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¿Cómo influyen las prácticas corporativas de ESG en la rentabilidad exigida por los accionistas? Evidencia aportada por el coste de capital implícito de empresas europeas cotizadas

How do corporate ESG practices impact required shareholders returns? Evidence from the implied cost of equity of European listed firms.

Realizado por la estudiante: TÁBATA CALVO CONDE

Tutelado por los profesores:

Dr. D. Gabriel de la Fuente Herrero (Universidad de Valladolid)

Dra. Dª Pilar Velasco González (Universidad de Valladolid)

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Fdo:

Alumna:

Abstract

In this research, we explore the relationship between a firm's ESG engagement, and the return required by its shareholders. Our hypothesis is that stronger ESG engagement is associated with a reduction in the return required by shareholders. We empirically test this hypothesis on a panel of publicly traded firms from a number of European countries during the period 2012-2023, using data obtained from Refinitiv Eikon. We use the implied cost of equity as a forward-looking measure of the return required by shareholders, which does not depend on any hypothesis about the type of risk involved or the appropriateness of any asset pricing model. This study provides empirical evidence that firms excelling in environmental, social, and governance practices can achieve financial benefits through reduced required returns, thereby highlighting the economic value of sustainable business practices. We also provide evidence for firms in European countries, which is still a relatively unexplored setting and which therefore allows us to offer a first insight into what influence the legal framework (common law versus civil law) has on the relationship between ESG engagement and required returns.

Keywords: corporate social responsibility, ESG (environmental, social and governance), implied cost of equity.

INTRODUCTION

ESG (environmental, social, and governance) practices are one of the topics currently attracting major interest not only from researchers and business practitioners but also from policymakers and society in general. Firms are becoming increasingly aware of the importance of embedding their corporate decision-making into ESG guidelines, thus sparking clear concern about the impact of such ESG engagement on a firm's value. In fact, one controversial issue which inspires much scientific debate is whether (and to what extent) firms should sacrifice their value creation objective for the sake of complying with ESG criteria, and whether both objectives could be successfully achieved at the same time.

A firm's ESG engagement has taken on the role of what was formerly known as corporate social responsibility (CSR). It constitutes a wider concept that has driven the emergence of quantitative indicators based on ESG scoring methodologies developed by leading worldwide data providers (Clark & Viehs, 2014). Previous literature has mainly focused on studying the impact of ESG engagement on alternative measures of a firm's financial performance or, directly, on a firm's value. Most empirical studies suggest a positive relationship (Fatemi, Fooladi & Tehranian., 2015; Manchiraju & Rajgopal, 2017; Waddock & Graves, 1997), although some works cast doubt on this evidence and document a negative relationship (Hassel et al., 2005; Baron, 2007). This controversial evidence may be partly explained by the fact that the bulk of existing studies mainly accounts for the stream of a firm's expected cash flows, which constitutes only one of the two value drivers for firms, and rather underestimate the importance of another mechanism of value creation of ESG engagement –the one channelled through the return required by investors. Consistent with this idea, one stream of literature emphasizes the need to explore the relationship between ESG engagement and firm risk, providing supporting evidence concerning the relevance of this value mechanism. Some papers show that ESG engagement alleviates firm risk because this strategy leads to the creation of

moral capital and, as a result, serves as strategic insurance (Godfrey, 2005; Dumitrescu & Zakriya, 2021)). Another group of works points out that the ESG-firm risk association is shaped differently across firms, depending on a range of factors such as the institutional context where each firm operates (Bouslah, Kryzanowski & M'Zali, 2013) or the pillar of ESG under analysis (Hoepner, Oikonomou, Scholtens & Schröder, 2023) to but name a few examples. Moreover, the risk perceived by shareholders is related to their required return: the higher the level of risk they attribute to the firm, the greater the economic compensation they will require from it in return for having allocated their financial resources within the firm.

Our study aims to delve into the relationship between ESG engagement and a firm's value by exploring further said value driver, which is alternative to the stream of cash flows and which is channelled by a firm's risk –shareholders' required return. Our central hypothesis is that ESG engagement helps to reduce the risk perceived by stakeholders, such that they demand a lower return on their investments, thereby increasing the firm's value.

The empirical testing of our research model is conducted on a panel of publicly traded firms from 17 European countries during the period 2012-2023. We use the implied cost of equity as a proxy for the return required by shareholders (Elton, 1999; Claus and & Thomas, 2001; El Ghoul, Guedhami, Kwok & Mishra, 2011; Hann, Ogneva, & Oz, 2013). El Ghoul et al. (2011) studied how corporate social responsibility (CSR) affected the implied cost of equity of US public firms over the period 1992 to 2007, using CSR data provided by KLD STATS. We extend this previous work by studying how ESG performance –as measured by different scores from the core pillars (environmental, social and governance) provided by Refinitiv Eikon– affects the implied cost of equity of listed firms in Europe over the period 2012 to 2023. In addition, we look at how the different legal frameworks (common law versus civil law-oriented systems) affect the relationship between ESG engagement and required shareholder returns. Our main empirical results reveal that ESG engagement significantly reduces a firm's implied

cost of equity, thus suggesting that better ESG engagement lowers the return required by shareholders and thereby enhances a firm's value.

In the rest of the paper, we proceed as follows. In **Section 2,** we present a review of our theoretical background. In **Section 3,** we set out our research hypothesis and describe the empirical model, variables, and data. **Section 4** explains our empirical results. **Section 5** conducts a battery of robustness tests. Finally, conclusions are presented in **Section 6**.

LITERATURE REVIEW

ESG engagement and firm value: Mixed evidence

One key question in ESG literature is whether (and if so, how) a firm's ESG engagement contributes to value creation within firms. In this regard, it is worth noting that the vast majority of empirical studies provide supportive evidence of a positive impact of ESG engagement on firm value (Fatemi et al., 2015; Velte, 2017; Oikonomou, Platanakis & Sutcliffe, 2018; Albuquerque, Koskinen & Zhang, 2019; Bhaskaran, Ting, Sukumaran & Sumod, 2020; Awaysheh, Heron, Perry & Wilson, 2020; Hannah, Sayari, Harris, Cain, 2021; Fu, Yu & Zhou, 2023). Such a beneficial effect is explained on the grounds that ESG strategy improves a firm's relationship with its stakeholders (Liang & Renneboog, 2020; Gillan, Koch & Starks, 2021; Chang, Fu, Jin & Liem, 2022; Bancel, Glavas & Karolyi, 2023) and enriches the pool of moral capital and trust (Lins, Servaes & Tamayo, 2017), encouraging stakeholder willingness to undertake specific investments (e.g. human capital) that are valuable to the firm (Godfrey, 2005; Cuypers, Koh & Wang, 2016; Fuente, Ortiz & Velasco, 2022)..

In contrast, some research works have also documented a negative relationship between ESG engagement and firm value (Russo & Fouts, 1997; Hassel, Nilsson & Nyquist, 2005; Masulis & Reza, 2015; Buallay, 2018). They attribute this value-destroying effect of ESG to the fact

that this strategy also conceals some costs for firms in the form of resource depletion or managerial self-interest decisions. For instance, Massulis and Reza (2015) argue that ESG engagement can be used by managers as a mechanism for rent extraction and entrenchment in firms. Their results reveal that about 62% of firms make contributions to CEO-affiliated charities, with this being more salient in the case of firms with worse aligned interest between CEO and shareholders. Considering the inequality in the distribution of a firm's overall ESG performance across the three pillars as a symptom of a discretionary and self-interested adoption of ESG principles, Fuente and Velasco (2024) empirically demonstrate that ESG disparity worsens the effect of ESG engagement on a firm's value.

The value drivers of ESG engagement: a focus on cash flows

Earlier literature has primarily been concerned with a firm's value. One noticeable limitation comes from failing to disaggregate this firm value into its underlying drivers. This could be particularly important since each driver might be shaped by different forces. According to financial theory, a firm's value is determined by two elements: on the one hand, the expected cash flows from its business operations and on the other the discount rate applied to calculate the present value of future cash flows (i.e., the return required by investors), which depends on risk. As a result, the influence of ESG engagement on a firm's value might be channelled through this strategy's impact either on cash flows, on the return required by investors, or on both elements simultaneously.

So far, existing literature has been overfocused on examining the effect of ESG on the former element of a firm's value; namely, a firm's expected cash flows. This has been articulated by analysing those cash flows as a whole or, at most, by disaggregating them into their components; namely, profitability, taxes, and cash flow reinvestment rate. These analyses have given rise to inconclusive empirical results. First, ESG strategy is found to enhance a firm's

profitability through several channels, such as employee attraction, retention and productivity (Flammer & Kacperczyk, 2019), as well as brand power, reputation and better stakeholder relationship management (Servaes & Tamayo, 2013; Deng, Kang & Low, 2013; Flammer, 2015; Dai, Liang & Ng, 2021; Bose, Clarkson & Richardson, 2023). However, it is important to note that another group of works has shown that ESG might also impair a firm's profitability because of worsening agency conflicts within firms (Bénabou & Tirole, 2010). These works advocate that ESG engagement is undertaken because of managerial self-interest, disregarding the well-being of shareholders and stakeholders as a whole (Hassel et al., 2005; Manchiraju & Rajgopal, 2017; Ertugrul & Marciukaityte, 2021; Rojo-Suárez & Alonso-Conde, 2023).

Second, regarding the tax payment component of cash flows, literature documents controversial evidence about the impact of ESG engagement thereon. ESG strategy has been found to either increase corporate tax payments (Hoi, Wu & Zhang, 2013), reduce them (Davis, Guenther & Krull, 2016) or to have no impact (Mayberry & Watson, 2021). Such dissimilar findings are attributed to being dependent on whether ESG is a genuine belief across all stakeholders within the company or whether firms' main motivation for engaging in ESG is to try to reduce tax payments. Third, as far as dividend payout is concerned, empirical evidence supports that ESG engagement encourages dividend distribution (Cheung, Hu & Schwiebert, 2018; Benlemlih, 2019) because doing so helps to curb the overinvestment problem. A higher dividend distribution reduces the amount of free cash flows within the firm and, as a result, discourages managers from investing in projects with negative net present value.

The value drivers of ESG engagement beyond cash flows: a risk-management perspective

The influence of a firm's ESG engagement is not only restricted to its expected cash flows, as it may, in contrast, also have an impact on other components of a firm's value, such as the required return by investors (El Ghoul *et al*., 2011)[1]. According to financial theory, the return

required by investors depends on their perceived risk of the firm, which may be influenced by ESG engagement. Indeed, previous literature supports ESG engagement as a strategic insurance mechanism (Godfrey, 2005; Godfrey, Merril & Hansen, 2009; Dumitrescu & Zakriya, 2021; Fuente et al., 2022). Godfrey (2005) shows that ESG engagement protects firms against potential adverse shocks, since it sparks the accrual of moral capital within firms that tempers negative stakeholder sanctions when malpractice occurs. Such an insurance role from ESG might reduce a firm's systematic (non-diversifiable) risk, idiosyncratic risk, and downside risk.

The relationship between a firm's engagement in ESG and systematic risk has been investigated by several works (Bénabou & Tirole, 2010; Oikonomou, Brooks & Pavelin, 2012; Albuquerque et al., 2019, among others). Bénabou and Tirole (2010) explore why a firm's ESG engagement may be related to systematic risk; either because of the stronger resilience of more ESG-engaged firms during crises, or because such firms incorporate a specific ESG-related risk factor. Oikonomou et al. (2012) find no statistically significant relationship between some components of the social pillar of ESG (namely, community, diversity, employment, product safety, and quality) and firm systematic risk. By drawing on the Capital Asset Pricing Model (CAPM), Albuquerque et al. (2019) offer empirical evidence that ESG engagement decreases systematic risk. They note that the higher the level of product differentiation, the stronger the negative impact of ESG on systematic risk.

With regard to the impact of ESG on idiosyncratic risk, Benlemlih and Girerd-Potin (2017) point out that such a relationship is moderated by the institutional context. For instance, community involvement decreases a firm's idiosyncratic risk in civil law countries (due to their greater concern about stakeholder protection) but fails to do so in common law countries. Finally, Hoepner et al. (2023) conduct an analysis of the effect of each individual pillar of ESG on firm downside risk. Their empirical evidence suggests that ESG decreases downside risk

overall. Their result is robust across the environmental and social pillars. However, the governance pillar is seen to have no impact on it.

Such an ambiguous picture of the impact of ESG engagement on each firm's type of risks has prevented achieving a better understanding of this value channel mechanism of ESG engagement. One reason for such ambiguity emerges from one noticeable shortcoming which is common in these papers: their results are dependent on the validity of the model used to assess the risk that influences the required return and the appropriateness of the particular risk measure included in the model. This implies that –should the underlying model not prove adequate to capture the relevant type of risk or should it fail to do so accurately– the research results will be far from reliable.

In order to overcome this limitation, another stream of research has alternatively studied the relationship between ESG and a firm's observed cost of equity. For instance, Sharfman and Fernando (2008) find that firms with better environmental risk management can benefit from a lower cost of equity. This aligns with the findings by Oikonomou, Brooks and Pavelin (2014), who report that firms with better social and environmental performance generally enjoy a lower cost of debt. This is because creditors consider such firms to be less likely to assume legal or reputational risks that could impair their ability to repay debt.

The problem inherent in these studies is that they mainly focus on the cost of debt, or use measures of observed cost of equity that are based on ex-post realized returns rather than on forward looking required returns, which are the determinants of a firm's market value. To address this concern, some authors propose using an ex-ante measure of expected returns such as the implied cost of equity (Elton, 1999; Claus and & Thomas, 2001), which refers to the rate of return that is implicit in a firm's market valuation. For instance, El Ghoul et al. (2011) examine the relationship between CSR scores and the implied cost of equity in order to avoid

the biases in prior studies emerging from using noisy realized returns, or the failure of traditional asset pricing.

The implied cost of equity is derived directly from the relationship between a firm's market value and its expected cash flows, thereby providing a more straightforward and accurate measure for investors' ex-ante required return. Moreover, it has several advantages. First, empirical results obtained from this approach will not be conditioned by theories about which type of risk (either systematic, idiosyncratic, or total risk) plays a more relevant role in determining the discount rate. Second, this approach alleviates some limitations of earlier models by bringing their estimations closer to the reality of capital markets. Finally, it is also more convenient to apply the implied cost of equity than the current cost since the latter is a backward measure (and is therefore dependent on past decisions), and thereby has limited ability to appraise the impact of ESG engagement on a firm's value based on a forward-looking perspective. Altogether, such a perspective based on the implied cost of equity may help to advance a better appraisal vis-à-vis how ESG engagement influences market perception and a firm's financial valuation, thereby providing an enhanced understanding of how ESG strategy influences firm value.

RESEARCH MODEL, VARIABLES, AND SAMPLE

Hypothesis and model

Based on our review of the existing literature, we expect a firm's ESG engagement to help reduce the return required by its shareholders. A firm's ESG engagement is a source of moral capital that can be used as an efficient risk management tool. Albuquerque et al. (2019) suggest that CSR can mitigate financial risk by improving the management of operational and reputational risks, which could reduce the required return for investors. On the other hand,

another group of papers suggests that companies with good ESG engagement can improve their reputation and manage risks better, which could in turn reduce the cost of equity and, consequently, the return required by shareholders (El Ghoul et al., 2011). Should investors perceive firms with superior ESG engagement to be lower risk firms, we could expect them to require lower returns. Hence, we posit the following hypothesis:

H1. The higher a firm's ESG engagement, the lower the return required by its shareholders.

Traditional research has generally used ex-post realized returns to estimate expected/required returns (Fama & French, 1997; Lamont & Polk, 2001). However, some studies have confirmed that the use of such historical returns can lead to imprecise approximations and biased inferences in finite samples (Elton, 1999; Pástor, Sinha & Swaminathan, 2008). Some works have therefore shifted from the use of an ex-ante approach to the application of a forward-looking perspective by measuring expected returns through the estimation of a firm's implied cost of equity (e.g., El Ghoul et al., 2011)). We will embrace this same approach in our research.

The implied cost of equity is the internal rate of return that equates the current stock price to the present value of expected equity cash flows. The implied cost of equity can thus be derived from the following equation:

$$P_t = \sum_{i=1}^{\infty} \frac{E_t[EPS_{t+i}]}{(1+ICE)^i},$$

where P_t is the stock price at time t, $E_t[EPS_{t+i}]$ is the expected value per share at time t of the equity cash flow at time $t+i$, and ICE is a firm's implied cost of equity.

This concept of a firm's implied cost of equity allows us to analyse the impact of a firm's ESG engagement on a forward-looking measure of the return required by shareholders which

directly reflects their expectations about the effect of ESG engagement on expected risk. Consequently, such a relationship is studied by estimating the following regression model:

$$ICE_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 BETA_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 BtM_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 FDISP_{i,t} + \alpha_7 IND_i + \alpha_8 COUNTRY_i + u_{i,t},$$

where $ICE_{i,t}$ is the implied cost of equity of firm i in year t, $ESG_{i,t}$ is the degree of ESG engagement of firm i in year t, $BETA_{i,t}$ is the equity beta for firm i in year t, $SIZE_{i,t}$ is the size of the firm i in year t, $BtM_{i,t}$ is the book-to-market ratio of firm i in year t, $LEV_{i,t}$ is the financial leverage of firm i in year i, $FDISP_{i,t}$ is the standard deviation of the earnings per share of firm i in year t, IND_i is the industry of the firm i, and $COUNTRY_i$ is the country in which the firm is registered.

Our baseline estimation methodology is based on ordinary least squares (OLS), with standard errors clustered by firm. Clustering standard errors enables the residual dependence from the same firm over time to be controlled for (Petersen, 2009). Additionally, the robustness of our results is verified by using OLS with standard errors clustered by industry and country, as well as by employing OLS fixed and random effects models.

Dependent variable: a firm's implied cost of equity

Following Claus and Thomas (2001), we proxy for a firm's implied cost of equity by implementing the following equation:

$$P_0 = BPS_0 + \sum_{t=1}^{T} \left(\frac{EPS_t - ICE \cdot BPS_{t+1}}{(1+ICE)^t} \right) + \left(\frac{(EPS_T - ICE \cdot BPS_{T-1})(1+g_{ri})}{(ICE - g_{ri})(1+ICE)^T} \right),$$

where EPS_t denotes a firm's earnings forecast per share for year t; BPS_{t+1} is its expected book value per share for equity at the end of year t; ICE refers to the implied cost of equity, and g_{ri} represents the abnormal earnings growth rate.

Independent variable: a firm's ESG engagement

Based on Refinitiv's scores at the pillar level, we calculate a firm's overall ESG engagement as the equally weighted average of the scores in the environmental, social, and governance pillars (*ESGindex*). Alternatively, we also calculate this measure by only computing the average between the environmental pillar score and the social pillar score (*ES*) because these two pillars are considered to be the two outward-looking ones and, as a result, are attributed a superior ability to signal a firm's genuine engagement to ESG practices (Lins et al., 2017). By means of robustness, we also employ alternative scores reported by Refinitiv Eikon: Refinitiv's overall firm ESG score based on the self-reported information in the environmental, social, and corporate governance pillars (*ESGscore*); the average of a firm's environmental pillar score and its social pillar score (*ES*); an overall firm score based on the reported information in the environmental, social, and corporate governance pillars discounted for ESG controversies (*ESGcomb*); a score which reflects a firm's communication practices about the integration of economic (financial), social, and environmental dimensions into its day-to-day decision-making processes (*CSRstrat*); and a score measuring a firm's exposure to environmental, social, and governance controversies and negative events reflected in global media (*ESGcontrov*).

Control variables

We control for a number of characteristics that are deemed to influence a firm's ESG engagement and its implied cost of equity. Following earlier works such as El Ghoul et al. (2011), we control for a firm's beta, a firm's size, book-to-market ratio, a firm's leverage, industry, and the country of domicile. A firm's beta –calculated using the CAPM– is provided directly by Refinitiv Eikon; a firm's size is approximated by the natural logarithm of a firm's total assets; the book-to-market ratio is calculated as the ratio of the book value and the market value of equity, and firm leverage is the ratio of total debt to market capitalization. Finally, a

firm's industry and the country where it operates are captured by a set of dummy variables. The industry classification scheme we use is based on Standard Industrial Classification (SIC) codes.

Data and sample

Our sample consists of a panel of publicly listed firms from 17 European countries over the period 2012-2023. We discard firms operating in the finance, insurance and real estate sector (SICs from 6000 to 6799) due to the particular idiosyncrasy and regulation that affect these industries. Countries represented in our sample are the following, ordered by the percentage of firm-year observations: the United Kingdom (25.06%), Germany (13.73%), France (12.73%), Sweden (8.79%), Switzerland (6.32%), Italy (5.61%), Finland (4.09%), Norway (4.01%), Spain (3.60%), the Netherlands (3.40%), Ireland (2.65%), Belgium (2.44%), Denmark (2.09%), Austria (1.77%), Luxembourg (1.40%), Greece (1.39%), and Portugal (0.92%). Most existing evidence is based on the U.S. context. Hence, exploring European countries allows us to consider an alternative institutional setting, where ESG compliance is being greatly enforced by policymakers such as European Union ESG rating regulation. Furthermore, a sufficiently broad time frame is analysed in order to appraise the influence of the dynamic process in the models under evaluation.

We use Refinitiv Eikon as our primary source of data, which compiles a number of databases. Specifically, annual financial data comes from Worldscope, market data is collected from Datastream, and analyst forecast data is extracted from I/B/E/S. Moreover, Refinitiv reports a set of ESG indicators (130 different financial and market indicators, different ESG scores, and scores disaggregated by the three pillars of environment, social, and governance). Thomson Reuters is a renowned global provider offering reliable, objective, systematic, and

auditable data, which have been extensively used in prior empirical studies (Flammer & Kacperczyk, 2019; Dai et al., 2021; Fuente & Velasco, 2024).

EMPIRICAL RESULTS

Descriptive statistics

Table 1 summarizes the descriptive statistics of our main variables. To mitigate the influence of potential outlier observations, all financial variables are winsorized at the top and bottom 1% level. Since the proxies for ESG engagement do not exhibit extreme outlier observations, they are not subject to winsorization. Moreover, we eliminate observations that have book values below zero.

INSERT TABLE 1 ABOUT HERE

Average ESG engagement (*ESGindex*) is about 6.015 and this variable ranges between 0.128 and 9.507 in our sample. As regards financial variables, the implied cost of equity (*ICE*) has an average of 0.1620, *BETA*, with a mean of 0.9270; *SIZE*, with a mean of 15.0590 and this variable ranges between 10.9780 and 18.9170; *LEV*, which had a mean of 0.3720; *BtM*, with a mean of 0.4070; and *FDISP*, which presented a mean of 0.9840.

Implied cost of equity and ESG engagement

Table 2 presents the estimation results of our analysis conducted using OLS regressions with standard errors clustered by firm. Column (1) shows the results for the baseline model that relates the implied cost of equity to our control variables. As expected, *BETA*, *LEV*, and *BtM* have a positive and statistically significant effect on the implied cost of equity, while *SIZE* has a negative and statistically significant effect on the dependent variable. *FDISP* has a negative effect on the required return by shareholders but displays no statistical significance. Across all model specifications which include ESG engagement (measured by *ESGindex*) (Columns (2)

to (5)), the coefficient for *ESGindex* is consistently negative and statistically significant at the 1% level. This indicates that higher ESG engagement is associated with a lower implied cost of equity. This finding supports our hypothesis that better ESG engagement reduces the required return by shareholders, thereby potentially enhancing firm value. However, it is worth noting that the size of this effect is small. Looking at the economic significance, a one percentage-point increase in *ESGindex* leads the implied cost of equity to decrease by 0.007 percentage points. We include year fixed-effects in order to control for time-specific effects, such as macroeconomic trends or global events, that could impact all firms similarly in a given year.

INSERT TABLE 2 ABOUT HERE

In Columns (3), (4), and (5), we expand our baseline equation by including industry and country fixed-effects in order to account for unobserved heterogeneity. Industry fixed-effects control for factors that are unique to specific industries, such as regulatory changes or industry-specific economic conditions. Country fixed-effects control for variations across different countries, such as differences in legal systems, economic environments, and cultural factors. Column (5) includes both industry and country fixed-effects simultaneously to provide a more comprehensive control for these varying factors, thus ensuring that our results are not biased by these unobserved differences.

As expected, *SIZE* exhibits a negative and statistically significant effect (p-value<0.10) on the implied cost of equity, whereas *BETA* and *LEV* have a positive and significant effect on our dependent variable. *BtM* displays non-significant effect in Columns (4) and (5), and *FDISP* is not statistically significant in any model, suggesting that the variability in analyst forecasts does not have a strong impact on the implied cost of equity in this sample.

The influence of the legal framework (common versus civil law) on the relationship between ESG engagement and implied cost of equity

Table 3 shows how the difference in the legal systems between Anglo-American countries (common law) and continental countries (civil law) affect the relationship between ESG engagement and the implied cost of equity of firms, incorporating a dummy variable (*CommonLaw*) that is equal to 1 if the country has common law regulation (the United Kingdom, in our case), and 0 otherwise. Column (1) presents the results of the regression relating the implied cost of equity to ESG engagement (*ESGindex*), using the same control variables as in Table 1, adding the *dumCommonLaw* variable. Column (2) shows the results when incorporating the interaction effect of this dummy variable and *ESGindex*. Finally, Column (3) displays the results incorporating the dummy variable individually and its interaction term with *ESGindex*.

INSERT TABLE 3 ABOUT HERE

ESGindex has a negative and statistically significant effect on the implied cost of equity across all the columns. Control variables remain robust to previously described regressions. When we incorporate the dummy variable *dumCommonLaw* (Column (1)), it has a negative and statistically significant effect on the implied cost of equity. This result implies that a country belonging to a common law legislation reduces the return required by shareholders. In column (2), the effect of legal regulation on the implied cost of equity interacted with ESG engagement (*dumCommonLaw*ESG*) remains negative and statistically significant, such that the type of regulation favours firms' ESG engagement, reducing the return required by shareholders. However, in Column (3), the dummy variable *dumCommonLaw* is statistically significant individually but, in contrast, its interaction effect with ESG is not. As expected, *SIZE* exhibits a negative and statistically significant effect on the implied cost of equity. In contrast, *BETA*

and *LEV* have a positive and significant effect on our dependent variable, and *BtM* and *FDISP* are not statistically significant in any model.

ROBUSTNESS ANALYSES

The robustness of our main evidence is verified by using a battery of additional analyses. We evaluate the robustness of our results to the use of alternative proxies for ESG engagement. First, we employ the ESG score provided by Refinitiv Eikon (*ESGscore*). Second, we compute ESG engagement by only considering the outside-looking pillars (namely, the environmental and social pillars) and calculating the average of the environmental (*ENVIRON*) and social (*SOCIAL*) score (*ES*). Additionally, we use Refinitiv's ESG combined score (*ESGcomb*) and the CSR strategy (*CSRstrat*) category score. Finally, we use the ESG controversies (*ESGcontrov*) category score provided by Refinitiv. It is worth noting that this latter score constitutes an inverse measure for ESG controversies: the higher it is, the fewer the number controversies the firm has (and therefore exhibits better ESG practices). Table 4 reports these results.

INSERT TABLE 4 ABOUT HERE

In the regressions in Column (1), *ESGscore* has a negative and statistically significant effect on the implied cost of equity, which is supportive for our expectations that stronger ESG engagement decreases a firm's implied cost of equity. In Columns (2), (3), (4) and (5), the results of the regressions are similar to those previously explained: the alternative proxies for ESG (namely, *ES*, *ESGcomb*, *CSRstrat*, and *ESGcontrov*) have a negative and statistically significant effect on the implied cost of equity. With regard to the control variables, *BETA* and *LEV* have a significant effect, whereas *SIZE* displays a negative and significant effect. *BtM* and *FDISP* have no significant effect on our dependent variable.

Additionally, we check the robustness of our results using an alternative estimation methodology. These results are tabulated in Table 5. Specifically, we implement OLS clustered standard errors by industry (Column (1)), and country (Column (2)); OLS with fixed-effects (Column (3)); and OLS with random effects estimation (Column (4)).

INSERT TABLE 5 ABOUT HERE

ESGindex has a negative and significant effect on the dependent variable across all regressions. Moreover, *BETA* and *LEV* have a positive and statistically significant effect on the implied cost of equity across all regressions, whereas *SIZE* has a negative and statistically significant effect on the return required by shareholders. As for Columns (1), (2), and (3), *BtM* has a positive but non-significant effect on the dependent variable, whereas it has the opposite sign in the regression in Column (4), although it is not statistically significant. However, *FDISP* has a positive effect in Columns (1) and (3), and a negative effect in Columns (2) and (4), being a non-statistically significant variable in all regressions in this table.

Moreover, we have estimated the return required by shareholders as the difference between the implied cost of equity calculated with the model proposed by Claus and Thomas (2001) and the risk-free interest rate for each of the countries-years in the sample (measured as the yield on the 10-year government bond). These results are reported in Tables A.1. to A.4. of the Appendix, and the regression results confirm that firms' ESG engagement reduces the return required by shareholders in a statistically significant way, with the effect of the control variables on the dependent variable being maintained.

In addition, we have estimated the implicit cost of equity using an alternative model to the one proposed by Claus and Thomas (2001), which is a straightforward discounted cash flow model with a growth rate from the second year.

$$P_0 = \frac{EPS_1}{(1+ICE)} + \frac{EPS_2}{(1+ICE)^2} + \frac{EPS_2(1+g)}{(ICE-g)(1+ICE)^2}.$$

where EPS_t denotes a firm's earnings forecast per share for year t provided by I/B/E/S analysts; ICE refers to the implied cost of equity; and g represents the earnings growth rate measured as the median of the long-term earnings growth rate.

The results of these regressions are reported in Tables A.5. to A.9. of the Appendix. Again, these results confirm that ESG engagement has a negative and statistically significant effect on firms' implied cost of equity. In both cases, *BETA* and *BtM* have a positive and statistically significant effect on the return required by shareholders, whereas *SIZE* has the opposite effect: the larger the firm, the lower the implied cost of equity. *LEV* has a positive effect in both models, but is only significant when the implied cost of equity calculated from the Claus and Thomas (2001) model is used for the regression. *FDISP* has a null and non-significant effect when we use the return required by shareholders calculated from the Claus and Thomas (2001) model, but its effect is positive and statistically significant when we use the Discounted Cash Flow model to calculate the implied cost of equity.

CONCLUSIONS

This study aims to deepen current understanding about the impact of a firm's ESG engagement on firm value. Our results reveal that ESG engagement significantly reduces a firm's implied cost of equity, thus suggesting that better ESG practices alleviate the required return by investors and –through it– can enhance a firm's value.

Elaborating on these findings, the negative impact of ESG engagement on the implied cost of equity shows that firms with stronger ESG practices are considered to be less risky by investors. This perception may emerge from the enhanced operational efficiencies, improved governance, and superior risk management practices associated with ESG-engaged firms.

Consequently, investors are willing to require a lower risk premium, thus leading to a decrease in the cost of equity. This reduction not only makes equity financing more cost-effective but also enhances a firm's value. Our results therefore highlight the financial advantages to be gained from adopting ESG practices, by demonstrating that ESG engagement serves as a valuable strategy for enhancing a firm's value beyond complying with regulatory or ethical requirements.

By focusing on the relationship between ESG engagement and shareholder required returns, our research unveils a crucial mechanism of value creation which proves complementary to traditional research approaches primarily concerned with expected cash flows. Our study contributes to the existing literature by providing empirical evidence that supports the notion that ESG engagement can be a strategic financial decision. Previous studies have often focused on the direct impact of ESG on firm performance metrics such as profitability or observed stock returns. Our research adds to this existing evidence by specifically examining how ESG practices influence the forward-looking cost of equity, thus integrating the risk perspective into the ESG discourse. This approach not only broadens our understanding of the financial advantages of ESG but also underscores the importance of considering investor perceptions and market dynamics when evaluating the overall impact of ESG initiatives.

This research points to a number of implications for practitioners and policy makers such as that engagement in effective ESG practices could serve as a strategic risk management tool for firms. By enhancing a firm's ESG engagement, managers can potentially lower the firm's cost of equity through reduced perceived risk among investors, thereby enhancing overall firm value and market competitiveness.

Our research also suffers from some limitations which could be addressed in a future research agenda. First, we acknowledge the need for further research to re-examine the

robustness of these results under different macroeconomic conditions and across various sectors. In particular, future studies could explore how ESG engagement interacts with firm-specific factors and external conditions, such as economic cycles or sector-specific dynamics. Additionally, examining the effects of ESG engagement within different ESG score categories and their impact on firms in various industries would provide a more nuanced understanding of the relationship between ESG practices and firm value. While our results provide strong support for the benefits of ESG engagement, ongoing research is essential to capture its implications across different contexts and conditions.

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FOOTNOTES

1. The effect of ESG engagement on a firm's expected cash flows and on a firm's risk can also occur interdependently. Risk reduction stimulates the specific investments made by stakeholders, which in turn produce higher expected cash flows. Moreover, ESG engagement creates value through the (real) flexibility options (Fuente, Ortiz & Velasco, 2022) that it provides the firm with in order to be better able to adapt to events. Exercising such options by the firm causes the asymmetric distribution of its realized returns (Del Viva, Kasanen & Trigeorgis, 2017).

TABLE 1
Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Max	P25	P75
ICE	6,746	0.1620	0.2210	0.0000	7.3360	0.0651	0.1809
ESG engagement							
ENVIRON	10,466	5.1380	2.5638	0.0000	9.9260	3.2400	7.2380
SOCIAL	10,466	5.9069	2.2320	0.0250	9.8200	4.2760	7.7170
GOVERN	10,466	5.3240	2.2217	0.0560	9.8560	3.5690	7.1160
ESGindex	4,954	6.0150	1.789	0.1280	9.507	3.7006	6.7976
ES	10,466	5.5224	2.2226	0.0130	9.7700	3.9125	7.3465
ESGscore	10,466	5.5397	1.9237	0.0630	9.5570	4.1640	7.0490
ESGcomb	10,466	5.3235	1.8073	0.0630	9.5100	4.0740	6.6990
CSRstrat	10,466	4.9346	2.9433	0.0000	9.9920	2.5000	7.5000
ESGcontrov	10,466	9.1131	2.2290	0.0590	10.000	10.000	10.000
Control variables							
BETA	6,746	0.9270	0.4710	-0.0860	2.4600	0.3300	1.1700
SIZE	6,746	15.0590	1.7090	10.978	18.917	9.8874	13.678
LEV	6,746	0.3720	0.5330	0.0000	3.0640	0.0127	1.3700
BtM	6,746	0.4070	0.5430	0.0010	4.0360	0.0635	0.7901
FDISP	19,598	0.9840	2.4132	0.0000	17.470	0.0833	0.7300

This table presents the summary statistics for the full sample (2012–2023). *ICE* measures a firm's implied cost of equity), *ENVIRON* (the score in the environmental pillar), *SOCIAL* (the score in the social pillar) and *GOVERN* (the score in the governance pillar), *ESGindex* (overall ESG score as the average of the scores in the three pillars), *ES* (the average of the environmental and social pillar scores), *ESGscore* (an overall firm score based on the self-reported information in the environmental, social, and corporate governance pillars), *ESGcomb* (an overall firm score based on the reported information in the environmental, social, and corporate governance pillars discounted for ESG controversies), *CSRstrat* (a firm's practices to communicate that it integrates the economic, social, and environmental dimensions into its day-to-day decision-making processes) and *ESGcontrov* (a firm's exposure to environmental, social, and governance controversies and negative events reflected in global media), are the alternative measures of ESG performance. Control variables are: *BETA* (CAPM), *SIZE* (firm size as the natural logarithm of total assets), *LEV* (the ratio of total debt to market capitalization), *BtM* (the ratio of book value to market capitalization), and *FDISP* (cash earnings per share standard deviation).

TABLE 2
A firm's ESG engagement and its implied cost of equity (OLS with standard errors clustered by firm)

	Dependent variable: *ICE*				
	(1)	(2)	(3)	(4)	(5)
Constant	0.441***	0.27***	0.202***	0.271***	0.203***
	(0.041)	(0.051)	(0.066)	(0.051)	(0.066)
ESG engagement					
ESGindex		-0.007***	-0.007***	-0.007***	-0.007***
		(0.002)	(0.002)	(0.002)	(0.002)
Control variables					
BETA	0.049***	0.046***	0.045***	0.048***	0.047***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SIZE	-0.021***	-0.008**	-0.008***	-0.009***	-0.01***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
LEV	0.013***	0.011**	0.008	0.013**	0.01*
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
BtM	0.007*	0.011**	0.011*	0.009	0.008
	(0.004)	(0.005)	(0.006)	(0.006)	(0.006)
FDISP	-0.003	-0.002	-0.002	-0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	No	No	Yes	No	Yes
Country fixed-effects	No	No	No	Yes	Yes
R-squared	0.046	0.065	0.071	0.078	0.086
F-test	12.461***	11.203***	8.742***	8.128***	7.088***
Number of obs.	6,738	4,946	4,946	4,946	4,946

This table shows the OLS estimation results of the relationship between a firm's ESG engagement and its implied cost of equity (*ICE*), winsorizing the control variables at the 1st and 99th percentiles. Standard errors are in parentheses. Column (1) shows the baseline model in which the dependent variable (*ICE*) is explain by the control variables, and we include year fixed-effects to control for time-specific effects. In Column (2) we include our independent variable (*ESGindex*), the control variables, and we control time-specific effects. Column (3) includes industry fixed-effects whereas in Column (4) we include country fixed-effects and in Column (5) we include both of them to control for heterogeneity. The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. *, ** and *** refer to statistical significance at the 10%, 5% and 1% levels, respectively.

TABLE 3
A firm's ESG engagement and its implied cost of equity (Common / Civil Law)

Dependent variable: *ICE*			
	(1)	(2)	(3)
Constant	0.233***	0.219***	0.239***
	(0.062)	(0.063)	(0.063)
ESG engagement			
ESGindex	-0.007***	-0.006***	-0.008***
	(0.002)	(0.002)	(0.003)
Control variables			
BETA	0.046***	0.045***	0.046***
	(0.007)	(0.007)	(0.007)
SIZE	-0.010***	-0.009***	-0.01***
	(0.003)	(0.003)	(0.003)
LEV	0.010*	0.010*	0.010*
	(0.006)	(0.006)	(0.006)
BtM	0.009	0.009	0.009
	(0.006)	(0.006)	(0.006)
FDISP	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)
dumCommonLaw	-0.030***		-0.049*
	(0.01)		(0.026)
dumCommonLaw*ESG		-0.004***	0.003
		(0.002)	(0.004)
Year fixed-effects	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
R-squared	0.075	0.074	0.075
F-test	9.626***	9.662***	9.359***
Number of obs.	4,946	4,946	4,946

This table shows the OLS estimation results of the relationship between a firm's ESG engagement and its implied cost of equity (*ICE*), winsorizing the control variables at the 1st and 99th percentiles. Standard errors are in parentheses. Column (1) shows the model in which the dummy variable (*dumCommonLaw*) is included in an additive form. In Column (2), said dummy variable interacted with *ESGindex*. Column (3) includes the dummy variable *dumCommonLaw* individually and its interaction with *ESGindex*. The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. *, ** and *** refer to statistical significance at the 10%, 5% and 1% levels, respectively.

TABLE 4
Robustness test for the relationship between a firm's ESG engagement and its implied cost of equity (OLS with standard errors clustered by firm)

	Dependent variable: *ICE*				
	(1)	(2)	(3)	(4)	(5)
Constant	0.361***	0.350***	0.383***	0.377***	0.457***
	(0.061)	(0.061)	(0.059)	(0.059)	(0.064)
ESG engagement					
ESGscore	-0.007***				
	(0.002)				
ES		-0.007***			
		(0.002)			
ESGcomb			-0.007***		
			(0.002)		
CSRstrat				-0.003**	
				(0.001)	
ESGcontrov					-0.003**
					(0.001)
Control variables					
BETA	0.046***	0.046***	0.046***	0.046***	0.046***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SIZE	-0.010***	-0.009***	-0.012***	-0.012***	-0.018***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
BtM	0.008	0.008	0.008	0.008	0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
LEV	0.010*	0.010*	0.010*	0.011*	0.011*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
FDISP	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.086	0.086	0.086	0.084	0.084
F-test	7.056***	7.297***	7.208***	6.922***	7.187***
Number of obs.	4,946	4,946	4,946	4,946	4,946

This table shows the OLS estimation results of the relationship between a firm's ESG engagement and its implied cost of equity (*ICE*) using different proxies and winsorizing the control variables at the 1st and 99th percentiles. Standard errors are in parentheses. Column (1) to (5) show different models in which we use different proxies as a measure of ESG engagement: *ESGscore*, in Column (1), *ES* in Column (2), *ESGcomb* in Column (3), *CSRstrat* in Column (4), and *ESGcontrov* in Column (5). The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. *, ** and *** refer to statistical significance at the 10%, 5% and 1% levels, respectively.

TABLE 5
Robustness test for the relationship between a firm's ESG engagement and its implied cost of equity (different estimation methods)

	Dependent variable: *ICE*			
	(1)	(2)	(3)	(4)
Constant	0.203***	0.277***	0.761***	0.379***
	(0.072)	(0.054)	(0.211)	(0.058)
ESG engagement				
ESGindex	-0.007**	-0.007**	-0.006*	-0.007***
	(0.002)	(0.003)	(0.004)	(0.003)
Control variables				
BETA	0.046***	0.044***	0.028***	0.033***
	(0.009)	(0.005)	(0.008)	(0.006)
SIZE	-0.010**	-0.008*	-0.037***	-0.014***
	(0.004)	(0.004)	(0.010)	(0.004)
BtM	0.008	0.010	-0.006	0.004
	(0.007)	(0.007)	(0.006)	(0.002)
LEV	0.010*	0.009*	0.015**	0.011**
	(0.005)	(0.005)	(0.007)	(0.005)
FDISP	0.000	-0.002	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
R-squared	0.086	0.071	0.046	0.077
F-test	9.387***	15.705***	9.195***	.
Chi-square	.	.	.	279.658***
Number of obs.	4,946	4,946	4,946	4,946

This table shows the estimation results of the relationship between a firm's ESG engagement and its implied cost of equity (*ICE*) using different methodologies (OLS clustered standard errors by industry, country and year, and OLS fixed and random effects), and winsorizing the control variables at the 1st and 99th percentiles. Standard errors are in parentheses. In Column (1), we estimate the effect of the independent variable (*ESGindex*) on the implied cost of equity using OLS clustered standard errors by industry. In Column (2) we use OLS clustered standard errors by country of domicile. In Columns (4) and (5), we use OLS with fixed-effects and random-effects, respectively. The F-statistic evaluates the null hypothesis of no joint significance of the explanatory variables. *, ** and *** refer to statistical significance at the 10%, 5% and 1% levels, respectively.

APPENDIX

Table A.1.

A firm's ESG engagement and its premium (*ICE* minus the risk free rate) - OLS with standard errors clustered by firm

Dependent variable: Premium (*ICE* minus 10-year yield)					
	(1)	(2)	(3)	(4)	(5)
Constant	0.416***	0.234***	0.166**	0.237***	0.168**
	(0.041)	(0.052)	(0.067)	(0.053)	(0.066)
ESG engagement					
ESGindex		-0.008***	-0.008***	-0.007***	-0.007***
		(0.002)	(0.002)	(0.002)	(0.002)
Control variables					
BETA	0.041***	0.047***	0.046***	0.048***	0.047***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SIZE	-0.021***	-0.007**	-0.008**	-0.009***	-0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
LEV	0.011**	0.009	0.007	0.012**	0.010*
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
BtM	0.007*	0.011**	0.011*	0.009	0.008
	(0.004)	(0.005)	(0.006)	(0.006)	(0.006)
FDISP	-0.003*	-0.003	-0.003	-0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	No	No	Yes	No	Yes
Country fixed-effects	No	No	No	Yes	Yes
R-squared	0.048	0.071	0.076	0.085	0.093
F-test	12.810***	13.829***	10.705***	9.306***	8.209***
Number of obs.	6,738	4,946	4,946	4,946	4,946

TABLE A.2.

A firm's ESG engagement and its premium (*ICE* minus the risk-free rate) (Common / Civil Law)

	Dependent variable: Premium (*ICE* minus 10-year yield)		
	(1)	(2)	(3)
Constant	0.203***	0.187***	0.209***
	(0.062)	(0.064)	(0.063)
ESG engagement			
ESGindex	-0.008***	-0.007***	-0.008***
	(0.002)	(0.002)	(0.003)
Control variables			
BETA	0.047***	0.046***	0.047***
	(0.007)	(0.007)	(0.007)
SIZE	-0.010***	-0.009***	-0.010***
	(0.003)	(0.003)	(0.003)
LEV	0.008	0.008	0.008
	(0.006)	(0.006)	(0.006)
BtM	0.009	0.009	0.009
	(0.006)	(0.006)	(0.006)
FDISP	0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.002)
dumCommonLaw	-0.036***		-0.054**
	(0.01)		(0.026)
dumCommonLaw*ESG		-0.005***	0.003
		(0.002)	(0.004)
Year fixed-effects	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
R-squared	0.082	0.081	0.082
F-test	11.677***	11.744***	11.353***
Number of obs.	4,946	4,946	4,946

TABLE A.3.

A firm's ESG engagement and its premium (*ICE* minus the risk-free rate) -OLS with standard errors clustered by firm

	Dependent variable: Premium (*ICE* minus 10-year yield)				
	(1)	(2)	(3)	(4)	(5)
Constant	0.167***	0.159***	0.193***	0.188***	0.169***
	(0.061)	(0.061)	(0.065)	(0.063)	(0.068)
ESG engagement					
ESGscore	-0.007***				
	(0.002)				
ES		-0.007***			
		(0.002)			
ESGcomb			-0.007***		
			(0.002)		
CSRstrat				-0.003**	
				(0.001)	
ESGcontrov					-0.003**
					(0.001)
Control variables					
BETA	0.047***	0.047***	0.047***	0.047***	0.046***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SIZE	-0.01***	0.003***	-0.012***	-0.012***	-0.018***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
BtM	0.008	0.008	0.008	0.008	0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
LEV	0.010*	0.010*	0.009*	0.010*	0.011*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
FDISP	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.093	0.094	0.093	0.091	0.091
F-test	8.191***	8.426***	8.326***	8.074***	8.333***
Number of obs.	4,946	4,946	4,946	4,946	4,946

TABLE A.4.

A firm's ESG engagement and its premium (*ICE* minus the risk-free rate) -Different methods)

	Dependent variable: Premium (*ICE* minus 10-year yield)			
	(1)	(2)	(3)	(4)
Constant	0.168***	0.241***	0.729***	0.345***
	(0.072)	(0.056)	(0.211)	(0.058)
ESG engagement				
ESGindex	-0.007**	-0.008**	-0.006*	-0.007***
	(0.003)	(0.003)	(0.004)	(0.003)
Control variables				
BETA	0.047***	0.046***	0.028***	0.034***
	(0.007)	(0.005)	(0.008)	(0.007)
SIZE	-0.010**	-0.008*	-0.038***	-0.015***
	(0.004)	(0.004)	(0.010)	(0.004)
BtM	0.008	0.011	-0.006	0.004
	(0.006)	(0.007)	(0.006)	(0.002)
LEV	0.010*	0.007	0.014**	0.010**
	(0.006)	(0.005)	(0.007)	(0.005)
FDISP	0.000	-0.003	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
R-squared	0.093	0.076	0.051	0.084
F-test	10.802***	16.906***	10.362***	.
Chi-square	.	.	.	313.539***
Number of obs.	4,946	4,946	4,946	4,946

TABLE A.5.

A firm's ESG engagement and its implied cost of equity (DCF) - (OLS with standard errors clustered by firm)

	Dependent variable: Implied cost of equity				
	(1)	(2)	(3)	(4)	(5)
Constant	0.471***	0.388***	0.290***	0.396***	0.295***
	(0.033)	(0.04)	(0.105)	(0.040)	(0.105)
ESG engagement					
ESGindex		-0.006***	-0.006***	-0.006***	-0.006***
		(0.002)	(0.002)	(0.002)	(0.002)
Control variables					
BETA	0.054***	0.048***	0.048***	0.048***	0.048***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
SIZE	-0.026***	-0.015***	-0.014***	-0.016***	-0.015***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
LEV	-0.012*	0.003	-0.002	0.005	0.002
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
BtM	0.178***	0.132***	0.135***	0.129***	0.130***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)
FDISP	0.013***	0.010***	0.010***	0.010***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	No	No	Yes	No	Yes
Country fixed-effects	No	No	No	Yes	Yes
R-squared	0.145	0.132	0.139	0.138	0.146
F-test	77.259***	47.774***	36.029***	25.991***	22.813***
Number of obs.	7,294	5,370	5,370	5,370	5,370

TABLE A.6.

A firm's ESG engagement and its implied cost of equity (DCF): Comparison between the Claus and Thomas (2001) model and the discounted cash flow model

Dependent variable: Implied cost of equity		
	Claus & Thomas (2001)	DCF model
Constant	0.203**	0.295***
	(0.094)	(0.105)
ESG engagement		
ESGindex	-0.007***	-0.006***
	(0.002)	(0.002)
Control variables		
BETA	0.047***	0.048***
	(0.005)	(0.006)
SIZE	-0.010***	-0.015***
	(0.002)	(0.003)
LEV	0.010**	0.002
	(0.004)	(0.006)
BtM	0.008***	0.130***
	(0.002)	(0.007)
FDISP	0.000	0.011***
	(0.001)	(0.001)
Year fixed-effects	Yes	Yes
Industry fixed-effects	Yes	Yes
Country fixed-effects	Yes	Yes
R-squared	0.086	0.146
F-test	11.465***	22.813***
Number of obs.	4,946	5,370

TABLE A.7.

A firm's ESG engagement and the implied cost of equity (DCF) (Common / Civil Law)

	Dependent Variable: Implied cost of capital		
	(1)	(2)	(3)
Constant	0.303***	0.219***	0.310***
	(0.075)	(0.063)	(0.075)
ESG engagement			
ESGindex	-0.006**	-0.005**	-0.006**
	(0.003)	(0.003)	(0.003)
Control variables			
BETA	0.048***	0.048***	0.049***
	(0.008)	(0.008)	(0.008)
SIZE	-0.015***	-0.014***	-0.015***
	(0.004)	(0.004)	(0.004)
LEV	0.001	0.000	0.001
	(0.012)	(0.012)	(0.012)
BtM	0.130***	0.131***	0.130***
	(0.039)	(0.039)	(0.039)
FDISP	0.011**	0.011**	0.011**
	(0.005)	(0.005)	(0.005)
dumCommonLaw	-0.014		-0.035
	(0.011)		(0.028)
dumCommonLaw*ESG		-0.002	0.004
		(0.076)	(0.004)
Year fixed-effects	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
R-squared	0.140	0.140	0.140
F-test	11.105***	11.011***	10.694***
Number of obs.	5,370	5,370	5,370

TABLE A.8.

A firm's ESG engagement and its implied cost of equity (DCF) -OLS with standard errors clustered by firm

	Dependent variable: Implied cost of equity				
	(1)	(2)	(3)	(4)	(5)
Constant	0.291***	0.285***	0.312***	0.300***	0.409***
	(0.077)	(0.077)	(0.076)	(0.073)	(0.083)
ESG engagement					
ESGscore	-0.006***				
	(0.003)				
ES		-0.006***			
		(0.002)			
ESGcomb			-0.008***		
			(0.002)		
CSRstrat				-0.004**	
				(0.001)	
ESGcontrov					-0.004**
					(0.001)
Control Variables					
BETA	0.048***	0.048***	0.048***	0.048***	0.047***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
SIZE	-0.015***	-0.014***	-0.016***	-0.016***	-0.023***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)
BtM	0.130***	0.130***	0.129***	0.130***	0.130***
	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
LEV	0.001	0.002	0.001	0.002	0.003
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
FDISP	0.011	0.011**	0.011**	0.011**	0.011**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.147	0.147	0.148	0.147	0.147
F-test	8.475***	8.593***	8.683***	8.285***	8.662***
Number of obs.	5,370	5,370	5,370	5,370	5,370

TABLE A.9.

A firm's ESG engagement and its implied cost of equity (DCF) - Different methods

	Dependent variable: Implied cost of equity			
	(1)	(2)	(3)	(4)
Constant	0.295***	0.398***	0.796***	0.578***
	(0.078)	(0.041)	(0.198)	(0.077)
ESG engagement				
ESGindex	-0.006**	-0.006	-0.004	-0.005*
	(0.003)	(0.004)	(0.003)	(0.003)
Control Variables				
BETA	0.048***	0.048***	0.023***	0.030***
	(0.008)	(0.005)	(0.007)	(0.007)
SIZE	-0.015***	-0.014***	-0.034***	-0.023***
	(0.004)	(0.003)	(0.009)	(0.005)
BtM	0.130****	0.135***	-0.007	0.067***
	(0.045)	(0.046)	(0.011)	(0.010)
LEV	0.002	-0.002	0.021**	0.008
	(0.013)	(0.014)	(0.009)	(0.008)
FDISP	0.011**	0.010	-0.002	0.006***
	(0.005)	(0.007)	(0.002)	(0.002)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
R-squared	0.146	0.139	0.049	0.097
F-test	9.681***	36.029***	10.860***	.
Chi-square	.	.	.	346.704***
Number of obs.	5,370	5,370	5,370	5,370