their level of CSP, cost of equity capital should also vary systematically with CSP.

2.2.2 | CSP and cost of capital—The investor preference channel

The second argument proposes that firms with lower levels of CSP will be similar to neglected stocks (El Ghoul et al., 2011) as the reluctance of socially responsible investment (SRI) funds to invest in low CSR firms may lead to a narrowing of their investment base (Heinkel et al., 2001). Merton (1987) proposes an inverse relationship between the number of investors who are informed about a firm and the rate of return of that stock, reasoning that a higher number of informed investors cause the stock price to become more informationally complete. This model is based on the basic intuition that information about securities is costly to acquire and therefore it is neither optimal nor plausible for investors to track every security in the market (Chichernea et al., 2015). It is implied by Merton's (1987) capital market equilibrium model that increasing the size of a firm's investor base will result in a lower cost of capital and higher market value. There is ample empirical support for this neglected stock hypothesis with event studies indicating that increases in investor recognition due to listings on exchanges (Foerster & Karolyi, 1999; Kadlec & McConnell, 1994), initiation of analyst coverage (Irvine, 2003), addition to stock indices (Chen et al., 2004), and hiring of investor relations firms (Bushee & Miller, 2012) all lead to increases in security values. Low CSP firms' investor base is also likely to be further reduced as a result of increased information asymmetry due to disadvantages in the three parts of the information transmission process; signalling by firms due to lower levels of disclosure (Dhaliwal et al., 2011), coverage by the media and analysts (Durand et al., 2013; Hong & Kacperczyk, 2009) and reception by investors. Higher required return by investors due to a reduction in investor base is evident in 'sin' stocks as shown by Hong and Kacperczyk (2009), while Chava (2014) provides supporting evidence that investor preferences explain the higher financing costs of environmentally irresponsible firms, where firms with hazardous waste and climate change concerns attract fewer institutional investors.

Pedersen et al. (2021) develop and test a model to explain the impact of investor preferences with regards to ESG performance on expected returns. They predict that if any economy has a large proportion of ESG-oriented investors, even when high ESG is linked to higher expected profits, high-ESG stocks may deliver lower expected returns, because ESG-motivated investors are willing to accept a lower return for a higher ESG portfolio. Pástor et al. (2021) propose a two-factor model, which includes an ESG factor as well as the market portfolio to price assets. Shifts in customer and investor tastes, the size of the ESG investment industry and the dispersion in investor tastes will influence the sign and coefficient of the ESG factor. To extend the line of research into the treatment of CSP by market actors revealed by the relationship between CSP and cost of equity capital, we test the hypothesis:

> **H1.** Corporate social performance is negatively related to a firm's cost of capital.

Previous research (El Ghoul et al., 2018; Galema et al., 2008) has indicated that aggregating various dimensions of CSP may lead to confounding effects and that not all items may be relevant to the cost of equity. To account for this, we also explore the association between cost of equity capital and the pillars (Environmental, Social) and sub-pillars (Resource Use, Emissions, Environmental Innovation, Workforce, Human Rights, Community, Product Responsibility) of CSP. In order to extend our analysis and shed further light on the drivers of the relationship, we test the following hypothesis:

> **H2.** Corporate social performance's pillars and sub-pillars have diverse relationships with cost of equity capital.

2.2.3 | The relationship between cost of capital, CSP and its pillars

While the findings above predict a linear and negative relationship between CSP and the cost of equity, some complexity could be introduced by recognizing that investors may have heterogenous preferences with respect to their attitude towards CSP (Ding et al., 2016; Harjoto et al., 2017) which could lead to a non-linear relationship between CSP and the cost of equity capital. Investor holdings with respect to CSP are likely to reflect the interplay of two potential drivers of investment decisions; social norms and economic incentives. These drivers may be aligned or mutually exclusive depending on context, which may be moulded by the presence of institutions. Some investors such as socially responsible mutual funds that gain utility from the social impact of their investments may give preference to social norms, and hence invest in companies with high CSP regardless of the economic incentives (Nofsinger et al., 2019). Riedl and Smeets (2017) also find that individual investors in socially responsible funds derive nonpecuniary benefits from green holdings and will therefore be willing to forgo financial performance to accommodate their social preferences.

Cho et al. (2013) stress the importance of separately considering the impact of responsible and irresponsible behaviour as the market's ability to process and evaluate information differs between positive and negative behaviours. The economic costs of negative CSP are tangible risks to the firm that could include lawsuits, strikes, and consumer boycotts (Benabou & Tirole, 2010; Luo & Balvers, 2017), while positive CSP offers intangible future benefits such as reputation and employee engagement which may be hard to quantify in terms of risk reduction and cash flow benefits. Additionally, the non-linear or increasing nature of investment costs may complicate the value of CSP investment as increasing a firm's CSP from a low base to average performance using widely available technology and processes is conceivably less costly in relative terms when compared to the cost of innovating to become the market leader in an area such as environmental performance. Hence, each component of CSP at each level of performance may pose a unique cost–benefit trade off that has implications for shareholder value and the firm's cost of capital. Hillman and Keim (2001) investigate whether stakeholder management represents a competitive advantage to firms. They find that activities focused on primary stakeholders can increase shareholder wealth whereas participating in purely social issues has the opposite effect. The asymmetric treatment of different types of CSP or components of CSP in the eyes of investors is also highlighted by Khan et al. (2016) who report that the type of sustainability performance matters, finding that firms with higher ratings on sustainability issues with evidence of wide interest from a variety of user groups and evidence of financial impact (material sustainability issues) results in outperformance while higher ratings on immaterial sustainability issues does not.

Institutional investors have been found to underinvest in low CSP stocks given the likely downside risks, in which case economic incentives and social norms align, but a corresponding overweighting of firms with positive CSP indicators by institutional investors was not found which indicates that an economic incentive may be lacking or in conflict with social norms (Nofsinger et al., 2019). Fernando et al. (2017) find a similar asymmetric reaction by institutional shareholders. They find that institutional investors shun stocks with high environmental risk exposure, which they find have lower valuations. However, they also find that firms that substantially increase their environmental performance may also be shunned by institutional investors. This may indicate that when it comes to higher levels of CSP, social norms and economic incentives are perceived to be mutually exclusive goals by some investors and may lead to a reduction in the number of investors willing to hold high CSP firms.

The perception of the cost–benefit payoffs of CSP investment may be further compounded by agency problems, which may manifest themselves in two opposing ways. First, CSP could represent private benefits such as prestige that managers extract at the expense of shareholders (Jiao, 2010). Second, the temporal nature of CSP investments which often involves substantial upfront costs that generate uncertain long-term intangible benefits may reduce current profits but generate much higher long-term profits through channels such as establishing a better work environment and/or creating good will and reputation with consumers and society (Ng & Rezaee, 2015). Stein (2003) argue that managers may increase short term profits by underinvesting in long-term assets because shareholders cannot distinguish such myopic behaviour from other more positive shocks that also increase short-term profits. Hence from an investor's perspective, both too much and too little or the wrong type of investment in CSP could be evidence of the existence of agency problems and increased risk, impacting firms' cost of equity capital nonmonotonically. However, Ferrell et al. (2016) suggest that CSR is not predominantly the result of agency problems but rather the result of good governance, that is, the result of reduced agency problems, and can ultimately result in a better run and more profitable firm. With the objective of gaining further insights into the nature of the CSP-cost of equity relationship, we test the following hypothesis:

> **H3.** The relationship between corporate social performance and cost of equity is stratified and non-linear.

Furthermore, this research examines the importance of institutional context on the relationship as the way corporations treat their stakeholders depends on the institutions within which they operate (Fligstein & Freeland, 1995). We examine the role played by political, and labour institutions which are considered to be critical determinants of corporate behaviour due to their ability to shape the relationships between the firm and its primary stakeholders (Aguilera & Jackson, 2003; Campbell, 2007). We propose that, on aggregate, investors take an instrumental view of CSP, pricing it based on its implications for firm risk and performance (Garriga & Melé, 2004), and that institutional structures alter its associated costs and benefits by altering stakeholder salience (Mitchell et al., 1997). An increase in stakeholder salience due to the presence of stronger stakeholder supporting institutions should impact the perceived value of

CSP, as failure to address the concerns of salient stakeholders increases the risk of suboptimal financial outcomes for the firm. We identify three stakeholder supporting institutions, Control of Corruption,[3] Property Rights[4] and Educational Attainment[5] which we use to test the following hypothesis:

> **H4.** The relationship between CSP and cost of equity is stronger in the presence of stakeholder-supporting institutions.

3 | DATA AND RESEARCH METHODOLOGY

3.1 | Measuring CSP

This research utilizes Thomson Reuters Asset4's ESG scores to create our measure of CSP following recent studies (Gupta, 2018; La Rosa et al., 2018; Liang & Renneboog, 2017; Sassen et al., 2016).[6] However, the Asset4 scoring system was changed from a score relative to all firms in the database to an industry-year relative score in 2017, making our CSP measure different to that used in previous studies. It is common practice in finance to judge or benchmark a firm's performance on a certain metric against its industry peers as opposed to all companies, 'comparing apples with apples' as it were, due to industry specific asset composition, cash flows schedules, cost structure, operational structure and risk profile. In the realm of non-financial information such as CSP, the use of an industry-relative score follows the same logic with good or bad, too little or too much being a relative judgement. If an optimal level of CSP investment is perceived to be present by investors, it is likely to be industry specific in line with cost structures and risk profiles. The use of industry-relative CSP scores in this research allows us to examine whether firms that distinguish themselves from their peers are associated with changes in the cost of equity capital.

The choice of this measure of CSP rests on its uniformity and consistency across time in addition to its widespread use in the investment community. The ability to compare these scores across time stems from their construction as industry-year relative scores for the environmental and social scores and country-year relative scores for the governance score. Thomson Reuters compiles these scores from over 400 measures based on information generated by the firms and published in annual reports and on company websites. Additionally, in order to increase the objectivity of the measures, additional information for its construction is also gathered from non-governmental organization's websites, stock exchange fillings, CSR reports and news sources. ESG scores measure a company's relative performances across ten themes under the three pillars: Environmental (Resource use, Emissions, Innovation), Social (Workforce, Human Rights, Community, Product Responsibility) and Governance (Management, Shareholders, CSR strategy) (Reuters, 2015). We follow previous studies (e.g. El Ghoul et al., 2018; Ioannou & Serafeim, 2012; Luo et al., 2015) by excluding the governance score from our overall measure of CSP which consists of an equally weighted-average of environmental and social scores. This allows our measure of CSP to be an industry-relative score, as governance is measured on a country-relative basis. Appendix A1 provides an outline of the ES measurements used.

3.2 | Implied cost of equity capital

Recent accounting and finance literature has adopted implied cost of capital for the purpose of estimating cost of equity capital or expected returns (Ben-Nasr et al., 2012; Dhaliwal et al., 2006; Dhaliwal et al., 2016; Hail & Leuz, 2006, 2009; Hou et al., 2012). The implied cost of capital (ICC) is the internal rate of return that equates current stock prices to the present value of expected future cash flows. This ex-ante based cost of equity measure, derived directly from stock prices and cash flow forecasts, has been increasingly used in the finance and accounting literature due to its advantages over ex-post measures which rely on backward-looking and noisy measures such as realized returns (Gupta, 2018).

Factor models using realized returns, including the CAPM, are claimed to generate imprecise estimates of the cost of capital as realized returns, affected by cash flow news and shocks (Campbell, 1991; Vuolteenaho, 2002), are argued to be a poor proxy of expected returns (Blume & Friend, 1973; Elton, 1999). The implied cost of capital method is claimed to be of particular use as it makes an implicit attempt to isolate cost of capital effects from growth and cash flow effects (Chen et al., 2009; Hail & Leuz, 2006, 2009). This makes it an economically more robust and less noisy measure as compared to traditional realized returns based measures (Lee et al., 2009). To estimate each firm's cost of equity capital, we follow recent studies (Boubakri et al., 2012; Gupta, 2018; Hail & Leuz, 2006; Pham, 2019) and use the average of estimates obtained from four implied cost of capital models including the income valuation models implemented by Claus and Thomas (2001) and Gebhardt et al. (2001), and the abnormal growth models used by Easton (2004) and Ohlson and Juettner-Nauroth (2005). As individual models can exhibit different associations with a given risk proxy, it is important to use an average of these four models to reduce the possibility of spurious results stemming from a particular cost of equity capital model (Dhaliwal et al., 2006). Descriptions of these models can be found in Appendix A2.

An extensive literature has shown that implied cost of capital measures derived from analyst forecasted earnings are unreliable (Easton & Monahan, 2005) and that analyst forecasts are biased (Hou et al., 2012; Li & Mohanram, 2014). Earnings forecasts generated by cross sectional models have been found to be superior to analysts' forecasts in terms of coverage, forecast bias and earnings response coefficients and model-based ICC estimates are a more reliable proxy for expected returns (Hou et al., 2012; Li & Mohanram, 2014). Hou et al. (2012) was the first study to present a cross sectional model to generate forecasts in order to compute ICC but the forecasts from their model perform worse than those from a naive random walk model and showed anomalous correlation with risk factors (Li & Mohanram, 2014). Due to these shortcomings we follow the recommendations of Li and Mohanram (2014) and implement the Residual Income (RI) earnings forecasting model based on the residual income model from Feltham and Ohlson (1996). This RI model which incorporates book value and accruals in addition to earnings has been shown to outperform analyst forecasts in addition to the Hou et al. (2012) model and earnings persistence models on a number of dimensions including forecast accuracy, forecast bias, earnings response coefficients and correlation with risk factors (Echterling et al., 2015; Gupta, 2018; Li & Mohanram, 2014; Xu, 2020). A description of this model can be found in Appendix A3.

3.3 | Control variables

In order to control for other factors known to affect the cost of equity, we use firm-level variables, including measures of growth, profitability, illiquidity, size, leverage, volatility, and country-level variables, a measure of the development level of the firm's home country and the inflation rate. We calculate our measure of expected growth as the ratio of book to market value (BTM). Our measure of profitability includes two variables, the return on equity (ROE) and a dummy variable representing whether or not a firm suffered a financial loss in the previous year (DLOSS). Our measure of illiquidity (ILLIQ) is calculated using Lesmond et al.'s (1999) model where a stock with no change in price over a time period is considered illiquid. Hence, we calculate the illiquidity as the ratio of zero trading days to the total number of trading days during the year. We measure size (SIZE) as the natural log of total assets and leverage (LEV) as the ratio of total debt to total assets. Volatility (VOL) is our chosen measure of risk and is calculated as the annualized standard deviation of daily total returns in a given year. We include turnover (TURNOVER), measured as the annual trading volume scaled by shares outstanding. We include a control for the level of economic development using the log of gross domestic product per capita (LGDPPC) in each year evaluated in constant (year 2018) $US. Finally, to account for the nominal terms of these inputs we follow Hail and Leuz (2006), Chen et al. (2009) and Gupta (2018) by including the annualized country-specific realized monthly inflation rate. Accounting and stock market measures are obtained from Thomson Reuters DataStream while LGDPPC and inflation rates are obtained from the World Bank. All applicable variables are dollarized to allow for cross-country comparison in addition to financial variables being winsorized at 1 and 99 percentiles to minimize the effect of outliers.

To undertake an examination the importance of institutional structure on the relationship, this research uses a number of previously used data sources (e.g. Cai et al., 2016; El Ghoul & Karoui, 2017; Gupta, 2018; Ioannou & Serafeim, 2012; Law et al., 2018) for our measures of institutional factors. These include the World Bank Governance Indicators (World Bank, 2018), Economic Freedom of the World Data from the Heritage Foundation (Heritage Foundation, 2019), and from the OECD (OECD, 2020). Details of the variables used can be found in Appendix A4.

The initial sample consisted of 44,333 firm year observations of publicly traded firms from 49 countries that are part of the Thomson Reuters Asset4 database during the period from 2002 to 2021. Missing control variables have reduced the final sample of 25,938 firm-year observations from 49 countries over the period 2002–2021. Table 1 shows a breakdown of the sample by country over the period.

3.4 | Descriptive statistics

We calculated the implied cost of capital using the average of the four models described above and found that the mean implied cost of equity was highest during the global financial crisis, increasing from 9.1% in 2007 to peak of 13.7% in 2010 and followed a trend through the years as expected, capturing exogenous shocks to the economic system. Table 2 reports the descriptive statistics for the variables used in our main regression models. It shows that the mean scores for CSP and its constituent parts are close to 50 which is expected as the environmental and social measures are percentile rank scores benchmarked against Thomson Reuters Business Classification Industry Groups for all environmental and social categories in a given year (Reuters, 2018). The average

TABLE 1 Sample broken down by country and year.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Australia	3	2	19	30	33	42	47	69	114	125	131	134	140	145	150	140	163	177	151	143	1958
Austria	2	2	0	0	1	1	4	5	5	5	8	6	5	6	4	3	5	6	15	4	87
Belgium	1	2	1	3	1	6	8	6	8	7	6	15	11	9	9	5	8	12	16	5	139
Brazil	0	0	0	0	0	5	1	16	7	8	5	8	5	5	7	45	56	88	75	0	331
Canada	7	2	6	11	8	29	55	65	56	59	78	68	61	61	76	68	76	94	103	18	1001
Chile	0	0	0	0	0	1	0	7	12	12	14	14	15	16	24	24	25	26	23	0	213
China	0	0	1	1	1	5	3	37	59	13	58	66	75	77	81	221	258	495	610	405	2466
Colombia	0	0	0	0	0	0	0	3	8	9	11	12	12	10	4	18	19	17	13	1	137
Czechia	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	3	3	3	0	19
Denmark	4	4	4	3	5	3	5	6	8	9	8	5	4	4	3	6	5	11	15	5	117
Finland	5	5	4	4	4	7	9	16	11	8	12	9	13	8	9	7	16	26	42	22	237
France	8	9	12	10	6	10	21	18	21	16	29	23	27	27	22	23	47	46	58	12	445
Germany	4	6	5	9	4	7	18	16	13	14	17	18	19	18	15	15	34	48	65	10	355
Greece	2	2	2	2	2	3	4	5	7	6	6	2	5	5	8	7	14	14	11	0	107
Hong Kong	2	2	10	14	16	35	38	49	75	7	96	101	100	115	133	153	167	195	173	45	1526
Hungary	0	0	0	0	0	0	0	2	2	3	2	4	3	3	2	3	3	3	1	0	31
Iceland	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	5	13
India	0	0	0	0	0	1	6	8	17	16	22	21	21	75	63	52	64	110	33	15	524
Indonesia	0	0	0	0	0	0	0	5	1	1	13	0	0	0	19	23	24	21	20	2	129
Ireland	0	0	0	2	1	1	4	2	5	5	5	5	6	5	4	8	10	14	9	5	91
Israel	0	0	0	0	0	0	1	6	4	4	4	7	7	9	5	6	4	6	7	0	70
Italy	9	11	8	13	13	22	24	23	25	20	19	23	28	29	24	28	50	64	80	17	530
Japan	6	9	81	138	149	196	214	166	225	225	246	255	259	244	195	152	174	200	245	132	3511
Kuwait	0	0	0	0	0	0	0	4	4	4	4	3	4	8	8	6	6	8	9	0	68
Malaysia	0	0	0	0	0	0	0	14	34	35	36	38	40	44	40	37	37	42	43	34	474
Mexico	0	1	1	1	1	3	1	1	10	11	19	24	27	24	31	2	37	44	35	0	273
Netherlands	0	2	2	2	4	5	4	10	5	8	5	7	7	8	10	3	16	16	17	10	141
New Zealand	0	0	3	5	5	6	7	5	8	9	9	10	10	27	30	29	34	34	30	31	292
Norway	4	6	5	1	4	4	3	10	5	10	9	9	7	9	10	9	29	39	42	20	235
Oman	0	0	0	0	0	0	0	1	1	1	1	1	1	8	8	4	4	5	2	2	39
Peru	0	0	0	0	0	0	0	0	0	1	1	1	1	0	14	16	21	18	18	0	91
Philippines	0	0	0	0	0	0	0	3	11	14	15	17	16	17	19	18	3	19	19	1	172

(Continues)

TABLE 1 (Continued)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Poland	0	0	0	0	0	1	2	5	8	9	11	15	13	15	17	12	21	19	23	0	171
Portugal	3	3	3	6	6	7	9	9	6	5	6	6	5	7	6	6	9	12	11	0	125
Qatar	0	0	0	0	0	0	0	2	1	1	0	1	7	8	8	5	7	9	16	5	70
Russia	0	0	1	1	0	0	1	2	1	0	0	1	2	2	1	10	13	17	18	0	70
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	1	1	2	6	7	3	11	16	17	4	68
Singapore	0	0	7	15	17	26	0	28	31	1	30	33	30	32	36	26	37	64	59	33	505
South Africa	0	0	1	1	1	0	1	1	20	34	9	9	8	80	10	9	66	77	57	60	444
South Korea	0	0	0	0	1	4	11	18	31	44	67	64	61	60	51	51	69	85	54	0	671
Spain	6	8	12	11	13	12	15	18	18	17	18	19	23	23	17	17	37	45	30	7	366
Sweden	9	9	13	16	15	17	20	24	22	18	24	29	22	34	25	20	51	102	134	56	660
Switzerland	1	4	4	3	1	2	6	5	11	10	19	16	10	13	9	9	13	17	27	8	188
Thailand	0	0	0	0	0	1	0	8	17	15	20	23	26	28	31	31	36	65	80	27	408
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	11	5	6	1	27
UAE	0	0	0	0	0	0	1	2	1	1	2	2	8	11	10	9	11	13	14	0	85
UK	42	45	70	100	102	140	122	150	169	153	170	176	153	184	188	159	224	267	302	206	3122
United States	17	11	20	39	37	99	138	199	144	148	176	168	149	220	295	209	246	309	377	119	3120
Vietnam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	11	1	16
Total	135	145	295	441	451	702	803	1049	1241	1121	1443	1470	1450	1741	1741	1712	2274	3027	3226	1471	25,938

Note: This table displays the distribution of firm observations in our sample by country and year.

TABLE 2 Descriptive statistics.

Statistic	Number	Mean	Standard deviation	Min	Max
Cost of Equity (AVG)	25,938	13.371	9.760	3.916	54.784
C&L K	25,938	13.355	10.215	1.377	62.186
G K	25,938	11.881	6.852	2.119	46.321
OJN K	25,938	11.849	12.000	1.844	87.867
Easton K	25,938	16.598	12.294	4.399	76.725
CSP	25,938	41.518	22.073	0.725	97.330
Environmental Score	25,938	39.672	25.610	0.020	99.080
Social Score	25,938	43.364	22.697	0.260	98.470
Resource Use	22,426	47.783	28.180	0.100	99.900
Emissions	22,827	49.308	28.239	0.080	99.910
Environmental Innovation	13,168	49.444	25.733	0.260	99.850
Workforce	30,861	50.743	28.718	0.100	99.940
Human rights	13,901	46.882	28.384	0.200	99.520
Community Score	30,708	44.494	28.839	0.160	99.940
Product Responsibility	23,775	50.923	27.097	0.070	99.930
BTM	25,938	0.796	0.557	−0.081	3.505
ROE	25,938	11.217	9.925	−88.263	70.260
DLOSS	25,938	0.090	0.286	0	1
ILLIQ	25,938	0.089	0.118	0.000	0.988
SIZE	25,938	15.500	1.682	9.086	19.608
LEV	25,938	0.242	0.170	0.000	0.950
VOL	25,938	36.561	15.077	13.367	157.125
TURNOVER	25,938	1.388	1.960	0.003	16.362
LGDPPC	25,938	10.303	0.832	6.906	11.542
Inflation	25,938	1.816	1.537	−4.863	19.596

Note: This table shows the preliminary statistics for all of the variables used in our regression models.

firm in our sample has an implied cost of equity of 13.37% with a book to market ratio of 0.796 and return on equity of 11.219%. In addition, the average firm has an illiquidity measure of 0.089, leverage ratio of 24.2%, and its total returns have an annualized volatility of 36.561%. The average GDP per capital in our sample is $37,718, implying that our sample is biased towards high income countries. The average annualized inflation rate across the countries and years in our sample is 1.816%.

We present Pearson pairwise correlation coefficients between all variables in Table 3. Return on equity, leverage and volatility are all found to be positively correlated with our implied cost of equity measures at a 1% level of significance as expected. Conversely, our CSP variables, book to market, log of GDP per capita and size are all found to be negatively related to our implied cost of equity estimates at a 1% level of significance as expected.

4 | METHOD OF ANALYSIS

To examine the relationship between implied cost of capital and CSP, we employ a multiple regression model. We use the following model to test both of our hypotheses relating to the relationship between CSP and cost of equity capital which includes a number of control variables consistent with previous literature (Botosan & Plumlee, 2002; Clarkson et al., 2004; Plumlee et al., 2015; Richardson & Welker, 2001).

$$\begin{aligned}\mathrm{ICC}_{it} = {} & \beta_1 \mathrm{CSP}_{it} + \beta_2 \mathrm{BTM}_{it} + \beta_3 \mathrm{ROE}_{it} + \beta_4 \mathrm{DLOSS}_{it} \\ & + \beta_5 \mathrm{ILLIQ}_{it} + \beta_6 \mathrm{SIZE}_{it} + \beta_7 \mathrm{LEV}_{it} + \beta_8 \mathrm{VOL}_{it} \\ & + \beta_9 \mathrm{TURNOVER}_{it} + \beta_{10} \mathrm{LGDPPC}_{it} + \beta_{11} \mathrm{inflation}_{it} \\ & + \varepsilon_{it}\end{aligned} \tag{1}$$

The dependant variable used in our analysis, ICC, the implied cost of equity capital, is calculated using the

TABLE 3 Pearson correlation matrix.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	AVG K																	
2	C&L K	0.984***																
3	G K	0.936***	0.901***															
4	OJN K	0.958***	0.934***	0.868***														
5	Easton K	0.972***	0.954***	0.892***	0.896***													
6	CSP	−0.106***	−0.097***	−0.086***	−0.097***	−0.119***												
7	ENV	−0.095***	−0.093***	−0.068***	−0.088***	−0.105***	0.924***											
8	Social	−0.1***	−0.084***	−0.091***	−0.089***	−0.112***	0.902***	0.669***										
9	BTM	0.266***	0.193***	0.333***	0.302***	0.22***	0.062***	0.098***	0.011*									
10	ROE	0.091***	0.146***	0.023***	0.127***	0.031***	−0.058***	−0.082***	−0.02***	−0.399***								
11	DLOSS	0.021***	0	0.024***	0.028***	0.03***	−0.008	−0.01	−0.004	0.104***	−0.106***							
12	ILLIQ	0.653***	0.673***	0.576***	0.615***	0.645***	−0.142***	−0.14***	−0.118***	0.038***	0.074***	−0.016***						
13	SIZE	−0.033***	−0.057***	0.006	−0.012**	−0.053***	0.352***	0.385***	0.25***	0.303***	−0.201***	−0.087***	−0.037***					
14	LEV	0.088***	0.096***	0.061***	0.083***	0.087***	0.101***	0.098***	0.087***	0.035***	−0.016***	0.039***	0.083***	0.175***				
15	VOL	0.11***	0.096***	0.113***	0.113***	0.108***	−0.092***	−0.09***	−0.076***	0.075***	−0.004	0.171***	−0.007	−0.218***	−0.019***			
16	TURN	−0.071***	−0.075***	−0.045***	−0.07***	−0.074***	−0.046***	−0.041***	−0.042***	−0.053***	0.038***	0.036***	−0.039***	0.01	−0.002	0.193***		
17	LGDPPC	−0.302***	−0.336***	−0.245***	−0.26***	−0.305***	0.014**	0.019***	0.006	0.098***	−0.152***	0.108***	−0.416***	−0.122***	−0.07***	−0.013**	0	
18	Inflation	0.155***	0.176***	0.104***	0.149***	0.146***	−0.039***	−0.083***	0.017***	−0.093***	0.176***	−0.022***	0.148***	−0.048***	0.014**	0.053***	−0.004	−0.393***

Note: We present Pearson pairwise correlation coefficients between all of the variables used in our regression models. p Values are indicated as follows: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

average of four implied cost of capital models as described in the data section. The variable of interest, CSP, will take a number of forms; CSP calculated as the average of the environmental and social scores, the environmental score (ENV), the social score (Social) and CSP group dummies. In order to account for the possibility that all aspects of CSP are not uniformly, timely and linearly priced, this study creates CSP group dummies in which firms are categorized into five quantiles based on their industry year relative CSP score in a given year. Other variables are as previously defined.

We follow Ding et al. (2016), El Ghoul et al. (2017) and Servaes and Tamayo (2013) by including firm fixed effects in order to address concerns about endogeneity resulting from omitted confounding variables correlated with CSP and cost of equity. Additionally, firm fixed effects subsume country and industry fixed effects. We also include time fixed effects to control for the possible presence of time series dependence due to the possible omission of controls for time-invariant unobservable firm characteristics.[7]

To add a further level of robustness to our study and account for the possible presence of endogeneity resulting from the possibility of reverse causality or unobservable firm specific variables (Garcia-Castro et al., 2010), we also implement two stage least squared regression analysis. To undertake this type of analysis, an exogeneous proxy for the independent variable of interest must be found which influences the independent variable but appears unlikely to affect the dependent variable except through its effect on the independent variable of interest (Larcker & Rusticus, 2010; Reeb et al., 2012; Wintoki et al., 2012). We use the country-average CSP[8] score as an instrumental variable for our firm-level CSP variable. The country-average CSP score is suitable as an instrumental variable as it is highly correlated with firm-level CSP, due to the fact that it is exposed to the same country-level factors that affect firm-level CSP and could only be associated with firm cost of capital through its impact on firm-level CSP. The correlation between country-average CSP and firm-level CSP is 0.43 while the correlation with implied cost of equity capital is −0.10. The results of an f-test for instrument validity are undertaken and reported in Table 6. The test statistics are high and strongly significant across all models so we can clearly reject the null hypothesis that the instruments are irrelevant. We also report the result of the Wu–Hausman test in Table 6 and reject the null hypothesis of CSP being exogenous.

5 | EMPIRICAL RESULTS

5.1 | Environmental and social pillars and sub-pillars

Table 4 reports the results of our regression model which investigates the possible relationship between a firm's cost of equity capital, CSP, the environmental and social pillars, and groupings of firms by different levels of these measures of CSP, while controlling for firm and year fixed effects. Table 5 repeats this analysis for sub-pillars of each of the environmental and social pillars. Table 6 reports the results for a two stage least squares model, using country-average CSP as our instrumental variable. Beginning with Tables 4 and 6, Models 1–3 in both tables report our findings when our measure of CSP and its constituent parts (environmental and social scores) are investigated. In Model 1, we find that the coefficient on CSP is negative and statistically significant at a 10% level in Table 4 and a 1% level in Table 6, indicating that firms with better CSP have a significantly lower cost of capital. These findings suggest that firms with high CSP have lower perceived risk, providing evidence to support our first hypothesis that corporate social performance is negatively related to a firm's cost of capital and that the cost of capital is an important channel through which market prices reflect the value of CSP.

In Model 2, we investigate the effect of a firm's environmental performance on its cost of equity capital and find that increased performance in relation to this metric reduces a firm's cost of equity capital at a 1% level of significance in Table 6. This pillar is not significant in Table 4 but we consider our results in Table 6 to be more robust to issues of endogeneity. In Model 3, the social score displays a negative relationship with cost of equity at a 1% and 5% level of significance in Tables 4 and 6. However, the economic significance of the social score is higher than that of the overall CSP score (the average of the environmental and social score) which may indicate that it is the main driver in the overall relationship. We further disaggregate these pillars to examine more precisely the channels through which CSP affects ICC. This further disaggregation is also motivated by previous research (El Ghoul et al., 2018; Galema et al., 2008) which explains that aggregating various dimensions of CSP may lead to confounding effects and that not all items may be relevant to the cost of equity. Previous studies have examined the relationship between the disaggregated pillars of ESG and financial distress risk (Boubaker et al., 2020), shareholder value (Hillman & Keim, 2001) and credit ratings (Attig et al., 2013).

In Models 1–7 in Tables 5 and Models 4–10 in Table 6, we investigate whether the three sub-pillars of the environmental score (Resource Use score, Emissions score, Environmental Innovation score) and the four sub-pillars of the social score (Workforce score, Human Rights score, Community score, Product Responsibility

TABLE 4 Fixed effects regression of implied cost of equity capital on CSP.

Dependent variable: Implied cost of equity capital						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
CSP	−0.003*					
	(0.002)					
Env		−0.00005				
		(0.001)				
Social			−0.006***			
			(0.002)			
Grouped by				**CSP**	**ENV**	**Social**
Group 2				−0.231**	−0.041	−0.358***
(20%–40%)				(0.070)	(0.063)	(0.073)
Group 3				−0.286***	−0.036	−0.388***
(40%–60%)				(0.085)	(0.076)	(0.086)
Group 4				−0.270**	−0.007	−0.399***
(60%–80%)				(0.106)	(0.090)	(0.104)
Group 5				−0.172	0.059	−0.451***
(80%–100%)				(0.155)	(0.124)	(0.138)
BTM	6.236***	6.242***	6.234***	6.236***	6.241***	6.240***
	(0.068)	(0.068)	(0.068)	(0.068)	(0.068)	(0.068)
ROE	−0.003	−0.003	−0.003	−0.003	−0.003	−0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
DLOSS	0.471***	0.472***	0.469***	0.474***	0.472***	0.471***
	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)
ILLIQ	33.357***	33.352***	33.354***	33.360***	33.349***	33.321***
	(0.533)	(0.533)	(0.533)	(0.533)	(0.533)	(0.532)
SIZE	−2.575***	−2.589***	−2.571***	−2.565***	−2.589***	−2.565***
	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
LEV	3.261***	3.263***	3.257***	3.274***	3.265***	3.272***
	(0.278)	(0.278)	(0.278)	(0.278)	(0.278)	(0.278)
VOL	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Turnover	0.023	0.023	0.023	0.025	0.023	0.025
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
LGDPPC	−2.430***	−2.461***	−2.434***	−2.393***	−2.452***	−2.396***
	(0.187)	(0.187)	(0.186)	(0.187)	(0.187)	(0.186)
Inflation	0.186***	0.187***	0.184***	0.187***	0.187***	0.188***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Observations	25,938	25,938	25,938	25,938	25,938	25,938
R^2	0.539	0.539	0.540	0.540	0.539	0.540
Adjusted R^2	0.384	0.384	0.384	0.384	0.384	0.384

TABLE 4 (Continued)

Grouped by				CSP	ENV	Social
F statistic	2064.527*** (*df* = 11; 19,386)	2063.896*** (*df* = 11; 19,386)	2065.996*** (*df* = 11; 19,386)	1623.637*** (*df* = 14; 19,383)	1621.582*** (*df* = 14; 19,383)	1625.402*** (*df* = 14; 19,383)

Note: The dependent variable, implied cost of capital for firm *i* in year *t* (calculated using forecasts of earnings per share generated by the residual income model) is regressed on our main dependent variables as well as firm-level and country-level control variables; book to market (BTM), return on equity (ROE), loss dummy (DLOSS), illiquidity (ILLIQ), the natural log of total assets (SIZE), the ratio of total debt to total assets (LEV) volatility of returns (VOL), Share turnover (Turnover), log of gross domestic product per capita (LGDPPC) and country inflation (Inflation). CSP is an equally weighted-average of environmental and social scores, ENV is the environmental score and Social is the social score. Groups 1–5 are dummy variables constructed by grouping firms into five quantiles based on their CSP, ENV and Social scores (CSP Group 2, 3, 4, 5). *p* Values are indicated as follows: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

score) exhibit a linear relationship with a firm's cost of equity capital. In Table 5, only the Workforce and Community score are found to be significant, while in Table 6, all sub-pillars except Human Rights are found to be significant. The coefficients of the social sub-pillars are higher than for the environmental sub-pillars with the exception of Environmental Innovation. The most significant result for the sub-pillars is for the Workforce score. This result mirrors the finding of El Ghoul et al. (2011) and could be attributed to the importance of this primary stakeholder to the level of risk of a firm. Boubaker et al. (2020) propose that prioritizing primary stakeholders such as employees can be effective in increasing firm value, while investments in social issues such as human rights do not seem to create firm value. Overall, we find stronger results for the social pillar and sub-pillars, providing support for our third hypothesis that different pillars of a firm's corporate social performance will affect the cost of capital differently, highlighting the importance of disaggregating CSP into its component parts. We suggest that from a risk perspective, social issues may be more likely to present an immediate, tangible effect on firm risk, given the greater legal protections that often exist for labour laws rather than the environmental laws, and therefore will have a larger effect on a firm's cost of equity capital. From an investor preference perspective, investors may be more likely to shun firms with social rather than environmental issues.

We find that the signs of the control variables are consistent with our expectations and previous research (Dhaliwal et al., 2006; El Ghoul et al., 2018; Gode & Mohanram, 2003; Gupta, 2018). Book to market (BTM), a dummy if the firm made a loss in the previous period (DLOSS), a measure of illiquidity (ILLIQ), leverage (LEV), volatility (VOL) and inflation (INFLATION) are all highly significant and positively related to the cost of equity capital. Additionally, a measure of firm size (SIZE) and the affluence of a firm's home country were both found to be negatively related to cost of equity capital. Our models explain between 41.6% and 41.7% of the total variance (R^2). These findings for the control variables lend credibility to the accuracy of our implied cost of capital measures as a proxy for expected returns by exhibiting the expected relation with common risk factors. It also implies that the market prices a firm's CSP along with other risk factors.

5.2 | CSP peers groups

In order to account for a possible divergence in the treatment of CSP by different investor groups, we substitute our CSP variables with peer group dummy variables based on five quantiles in Models 4–7 of Tables 4 and 8 to 14 of Table 5. We create five groupings of firms based on their industry-relative scores for CSP, its environmental and social pillars and sub-pillars. Those with scores of between 0 and 20 are in referred to as group 1, between 20 and 40 as group 2, between 40 and 60 as group 3, between 60 and 80 as group 4 and between 80 and 100 as group 5. Group 1 is the base case against which the other groups are measured. Firms that are members of group 2 demonstrate a statistically and economically significant difference in cost of equity capital when compared to those with the lowest scores in group 1. Our results show an average reduction in the cost of capital of 0.231% for firms in group 2 compared to group 1. Membership of group 3, results in a reduction in the cost of equity by an estimated 0.286%, a difference of 0.055% compared to the reduction for group 2. Membership of group 4 reduces the cost of equity by 0.270% as compared to group 1, which is 0.016% less of a reduction when compared to group 3. Firms in group 5 experience no significant reduction in the cost of equity relative to group 1. Group 3 displays the largest reduction in cost of equity capital compared to group 1 which may indicate that it represents the optimal level of CSP investment with regards to cost of equity. Our findings point to a more complex non-linear relationship between CSP and cost of equity with the largest reduction occurring between the

TABLE 5 Fixed effects regression of implied cost of equity capital on sub-pillars of CSP.

Dependent variable: Implied cost of equity capital calculated using residual income model forecasts															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)	(9)	(10)	(11)	(12)	(13)	(14)
Resource Use	0.002							Grouped by	Resource Use	Emissions	Environmental Innovation	Workforce	Human Rights	Community Score	Product Responsibility
	(0.001)							Group 2	−0.069	−0.073	−0.0002	−0.081	0.067	−0.076	−0.148*
Emissions		−0.001						(20–40%)	(0.072)	(0.066)	(0.102)	(0.070)	(0.083)	(0.064)	(0.084)
		(0.001)													
Environmental Innovation			−0.002					Group 3	−0.104	−0.090	−0.115	−0.133*	−0.080	−0.156**	−0.206**
			(0.001)					(40–60%)	(0.081)	(0.079)	(0.110)	(0.077)	(0.091)	(0.077)	(0.090)
Workforce				−0.007***											
				(0.001)											
Human Rights					−0.0003			Group 4	0.059	−0.102	−0.115	−0.305***	0.079	−0.109	−0.092
					(0.001)			(60–80%)	(0.091)	(0.088)	(0.110)	(0.085)	(0.098)	(0.083)	(0.093)
Community Score						−0.003**									
						(0.001)		Group 5	0.072	0.170*	0.071	−0.568***	0.049	−0.234**	−0.149
Product Responsibility							−0.001	(80–100%)	(0.105)	(0.103)	(0.124)	(0.097)	(0.113)	(0.094)	(0.101)
							(0.001)								
BTM	6.340***	6.209***	6.096***	6.368***	6.274***	6.372***	6.555***		6.336***	6.207***	6.098***	6.369***	6.276***	6.372***	6.556***
	(0.073)	(0.070)	(0.087)	(0.065)	(0.095)	(0.065)	(0.077)		(0.073)	(0.070)	(0.087)	(0.065)	(0.095)	(0.065)	(0.077)
ROE	0.001	0.005*	0.003	−0.014***	0.003	−0.014***	−0.008**		0.001	0.005*	0.003	−0.014***	0.003	−0.014***	−0.008**
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)		(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
DLOSS	0.471***	0.492***	0.447***	0.470***	0.483***	0.492***	0.432***		0.474***	0.492***	0.449***	0.473***	0.482***	0.491***	0.431***
	(0.075)	(0.073)	(0.091)	(0.069)	(0.090)	(0.069)	(0.076)		(0.075)	(0.073)	(0.091)	(0.069)	(0.090)	(0.069)	(0.076)
ILLIQ	33.716***	33.256***	29.212***	32.569***	31.908***	32.481***	31.323***		33.727***	33.252***	29.203***	32.567***	31.910***	32.474***	31.291***
	(0.567)	(0.558)	(0.738)	(0.479)	(0.766)	(0.482)	(0.582)		(0.567)	(0.558)	(0.738)	(0.479)	(0.766)	(0.482)	(0.582)
SIZE	−2.799***	−2.468***	−2.278***	−2.776***	−2.526***	−2.777***	−2.822***		−2.791***	−2.468***	−2.275***	−2.777***	−2.528***	−2.778***	−2.823***
	(0.078)	(0.075)	(0.105)	(0.063)	(0.106)	(0.063)	(0.079)		(0.078)	(0.075)	(0.105)	(0.063)	(0.106)	(0.063)	(0.079)
LEV	3.826***	3.616***	3.203***	3.449***	3.533***	3.445***	4.090***		3.823***	3.624***	3.201***	3.428***	3.523***	3.443***	4.105***
	(0.297)	(0.293)	(0.409)	(0.259)	(0.387)	(0.260)	(0.301)		(0.297)	(0.293)	(0.409)	(0.259)	(0.387)	(0.260)	(0.301)
VOL	0.037***	0.036***	0.019***	0.039***	0.023***	0.040***	0.033***		0.037***	0.036***	0.019***	0.039***	0.023***	0.040***	0.033***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)		(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Turnover	0.040**	0.035*	0.129***	0.041**	0.137***	0.039**	0.064***		0.040**	0.036*	0.129***	0.040**	0.136***	0.039**	0.063***
	(0.019)	(0.018)	(0.022)	(0.016)	(0.025)	(0.016)	(0.019)		(0.019)	(0.018)	(0.022)	(0.016)	(0.025)	(0.016)	(0.019)
LGDPPC	−2.170***	−2.176***	−2.573***	−2.546***	−0.969***	−2.589***	−2.580***		−2.158***	−2.164***	−2.575***	−2.561***	−0.979***	−2.592***	−2.576***
	(0.204)	(0.199)	(0.267)	(0.177)	(0.304)	(0.178)	(0.214)		(0.203)	(0.199)	(0.268)	(0.177)	(0.304)	(0.178)	(0.214)

TABLE 5 (Continued)

Dependent variable: Implied cost of equity capital calculated using residual income model forecasts	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Inflation	0.187***	0.182***	0.183***	0.169***	0.208***	0.165***	0.185***	0.187***	0.183***	0.182***	0.168***	0.209***	0.165***	0.185***
	(0.021)	(0.021)	(0.026)	(0.019)	(0.026)	(0.019)	(0.021)	(0.021)	(0.021)	(0.026)	(0.019)	(0.026)	(0.019)	(0.021)
Observations	22,426	22,827	13,168	30,861	13,901	30,708	23,775	22,426	22,827	13,168	30,861	13,901	30,708	23,775
R^2	0.551	0.547	0.523	0.536	0.525	0.533	0.523	0.551	0.548	0.523	0.536	0.525	0.534	0.523
Adjusted R^2	0.395	0.387	0.346	0.384	0.307	0.380	0.337	0.395	0.388	0.346	0.384	0.307	0.380	0.337
F Statistic	1858.044*** (*df* = 11; 16,633)	1854.739*** (*df* = 11; 16,863)	957.231*** (*df* = 11; 9614)	2439.151*** (*df* = 11; 23,251)	957.870*** (*df* = 11; 9524)	2401.524*** (*df* = 11; 23,102)	1705.425*** (*df* = 11; 17,091)	1460.597*** (*df* = 14; 16,630)	1459.734*** (*df* = 14; 16,860)	752.023*** (*df* = 14; 9611)	1918.020*** (*df* = 14; 23,248)	753.154*** (*df* = 14; 9521)	1887.105*** (*df* = 14; 23,099)	1340.595*** (*df* = 14; 17,088)

Note: The dependent variable, implied cost of capital for firm *i* in year *t* (calculated using forecasts of earnings per share generated by the residual income model) is regressed on our main dependent variables, the sub pillars of CSP, as well as firm-level and country-level control variables; book to market (BTM), return on equity (ROE), loss dummy (DLOSS), illiquidity (ILLIQ), the natural log of total assets (SIZE), the ratio of total debt to total assets (LEV) volatility of returns (VOL), log of gross domestic product per capita (LGDPPC) and country inflation (Inflation). Resource Use, Emissions and Environmental Innovation are sub-pillars of a firm's environmental score while Workforce, Human rights, community score and product Responsibility are sub-pillars of a firm's social score. Groups 1–5 are dummy variables constructed by grouping firms into five quantiles based on each sub-pillar score (Group 2, 3, 4, 5). *p* Values are indicated as follows: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

bottom performer group and group 3, which represents the optimal point of CSP, beyond which a slight increase in cost of equity occurs. These findings provide evidence to support our second hypothesis that the relationship between CSP and cost of equity is stratified and non-linear. The severe drop in the cost of equity for firms moving out of the bottom group could possibly be attributed to both the risk reduction channel and the investor preference channel. A reduction in idiosyncratic risk may occur due to decreased risk of adverse shocks to cash flows stemming from fines, lawsuits, strikes or other tangible repercussions of poor performance (Benabou & Tirole, 2010; Luo & Balvers, 2017) in addition to reduced risks of agency problems indicated by an deficiency in long-term investment such as CSP. Additionally, these findings may provide evidence that group 1 firms are neglected stocks (El Ghoul et al., 2011; Heinkel et al., 2001; Hong & Kacperczyk, 2009), due to investor preference and information asymmetry, forcing them to offer higher expected returns to compensate investors for a lack of risk sharing. The largest drop in the cost of equity accruing to firms that move out of this neglected group indicates that it is only the worst performers that suffer this status, and it could be argued that economic incentives and social norms align in the eyes of investors (Nofsinger et al., 2019) leading to a substantial drop in the cost of equity capital. As the risk profile of firms in the middle and above average groups could conceivably be of a similar nature, the further reduction in the cost of equity capital may be attributable to an increase in the investor base as socially responsible investors, due to their tastes (Fama & French, 2007), are more likely to buy and hold firms in the above average group. We conjecture that the findings for groups 4 and 5 can be mainly explained by investor preferences. Additional investors attracted to firms with top CSP performance are counteracted by the reduction in economically focused investors willing to hold these stocks due to their perception of the costs and benefits of high levels of environmental performance investment. At each level of CSP investment, further investment in increasing a firm's CSP involves a trade of between non-constant costs and benefits. Hence, some investors with purely wealth maximization objectives as opposed to socially responsible investors view investment in CSP as a trade-off between its non-constant costs and the diminishing returns of CSP investment and may view firms with CSP that is too high as engaging in investments that reduce the value of the firm or transfer it to insiders due to agency problems (Jiao, 2010). Due to this belief, they may reduce their holdings of the firm, narrowing the firm's investor base and increasing its cost of capital as found in the data. This results in an optimal level of CSP and once the optimal point is breached,

TABLE 6 Two-stage least-squared regression of implied cost of equity capital on CSP.

Dependent variable: Implied cost of equity capital										
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
CSP	−0.082***									
	(0.020)									
Environmental		−0.061***								
		(0.014)								
Social			−0.085**							
			(0.023)							
Resource Use				−0.036*						
				(0.014)						
Emissions					−0.038*					
					(0.016)					
Environmental Innovation						−0.105*				
						(0.039)				
Workforce							−0.050**			
							(0.016)			
Human Rights								0.001		
								(0.022)		
Community									−0.045*	
									(0.019)	
Product Responsibility										−0.051*
										(0.021)
BTM	6.085***	6.097***	6.117***	6.287***	6.170***	6.067***	6.302***	6.240***	6.317***	6.539***
	(0.073)	(0.073)	(0.073)	(0.076)	(0.073)	(0.108)	(0.068)	(0.096)	(0.068)	(0.081)
ROE	−0.003	−0.004	−0.003	0.0003	0.005	0.004	−0.014***	0.004	−0.014***	−0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)
DLOSS	0.460***	0.482***	0.434***	0.468***	0.493***	0.546***	0.408***	0.496***	0.495***	0.417***
	(0.075)	(0.075)	(0.076)	(0.077)	(0.075)	(0.114)	(0.072)	(0.089)	(0.071)	(0.080)
ILLIQ	33.478***	33.521***	33.379***	33.719***	33.216***	29.951***	32.659***	31.996***	32.363***	31.596***
	(0.554)	(0.554)	(0.559)	(0.582)	(0.574)	(0.926)	(0.494)	(0.768)	(0.498)	(0.613)

TABLE 6 (Continued)

Dependent variable: Implied cost of equity capital										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SIZE	−2.244***	−2.264***	−2.330***	−2.597***	−2.199***	−1.893***	−2.598***	−2.559***	−2.711***	−2.668***
	(0.085)	(0.085)	(0.081)	(0.092)	(0.095)	(0.155)	(0.070)	(0.108)	(0.066)	(0.087)
LEV	3.255***	3.289***	3.219***	3.788***	3.683***	2.664***	3.285***	3.573***	3.621***	4.170***
	(0.290)	(0.290)	(0.292)	(0.304)	(0.301)	(0.520)	(0.267)	(0.387)	(0.268)	(0.316)
VOL	0.036***	0.037***	0.034***	0.037***	0.036***	0.020***	0.038***	0.022***	0.038***	0.032***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)
Turnover	0.018	0.016	0.023	0.028	0.035*	0.106***	0.055***	0.138***	0.037**	0.077***
	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	(0.028)	(0.017)	(0.025)	(0.016)	(0.020)
LGDPPC	−1.661***	−1.572***	−2.029***	−1.567***	−1.698***	−2.021***	−2.026***	−0.887***	−2.507***	−2.247***
	(0.217)	(0.224)	(0.202)	(0.239)	(0.222)	(0.348)	(0.195)	(0.304)	(0.183)	(0.230)
Inflation	0.168***	0.183***	0.155***	0.189***	0.166***	0.132***	0.163***	0.204***	0.128***	0.158***
	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)	(0.034)	(0.020)	(0.026)	(0.021)
Observations	25,931	25,931	25,931	22,358	22,757	13,122	30,773	13,863	30,620	23,702
R^2	0.504	0.504	0.497	0.530	0.523	0.354	0.511	0.524	0.507	0.478
Adjusted R^2	0.336	0.336	0.327	0.366	0.355	0.115	0.350	0.305	0.345	0.274
F Statistic	21,041.120***	21,049.790***	20,704.160***	19,412.790***	19,279.830***	6865.891***	25,304.140***	10,444.590***	24,888.420***	16,954.170***
F Test (1st stage)	744.8***	760.6***	543.9***	482.3***	530.5***	66.5***	943.9***	132.5***	767.3***	477.1***
Wu–Hausman	64.8***	65.5***	57.1***	23.6***	28.8***	34.9***	53.7***	0.004	44.6***	48.8***

Note: The table shows the results of a two stage least square regression with the dependent variable, implied cost of capital for firm i in year t (calculated using forecasts of earnings per share generated by the residual income model) is regressed on our main dependent variables as well as firm-level and country-level control variables; book to market (BTM), return on equity (ROE), loss dummy (DLOSS), illiquidity (ILLIQ), the natural log of total assets (SIZE), the ratio of total debt to total assets (LEV) volatility of returns (VOL), Share turnover (Turnover), log of gross domestic product per capita (LGDPPC) and country inflation (Inflation) and our variable of interest CSP and its sub pillars. CSP is an equally weighted-average of environmental and social scores, ENV is the environmental score and Social is the social score. Resource Use, Emissions and Environmental Innovation are sub-pillars of a firm's environmental score while Workforce, Human rights, community score and product Responsibility are sub-pillars of a firm's social score. This research uses country year average CSP scores as our instrument for CSP. Clustered robust standard errors from a two-way cluster approach of Petersen (2009) are shown in parentheses. p Values are indicated as follows: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

TABLE 7 Country groupings, results from two stage least squares estimation.

	Control of corruption		Property rights		Educational attainment	
	Low	High	Low	High	Low	High
CSP	−0.066*	−0.128***	−0.046	−0.111***	−0.196**	−0.324**
	(0.034)	(0.027)	(0.037)	(0.056)	(0.083)	(0.116)
ENV	−0.052*	−0.088***	−0.031	−0.075***	−0.132**	−0.338**
	(0.028)	(0.017)	(0.028)	(0.019)	(0.058)	(0.153)
Social	−0.065*	−0.163***	−0.047	−0.142***	−0.148**	−0.220**
	(0.035)	(0.037)	(0.033)	(0.036)	(0.067)	(0.088)

Note: The table repeats the estimation in models 1, 2 and 3 of Table 6, but for groupings of firms which are categorized as belonging to countries with either low or high levels of three institutional indicators. We only display the results for the CSP, environmental and social pillars for reasons of space but these results are extracted from the full model in each case as listed in Table 6. Full results are available on request.

TABLE 8 Fixed effects regression of implied cost of equity capital on CSP$t-1$.

Dependent variable: Implied cost of equity capital						
	(1)	(2)	(3)	(4)	(5)	(6)
CSP_{t-1}	−0.0003					
	(0.002)					
Env_{t-1}		0.002				
		(0.001)				
$Social_{t-1}$			−0.003**			
			(0.002)			
Grouped by				$\mathbf{CSP_{t-1}}$	$\mathbf{ENV_{t-1}}$	$\mathbf{Social_{t-1}}$
Group 2				−0.234***	−0.127*	−0.317***
(20%–40%)				(0.074)	(0.067)	(0.077)
Group 3				−0.258***	0.040	−0.283***
(40%–60%)				(0.089)	(0.079)	(0.089)
Group 4				−0.188*	0.017	−0.267**
(60%–80%)				(0.109)	(0.093)	(0.107)
Group 5				−0.067	0.175	−0.355**
(80%–100%)				(0.157)	(0.126)	(0.143)
BTM	6.085***	6.088***	6.084***	6.080***	6.081***	6.089***
	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)
ROE	−0.001	−0.0004	−0.001	−0.001	−0.001	−0.0004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
DLOSS	0.548***	0.546***	0.548***	0.547***	0.546***	0.547***
	(0.077)	(0.077)	(0.077)	(0.077)	(0.077)	(0.077)
ILLIQ	32.830***	32.828***	32.833***	32.860***	32.831***	32.793***
	(0.596)	(0.596)	(0.596)	(0.596)	(0.596)	(0.596)
SIZE	−2.613***	−2.626***	−2.605***	−2.597***	−2.622***	−2.602***
	(0.078)	(0.079)	(0.078)	(0.078)	(0.078)	(0.078)
LEV	3.314***	3.314***	3.319***	3.329***	3.327***	3.335***
	(0.305)	(0.305)	(0.305)	(0.305)	(0.305)	(0.305)

TABLE 8 (Continued)

Grouped by				CSP_{t-1}	ENV_{t-1}	$Social_{t-1}$
VOL	0.035***	0.035***	0.035***	0.036***	0.035***	0.035***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Turnover	0.031	0.031	0.030	0.032	0.031	0.032
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
LGDPPC	−2.287***	−2.313***	−2.273***	−2.217***	−2.283***	−2.233***
	(0.209)	(0.209)	(0.208)	(0.209)	(0.209)	(0.208)
Inflation	0.130***	0.131***	0.129***	0.132***	0.132***	0.131***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Observations	20,862	20,862	20,862	20,862	20,862	20,862
R^2	0.543	0.543	0.543	0.544	0.544	0.544
Adjusted R^2	0.388	0.388	0.388	0.388	0.388	0.388
F statistic	1683.007*** ($df = 11$; 15,560)	1683.414*** ($df = 11$; 15,560)	1683.779*** ($df = 11$; 15,560)	1324.227*** ($df = 14$; 15,557)	1323.772*** ($df = 14$; 15,557)	1324.882*** ($df = 14$; 15,557)

Note: The dependent variable, implied cost of capital for firm i in year *t* (calculated using forecasts of earnings per share generated by the residual income model) is regressed on our main dependent variables as well as firm-level and country-level control variables; book to market (BTM), return on equity (ROE), loss dummy (DLOSS), illiquidity (ILLIQ), the natural log of total assets (SIZE), the ratio of total debt to total assets (LEV) volatility of returns (VOL), Share turnover (Turnover), log of gross domestic product per capita (LGDPPC) and country inflation (Inflation). CSP_{t-1} is an equally weighted-average of environmental and social scores lagged by 1 year, ENV_{t-1} is the environmental score lagged by 1 year and $Social_{t-1}$ is the social score lagged by 1 year. Groups 1–5 are dummy variables constructed by grouping firms into five quantiles based on their CSP, ENV and Social scores (CSP Group 2, 3, 4, 5). *p* Values are indicated as follows: $^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

investors with these preferences may reduce their holding of such stocks, resulting in a narrowing of the investor base and increase in the cost of equity capital relative to firms with optimal levels of CSP.

When the CSP score is disaggregated into its two constituent parts and placed into groups based on their score, we find no significant results for the environmental pillar in Table 4 or its sub-pillars in Table 5. For the social pillar, we find that the cost of equity continues to fall as the social score increases. The largest reduction in cost of equity occurs when a firm moves from the bottom group to group 2, but the optimal level of performance is to be a top performer, that is in group 5, contrary to the findings for CSP overall and environmental performance. Investors may perceive that the stakeholder benefits such as the attraction of the high-quality employees and loyal customers may offset the perceived costs of higher Social performance (Godfrey et al., 2009; Koh et al., 2014). For the workforce score the cost of equity is only significant for firms in group 3, with the largest reduction for groups 4 and 5. This indicates that the benefits from a high workforce score, such as the attraction and retention of human capital, accrue to firms with above average performance. This may indicate that economic and social incentives are aligned at higher levels of workforce performance. The human rights groupings have no significant relationship with cost of equity. For the community score only groups 3 and 5 display a reduction in the cost of equity. Finally, the product responsibility score displays an initial fall in the cost of equity from moving into group 2, and a further decrease in the cost of capital for firms in group 3 with no significant reduction beyond this, which may indicate that the optimal level of investment in product responsibility has been passed.

This examination of CSP's sub-pillars has further highlighted the divergent treatment of CSP's various elements at different levels of investment by investors. It has further displayed the importance of considering the implications of investors' perceptions in relation to risk reduction in addition to the conflicting or harmonious economic and social incentives entailed at multiple levels of performance on various dimensions of CSP.

5.3 | Groupings by country-level institutional indicators

In Table 7, we report the results when we repeat models 1 to 3 of Table 6 having split our sample based on the level of stakeholder-supporting institutional strength in a firm's home country. Firms in countries that have an institutional strength below our sample average are grouped together while firms in countries with above average institutional strength form the other group. Firms are categorized as belonging to either group using three country-level institutional indicators; Control of Corruption, Property Rights and Educational Attainment. We only report the results for the main variables of interest, namely CSP, the environmental score and social score, but these results are extracted from estimations of the full models as used in Table 6. For the groupings by Control of Corruption we find that the social pillar is the main driver for both high and low levels of Control of Corruption. However, we find a stronger and more significant relationship between CSP, the environmental pillar and the social pillar in countries with higher Control of Corruption. For groupings by Property Rights we only find a significant relationship between cost of capital and CSP, the environmental pillar and the social pillar in countries with higher levels of Property Rights. Again we find that the social pillar has the strongest effect. For groupings by Educational Attainment, the relationship for all pillars is found to be stronger and more significant for countries with higher levels of Educational Attainment. These findings allow us to fail to reject our fourth hypothesis and indicate that the presence of stakeholder supporting institutions alters the market's perception of the importance of CSP with regards to performance and risk.

5.4 | Robustness checks

An alternative specification of the model in which all the CSP variables are lagged by 1 year in order to account for the possibility of reverse causality is shown in Table 8. Reverse causality is possible as the cost of equity capital could affect CSP if, for example, a firm has a lower funding cost, this may affect its ability to undertake investments that will improve its CSP. In models 1 to 3, the social pillar is significant but CSP and the environmental pillar are insignificant. In models 4 to 6, we split the sample into quantiles based on their CSP, the environmental and the social pillar, and find an initial substantial drop in cost of equity capital for CSP, which decreases for group 4 and becomes insignificant for group 5. We find a significant decrease between groups 1 and 2 for the environmental pillar, and for the social pillar we find a similar pattern as in Table 4, in that the optimal grouping is group 5. While these findings allow us to discount the possibility of reverse causality, the forward-looking nature of our cost of capital estimates, which assume a level of market efficiency that implies the incorporation of all current year data into its calculation, results in unlagged CSP scores giving a better representation of the relationship between CSP and cost of equity or expected future returns.

6 | DISCUSSIONS AND CONCLUSION

In this paper, we empirically examine the mediating role played by financial markets in the CSP-CFP link through an examination of the relationship between a firm's CSP and its implied cost of equity capital with the utilization of an extensive international dataset consisting of 25,938 firm-year observation from 49 countries during the period from 2002 to 2021. Operationalizing CSP using an average of a firm's Reuters Asset4 industry-relative environmental and social score allows us to construct peer group dummy variables to examine whether heterogeneous information constraints and utility functions could lead investors to value CSP differently, inducing groupings along the CSP-CFP continuum similar to a clientele effect (Ding et al., 2016). We find that the relationship between CSP and cost of equity capital is stratified and non-linear. The largest reduction in a firm's cost of equity was found to occur when a firm moved from the bottom 20% of performers in their industry in a given year which lends substantial support to the claim that the neglected stock hypothesis extends to low CSP firms (El Ghoul et al., 2011; Heinkel et al., 2001). Another explanation for this reduction in a firm's cost of equity capital when moving out off the bottom performing group may relate to the reduction in risk related to low performance, such as fines and other liabilities and the fact that these idiosyncratic risks are priced due to the reduced size and breath of their shareholder base (Chichernea et al., 2015). Hence, the large reduction in a firm's cost of capital may be the result of an alignment between economic and social incentives as low CSP performance relative to industry peers in a given year reflects the presence of downside risks. Additionally, our research also suggests that an optimal point of CSP investment may exist after which the benefits of increased performance are perceived to be outweighed by the costs for some investors, as an economic incentive is perceived to be lacking or at odds with social incentives at higher levels of CSP investment. This leads to an increase in the cost of equity for high performing CSP firms in comparison to firms with above average performance, albeit still considerably lower than the most poorly performing firms. This may result from the neglected stock hypothesis applying to a lesser extent; if firms with the highest level of CSP are avoided by investors who believe that the optimal level of CSP has been exceeded. This reduction in economically incentivized investors may be of less consequence as the overweighting of these top CSP firms by socially responsible investors could counteract the reduction in investor base and its impact on the cost of capital.

Our analysis also contributes to our understanding of the relationship between CSP and cost of equity through its investigation of the specific channels through which facets of a firm's environmental and social performance may affect its implied cost of capital. As the aggregation of pillars and sub-pillars of a firm's environmental and social performance can lead to confounding effects, we test the sub-pillars separately to disentangle these effects. The social pillar is found to be the main driver of our results both for the full sample and for the groupings. We suggest that from a risk perspective, social issues may be more likely to present an immediate, tangible effect on firm risk, given the greater legal protections that often exist in labour laws rather than environmental laws, and therefore will have a larger effect on a firm's cost of equity capital. From an investor preference perspective, investors may be more likely to shun firms with social rather than environmental issues. When we further disaggregate the environmental and social pillars, we find that the Workforce sub-pillar has the largest effect on a firm's cost of capital, which could be attributed to the importance of this primary stakeholder to the level of risk of a firm, mirroring findings by El Ghoul et al. (2011) and Boubaker et al. (2020). However, we find that the benefits from a high workforce score, such as the attraction and retention of human capital, accrue only to firms with above average performance. These results further highlight the divergent treatment of CSP's various elements at different levels of investment by investors.

Furthermore, this research examines the importance of institutional context on the relationship as the way corporations treat their stakeholders may depend on the institutions within which they operate. We split our sample based on indicators of the Control of Corruption, Property Rights and Educational Attainment in a firm's home country. We find stronger and more significant relationships between the cost of equity capital and CSP, and its component pillars, for firms operating in countries with stronger stakeholder-supporting institutions. Our results indicate that the presence of stakeholder-supporting institutions alters the market's perception of the importance of CSP with regards to firm performance and firm risk.

Our findings that CSP and the cost of equity capital have a non-linear and stratified relationship reveals a more nuanced understanding of the role that financial markets can play in incentivizing firms to increase their sustainable practices through a reduced cost of equity. While at the low end of the CSP spectrum there is a clear alignment between economic and social incentives, once the initial reduction has occurred, the marginal reductions in the cost of capital for increasing levels CSP are far more modest, eventually increasing beyond a certain level of CSP. Hence, the market offers decreasing incentives via cost of equity capital reduction to firms that increase their CSP until an optimal level is reached after which further investment increases a firm's cost of equity capital. For policy makers, this complex picture of the role markets play in incentivizing firms to increase their CSP highlights the importance of other forces, such as both the formal and informal institutional forces that may increase or decrease stakeholder salience and thus the value placed by markets on a firm's corporate social performance. If markets primarily encourage firms to increase their CSP from low to mid-range performance, regulation or technological change may be required to incentivize further CSP investment beyond this point, if the goal is to move business to a more sustainable footing.

Although our sample contains a large number of publicly traded firms from multiple countries, the spread of firms is uneven and concentrated in higher income countries and hence suffers from a prosperous country bias in addition to a large firm bias due to data availability. Future research which may have access to a more diverse sample of firms could test the generalizability of our findings with regards to smaller firms and a larger range of firms. Further research could also investigate other possible channels, such as estimated future cash flows, through which industry-relative CSP could influence the financial performance of a firm and whether a complex non-linear relationship also exists in these areas due to heterogeneous investor tastes in addition to divergent or aligned incentives at different levels of CSP performance.

ACKNOWLEDGEMENTS

The authors are very grateful for the helpful and insightful suggestions provided by the anonymous referees during the review process. These suggestions greatly helped them to improve their paper, to strengthen their analysis and to better highlight the main contributions of our research. Open access funding provided by IReL.

DATA AVAILABILITY STATEMENT

All data used in this study can be made available upon request.

ORCID

Benjamin Lynch https://orcid.org/0000-0003-4432-558X
Martha O'Hagan-Luff https://orcid.org/0000-0003-1173-5259

ENDNOTES

[1] ESG integration involves including all material factors including financial, Environmental, Social, and Governance metrics in the investment decision making process (Principles for Responsible Investment, 2019).

[2] Corporate social performance is defined as 'the principles, practices, and outcomes of businesses' relationships with people, organizations, institutions, communities, societies, and the earth, in terms of the deliberate actions of business towards these stakeholders as well as the unintended externalities of business activity' (Wood, 2015).

[3] Corruption may constrain the ability of stakeholder groups to implement indirect stakeholder salience strategies by forming coalitions with government to effect change. Hence, stakeholders are more empowered in an institutional setting in which corruption is low (or control of corruption is high).

[4] Legal recourse is often one of the main avenues through which stakeholders' groups influence firms' behaviour and gain recourse for misdeeds. Hence, stakeholders are more empowered in an institutional setting that has well established and enforced property rights.

[5] In countries with highly skilled workers, competition between firms to attract the most valuable, rare and costly to imitate human capital would be higher. Hence, stakeholders are more empowered in an institutional setting that promote a higher level of human capital acquisition.

[6] The data that support the findings of this study are available from the corresponding author upon request.

[7] This research undertook an Wu–Hausman test to examine the appropriateness of using fixed over random effects in our regressions and found that Fixed effects models were appropriate ($\chi^2 = 1315.5$, p-value $< 2.2\mathrm{e}{-16}$).

[8] When the pillars and sub-pillars of CSP are instrumented we use the country-average pillar or sub-pillar as our instrument.

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How to cite this article: Lynch, B., & O'Hagan-Luff, M. (2023). Relative corporate social performance and cost of equity capital: International evidence. *International Journal of Finance & Economics*, 1–29. https://doi.org/10.1002/ijfe.2808

APPENDIX A

TABLE A1 Description of ESG measurements (Reuters, 2018).

Pillar	Theme	Definition
Environmental	Resource Use Score	The Resource Use Score reflects a company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.
	Emissions Score	The Emissions Reductions Score measures a company's commitment and effectiveness towards reducing environmental emission in the production and operational processes.
	Environmental Innovation Score	The Innovation Score reflects a company's capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies and processes or eco-designed products.
Social	Workforce Score	The Workforce Score measures a company's effectiveness towards job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce.
	Human Rights Score	The Human Rights Score measures a company's effectiveness towards respecting the fundamental human rights conventions.
	Community Score	The Community Score measures the company's commitment towards being a good citizen, protecting public health and respecting business ethics.
	Product Responsibility Score	The Product responsibility Score reflects a company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy.

Note: This table provides a description of each of the Environmental and Social Metrics and their sub-categories used by Thomson Reuters in their Asset4 Database.

TABLE A2 Implied cost of capital estimation models.

We follow previous research (Chen et al., 2009; El Ghoul et al., 2011; Gupta, 2015; Harjoto & Jo, 2015; Hou et al., 2012) and estimate the four different models below, taking the average of the four models as an overall estimate of implied cost of equity capital.

Common notation

FEPS = forecasted earnings per share

B = book value

DPR = forecasted dividend payout ratio (firm-specific 3-year median dividend pay-out ratio)

g = expected (long-run) earnings growth

DIV = dividend

P = average annual market price of equity

1. Claus and Thomas (2001)

This model assumes clean surplus accounting (Ohlson, 1995), allowing share price to be expressed in terms of forecasted residual earnings and book values.

$$P_t = B_t + \sum_{\tau=1}^{5} \frac{ae_{t+\tau}}{(1+R_{CT})^{\tau}} + \frac{ae_{t+5}(1+g)}{(R_{CT}-g)(1+R_{CT})^{5}}$$

where:

$$ae_{t+\tau} = \mathrm{FEPS}_{t+t} - R_{CT}B_{t+\tau-1}$$

$$B_{t+\tau} = B_{t+\tau-1} + \mathrm{FEPS}_{t+\tau}(1-\mathrm{DPR}_{t+\tau})$$

$$B_{t+1} = B_t + \mathrm{FEPS}_{t+1} - \mathrm{DIV}_{t+1}$$

2. Gebhardt et al. (2001)

This model also assumes clean surplus accounting, allowing share price to be expressed in terms of forecasted earnings per share and book value.

$$P_t = B_t + \sum_{\tau=1}^{12} \frac{\mathrm{FEPS}_{t+\tau} - (R_{GLS} \times B_{t+\tau-1})}{(1+R_{GLS})^{\tau}} + \frac{\mathrm{FEPS}_{t+12} - (R_{GLS} \times B_{t+11})}{R_{GLS}(1+R_{GLS})^{12}}$$

This model uses a two-stage approach to estimate the intrinsic value of the stock.

- The first stage considers EPS forecasts for the first 3 years ahead
- The second stage assumes that from the 4th to 12th year, EPS will grow linearly to the industry-specific median ROE. The terminal value beyond the 12th year assumes 0 incremental profits, Residual income does not change.

TABLE A2 (Continued)

3. Ohlson and Juettner-Nauroth (2005)	This model uses short-term growth computed from 1-year ahead earnings forecasts which gradually declines to long run growth rate (g). $R_{oj} = A + \sqrt{A^2 + \frac{FEPS_{t+1}}{P_t}\left(\frac{FEPS_{t+2} - FEPS_{t+1}}{FEPS_{t+1}} - g\right)}$ where: $A = \frac{1}{2}\left(g + \frac{DPR*FEPS_{t+1}}{P_t}\right)$ The model requires positive earnings for the period t + 1 and t + 2 for numerical approximation to converge. The long-term growth rate equals country specific inflation rate.
4. Easton (2004)	This model is a special case of the OJ model where the abnormal returns are assumed to exist in perpetuity after the initial period. $P_t = \frac{FEPS_{t+2} - FEPS_{t+1} + (R_{ES}*FEPS_{t+1}*DPR)}{R_{ES}^2}$ It uses one and to year ahead earnings forecasts combined with dividend pay-out to estimate abnormal earnings. This model requires positive changes in forecasted earnings for numerical approximation to converge

TABLE A3 Cross-sectional forecasted earnings per share (FEPS) estimation model.

We use the cross-sectional Residual Income model proposed by Li and Mohanram (2014) to estimate forecasted Earnings per share. The model is estimated by running a regression on 10 years of lagged data using all firms with available data, before applying the regression coefficients to firm-specific data to estimate the expected value for each firm.

Formula:

$$FEPS_{j,t+i} = \alpha_0 + \alpha_1 NegE_{j,t} + \alpha_2 E_{j,t} + \alpha_3 NegE_t \times E_{j,t} + \alpha_4 B_{j,t} + \alpha_5 TACC_{j,t} + \varepsilon_{j,t+i}$$

where:

FEPS = Forecasted earnings per share

NegE = dummy variable for negative earnings

E = Earnings per share

B = book value of equity divided by the total number of outstanding shares

TACC = Total accruals (sum of change in net working capital, change in non-current operating assets, and change in net financial assets) divided by total number of shares outstanding.

TABLE A4 Description of institutional variables.

Stakeholder supporting institution	Description
Control of Corruption (CC)	The World Bank's Governance indicators, Control of Corruption (CC) captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests (World Bank, 2018). It is measured in percentile rank terms ranging from 0 to 100.
Property Rights (PR)	Economic freedom of the world's Property Rights Metric from the Heritage Foundation grades countries on a scale of 0 to 100 and assesses the extent to which a country's legal framework allows individuals to acquire, hold, and utilize private property, secured by clear laws that the government enforces effectively (Heritage Foundation, 2019a, 2019b)
Educational Attainment	The Educational Attainment of a country's workforce (EA), is measured as the percentage of the labour force that has achieved an advanced or tertiary level of education (OECD, 2020).

Note: This table provides a description of each of the Institutional Measures.