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ESG Performance and Market Capitalization of Industries in the BRICS Region: The Mediating Role of Cost of Equity

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The evaluation of environmental, social, and governance performance is a component of investment portfolio analysis that aids in the identification of potential risks and opportunities. The paper investigates the relationship between ESG performance and market capitalisation, with a keen interest in the mediating role of the cost of equity. The study focuses on industries in the BRICS region with a sample of 78 individual industries streamlined from 144 specific sectors across Brazil, Russia, India, China, and South Africa from 2019 to 2023. We use robust and flexible econometric methods that account for homoskedasticity, heteroskedasticity, multicollinearity, cross-sectional heterogeneity, and cross-sectional dependence. We find that the impact of ESG performance on market capitalization is positive and significant, irrespective of industry-specific and country-specific characteristics. Moreover, the relationship is linear but not non-linear, except for the mediating role of the cost of equity. We established an inverted U-shape curve relationship between the cost of equity and market capitalization.

Keywords: *ESG Performance; Market Capitalisation; Cost of Equity; BRICS; Market Value*.

Introduction

Environmental, social, and governance (ESG) performance scores have become crucial measures for assessing a company's ethical and sustainability practices, attracting increasing interest from stakeholders and investors; see Landi and Sciarelli (2019), Eccles et al. (2020), Barko et al. (2022) and Chen et al. (2023a). The evaluation of ESG is a constituent of investment portfolio analysis that aids in the detection of potential risks and opportunities (Folque *et al.*, 2021; Karwowski and Raulinajtys-Grzybek, 2021). In addition, the indicator assists prospective investors who have an interest in sustainable investments in avoiding investments in companies that are at financial risk due to skeptical and contentious business and environmental policy implementations (Serban *et al.*, 2022). ESG disclosure and performance scores are commonly employed approaches in sustainable business and finance (Boffo & Patalano, 2020; Liu *et al.*, 2023). This constitutes a company's environmental footprint and its interlinkages with suppliers, employees, and customers, with greater emphasis on its governance structure and ethical standards. Despite still being in its initial phase, the incorporation of ESG measures has the capacity to influence a company's financial value and performance (Nirino *et al.*, 2021; Alkaraan *et al.*, 2022; García-Amate *et al.*, 2023) and market value (Lo & Kwan, 2017; Janicka & Sajnog, 2022; Zhou *et al.*, 2022).

Numerous studies have been carried out in the past few decades regarding socially responsible and sustainable investment (see Capelle-Blancard & Petit, 2019; Aich *et al.*, 2021; S, erban *et al.*, 2022, among many others). This research has focused on the influence of corporate social responsibility and good governance on market-based and financial statement indicators of financial performance. Although these studies provide a thorough analysis of corporate social responsibility and ESG, they do not specifically address the relationship between ESG performance scores and their influence on the market capitalization of non-financial publicly listed companies in the BRICS region. In recent times, businesses have concentrated on the extent to which ESG investment can result in higher market value given its proportional link with market capitalisation (Raimo *et al.*, 2020; Zhou *et al.*, 2022; Aydogmus *et al.*, 2022; Ni & Sun, 2023; Espinosa-Mendez *et al.*, 2024), compared to traditional investing that does not take sustainability factors beyond immediate financial performance and corporate strategy to improve future performance and market capitalisation. We investigate the impact of ESG performance on the market capitalisation of non-financial publicly listed firms in the BRICS region. This would offer fresh evidence of emerging market dynamics.

There are still issues that need to be addressed despite companies in the BRICS region having made considerable improvements in their ESG performance. These improvements have seemingly resulted from implementation of ESG policies, governance, and social practices. Usually, persistent and strong regulatory frameworks are pertinent to bringing these markets in line with ESG standards across the globe (Sulkowski & Jebe, 2022). The ESG performance of companies in the BRICS countries can offer important revelations about the extent to which these emerging markets are in accordance with the accepted sustainability standards across the globe. Despite its varying social performance, Brazil faces significant environmental challenges, particularly in the areas of natural resources and agriculture (Wolford, 2008; Paulino, 2014). Nonetheless, Brazil has a strong legal structure for labour rights, but enforcement is lousy (Pires, 2008; Coslovsky, 2014). Social interventions that ensure employees' welfare and community engagement are prioritised appear far-reaching. Even with government standards improving, they continue to be sub-standard to those of advanced economies. What seems to be worrying is corruption, which is increasingly becoming a major concern, and some organisations are beginning to implement higher standards of social conduct (Lino et al., 2022). Notably, India is placing a greater emphasis on sustainability. A greater attention has been experienced from sectors such as pharmaceuticals and information communication technology demonstrating higher environmental performance (Sharma & Modgil, 2020; Mishra & Yadav, 2021). Nevertheless, resource management issues and the rise in pollution levels continue to prevail.

On the other hand, China has made substantial strides in environmental sustainability. This development has been witnessed as a result of international pressure and government policies (Li *et al.,* 2020; Wang *et al.,* 2020; Yu *et al.,* 2023). With a heightened emphasis on community engagement, safety, and worker rights, social performance is showing signs of improvement even in the midst of environmental challenges such as pollution and emissions. In a region in which socio-economic conditions and environmental regulation are evolving, ESG performance measures would have a considerable effect on capital inflows and market perception, as prospective investors are particularly interested in ESG factors in emerging markets due to the increasing concerns about governance issues and environmental impacts; see Garcia et al. (2017) and Bahadori et al. (2021).

Given the above argument, it is important to emphasise that ESG performance could potentially improve the market capitalisation of non-financial publicly listed companies in the BRICS region. This is against the backdrop of the increasing prioritisation of sustainability by investors and regulators, which is likely to have a positive impact on their market valuation. In light of this, we contribute to the existing literature on the ESG-market capitalisation nexus by considering the mechanisms and mediation effects of the cost of equity to offer fresh evidence on the subject matter. The literature is scant on the mediating role of cost of equity in the relationship between ESG performance and market capitalisation. We assess the mediation effect based on the inverted U-shape curve assumption, which suggests that there is a non-linear relationship between the cost of equity and market capitalisation and perhaps when the cost of equity reaches an inflection point, a further increase in the cost of equity could likely lead to a decrease in market capitalisation. This is a reflection of the hypothesis that assumes companies' market value is a function of the composition of equity ownership; see McConnell and Servaes (1990). Vitolla et al. (2020) found a significant and negative relationship between the cost of equity and market value, while Balakrishnan et al. (2021) understand that market capitalisation significantly leads to an increase in the cost of equity. This strongly suggests that the association between the cost of equity and market value is inconsistent and may be non-linear.

Moreover, there exists a notable methodological gap in the existing literature in relation to a robust and flexible econometric approach that could address potential cross-sectional dependence and also various specifications that may potentially address homoskedasticity, heteroskedasticity, heterogeneity, and non-linearity. Therefore, we employ the linear regression method with some important specifications, such as robust standard errors, bias-corrected, weighted, clustered standard errors, mixed-effect multilevel regression, and Merlin regression methods. For robust inference, we also use Driscoll-Kraay standard error regression to address potential cross-sectional and temporal interdependence in the errors of the cross-section of industries in the study. These methods differ from what the existing related studies have used: S¸erban et al. (2022) used multiple linear regression and contemporary quantile regression; Vochenko et al. (2024) used a multiple linear regression method; Zhou et al. (2022) also used random and fixed effects regression methods; and Espinosa-Mendez et al. (2024) utilised the dynamic panel GMM estimation method.

We organise our study into five sections: introduction, empirical literature review, methods and data, which encompass the empirical model and methodology, and conclusion summarising the study and highlighting the practical implications of the findings.

Empirical Literature Review

The Relationship Between ESG Performance and Market Capitalization

Companies' valuation has essentially been attributed to some varying measures. These are physical assets and financial and non-financial measures like corporate brand image and reputation (S¸erban *et al.,* 2022). Recently, corporate social responsibility has gained traction, with different indicators used to measure the extent of its impact (Carnevale *et al.,* 2012; Capelle-Blancard & Petit, 2019; Aich *et al.,* 2021; Karwowski & Raulinajtys Grzybek, 2021; Bofinger *et al.,* 2022). Mostly, investors develop investment behaviour based on socially responsible investments. The ESG factors provide insights for investors to invest in companies with environmentally friendly and sustainable practices that target both ethical issues and financial goals (Landi & Sciarelli, 2019; Eccles *et al.,* 2020; Barko *et al.,* 2022). With the integration of

ESG strategies and policies into portfolio theory, ESG could potentially become an essential factor influencing investments in the stocks of companies (Li *et al.*, 2022).

The relationship between ESG performance measures and a company's market capitalisation is a contentious issue. The existing literature emphasises on the importance of sustainable finance for risk reduction and long-term market capitalisation. Cremasco and Boni (2022) argues that the financial performances of companies are mostly contingent upon the financial incentives of management which are likely to influence the value of firms. A plethora of studies suggest standardising and harmonising of ESG performance for greater comparability and transparency among companies (Kotsantonis & Serafeim, 2020; Romana *et al.*, 2022). According to Vochenko et al. (2024), there exist three distinct relationships between ESG measures and the market value of companies in the existing literature: positive, negative, and insignificant relationships. Our review of related and existing studies supports this assertion and confirms both value-enhancing and shareholder expense theories.

In retrospect, Deswanto and Siregar (2018) examined the association between environmental disclosure scores, financial performance, and market value of Indonesian companies. The outcome of the finding suggests that environmental disclosures have no significant impact on the market value of Indonesian companies. The study spanned 2012 to 2014 with an observation of 211 across multiple industries. Aydogmus et al. (2022) investigated the relationship between ESG scores and firm value for 1720 companies for period 2013 to 2021 used a structural equation modelling. The authors measured the market value of firms as Tobin Q and applied the fixed effect regression method. The outcome of the findings suggests that ESG is an important indicator of firm value, suggesting that higher ESG scores is a reflection of high financial returns. Using Indian energy sector as a case study, Behl et al. (2022) found that there is a negative impact of ESG factors on energy-related companies' value in the short run and a positive impact in the long-run. The study used a sample of 62 companies from 2016 to 2019 using a structural equation model. Similarly, the authors used Tobin Q as an economic measure of the market value of the energy-related companies. Zhou et al. (2022) also assessed the impact of ESG performance scores on the firm value of 167 Chinese listed companies for the period 2014–2019 using both random and fixed effects regression methods. The results indicate that ESG performance scores are positive drivers of the market value of listed companies in China. The authors also used Tobin Q as a measure of market value. In a comprehensive study, S¸erban et al. (2022) applied contemporary quantile regression and multiple regression methods to a sample of 5557 companies across 78 countries. A positive and direct impact of ESG on market capitalisation was observed.

The relevant and related studies present a notable gap in relation to the empirical and methodological approaches. Most of the studies only focus on the overall ESG measure and not the disaggregate measures. Also, the industrial and country-specific effects are usually ignored. In addition, the mediating role of the cost of equity has not been considered. These suggest a lack of comprehensive analysis to unravel the heterogeneity of the impact of ESG on market capitalisation. We consider investigating the relationship between ESG performance measures and the market capitalisation of non-financial publicly listed firms in the BRICS region against the backdrop of value-enhancing and shareholder expense theories. Value-enhancing theory underpins the structure that focuses on policies and strategies to improve a company's value (Zeidan & Shapir, 2017). This is mostly practised in business and finance. The major aspects of value-enhancing theory are resource allocation, core competencies, innovation, strategic mergers, and cost management. For instance, investment in green technologies could potentially crowd-in investors, enhance the corporate brand, reduce systemic risks, and propagate innovation. On the other hand, the concept that recognises costs incurred by shareholders based on management actions is referred to as the shareholder expense theory (Bartram, 2000; Vishwanath, 2007). The shareholder expense theory emphasises on sub-standard decisionmaking, agency costs, management self-centered initiatives, reinforcement, and corporate governance mechanisms. However, minimising shareholder expense requires robust governance mechanisms, performance-based compensation, and increased transparency. This eventually results in minimising expenses and maximising shareholder value.

The Mediating Role of Cost of Equity

The relationship between Environmental, Social, and Governance (ESG) practices and market capitalisation could be significantly attributed to the cost of equity as a key factor. Chen et al. (2023b) find that ESG factors could considerably decrease the cost of equity of companies. In addition, operation capacity, referred to as leverage, tends to mediate the link between ESG and the market value of enterprises (Zhou *et al.*, 2022). ESG practices could potentially influence a company's operational efficiency and reputation (Nirino *et al.*, 2021; Janicka & Sajnog, 2022). In general, these reflect the overall sustainability of a company, which ultimately impacts its market value. A positive and direct impact of ESG factors on market capitalisation has been linked with strong ESG practices aided by operational efficiency, improved reputation, investor attraction, and risk management Nirino et al. (2021); Bofinger et al. (2022); Janicka and Sajnog (2022); Zhou et al. (2022).

The cost of equity is an essential indicator that places emphasis on the return a company needs to plan whether a prospective investment meets capital return requirements (El Ghoul *et al.*, 2011). Most often, companies that implement robust ESG practices are perceived by investors as lower risk, leading to a lower cost of equity (Giese *et al.*, 2019; Khanchel & Lassoued, 2022). This is mostly reflected in investor demand for shareholding in these companies, as strong ESG credentials lead to improved financial performance, compliance, and regulatory benefits. In view of this, improved ESG practices and implementation lead to lower costs of equity and lower risk perception, which in turn escalate into a rise in market capitalisation. This highlights the importance of investing in robust ESG initiatives for ethical and

regulatory reasons, as well as enhancing financial performance and market value.

Methods and Data

Empirical Model

Based on the value-enhancing and shareholder expense theories, we assume that market capitalisation is a function of ESG performance and other factors. Hence, we formulate the model:

$$Market\ capitalisation = f(ESG\ performance, X) \quad (1)$$

Where X represents other factors that could potentially impact market capitalisation and ESG performance for industry i at time t. Taking into account country- and industry-specific fixed effects (β_{0i}) and error terms ϵ_{it}, we derive the model below:

$$Market\ capitalization_{it} = \beta_{0i} + \beta_1 ESG_{it} + \beta_2 Cost\ of\ equity_{it} + \beta_3 Cost\ of\ equity_{it}^2 + \beta_4 Leverage_{it} + \beta_5 Price - to - book_{it} + \epsilon_{it} \quad (2)$$

In equation (2), the foundation of the model relies on the inverted U-shape curve assumption of cost of equity as a mediating variable, denoted as $Cost\ of\ equity_{it}$ (linear term) and $Cost\ of\ equity_{it}^2$ (quadratic term). The rationale behind this assumption is that companies that implement robust ESG policies and strategies are mostly perceived to have lower risks, which eventually leads to a lower cost of equity (Giese *et al.*, 2019). Further justification of the mediating role of cost of equity is emphasised in Section 2.2.

The objective of the model is to evaluate the influence of ESG performance on the market capitalisation of industries in the BRICS regions. The importance of ESG performance in assessing companies' long-term sustainability and risk is growing, especially in emerging markets where governance concerns and environmental effects are more prominent; see Garcia et al. (2017) and Bahadori et al. (2021). Market capitalisation is a holistic indicator of a company's worth in the market, which is determined by a range of factors such as financial performance, potential for growth, and how investors perceive the company (S¸erban *et al.*, 2022). Companies that demonstrate robust ESG performance may enjoy enhanced opportunities for financing or more advantageous borrowing conditions, which can influence their level of debt (Raimo *et al.*, 2021; Asimakopoulos *et al.*, 2023). This supports the notion that ESG performance can boost firm value by fostering better stakeholder relationships, which would ensure long-term sustainability by mitigating risk and enhancing competitive advantage.

By including leverage and price-to-book ratio as additional control variables aside from the linear and quadratic terms of cost of equity, we assume that companies that demonstrate robust ESG performance may be exposed to better opportunities for financing or more advantageous borrowing conditions, which can influence their leverage. This has been extensively argued by Raimo et al. (2021) and Asimakopoulos et al. (2023). Evidence suggests that a higher price-to-book ratio could indicate anticipation of significant growth in profitability, whereas a lower price-to-book ratio may suggest potential risk or undervaluation; see Block (1995). ESG performance can have a significant impact on these expectations, especially in terms of how the market assesses the worth of intangible assets such as reputsation and risk management.

Empirical Methods

We employ several econometric methods and different specifications with linear regression, mixed effect multilevel regression, Merlin regression, and Driscoll-Kraay standard errors regression methods. Generally, idiosyncratic assumptions are commonly employed in the social sciences to assess the quality of linear models. The assumptions encompassed in this context are additivity and linearity, normal distribution, homoscedasticity (also known as homogeneity of variance), and independence of the predictors (Greene, 2003; Wilcox, 2010; Field, 2013; Darlington & Hayes, 2016; Hayes, 2017). The principles of additivity and linearity guarantee an accurate description of the relationship between dependent and independent variables (Field, 2013). Statistically, a normal distribution depicts the existence of a normal distribution of errors among variables. Homoscedasticity refers to the property of having equal variance in the conditional distributions of variables (Darlington & Hayes, 2016). Variable independence is a requirement for achieving independence between explained and explanatory variables. These assumptions confirm that a model is logically consistent in explaining a phenomenon, and deviations from linearity suggest that a variable is not significant (Hayes, 2017). The remaining assumptions pertain to the distributions of estimation errors, while independence guarantees that the errors are uncorrelated. Given these important assumptions, we used the hascons, robust, bias-corrected, clustered, and weighted standard errors to address normality, homoskedasticity, heteroskedasticity, multicollinearity, and cross-sectional heterogeneity issues that our empirical model may encounter.

Subsequently, we used an extended method over the linear regression method. The mixed effect multilevel regression method, also referred to as hierarchical linear modelling or mixed models, offers several benefits when analysing data with a nested or hierarchical structure. The method offers numerous advantages, such as integrate random effects and manage hierarchical data structures (Crowther, 2017). Moreover, it enhances the estimation of fixed effects, enhances generalisability, and handles missing data. Notably, it accommodates complex covariance structures by incorporating both fixed and random effects and maintaining robustness even when assumptions are violated. Essentially, the mixed effect multilevel regression method is a flexible and robust statistical method that enables a profound investigation of explicit and hierarchical (structural) data in different research domains (Crowther, 2019).

Given that the mixed effect may not be able to capture the non-linearity of predictors nested on maximum likelihood, we employed the Merlin regression method. Merlin regression is a more advanced regression method that builds upon traditional mixed models. The method has some notable advantages. It has the capability to model intricate relationships and effectively handle data that involves multiple levels and spans over a long

period of time; see Crowther (2020). The model has the ability to include random effects and hidden variables. It also offers a range of link functions and distributions. The method is very adaptable and can handle errors in the linear model. In addition, the technique is capable of effectively handling missing data, and it also allows for level-specific random effects. We utilised the Gaussian family link approach.

For robustness' sake, we finally use Driscoll-Kraay standard error regression method, which is specifically designed to address cross-sectional dependence; see Driscoll and Kraay (1998). This is crucial when dealing with datasets where some variables exhibit clear cross-sectional dependencies (i.e., the observations are not independent across cross-sections) and others do not; see, for example, Appiah et al. (2022), Yang et al. (2022) and Jain and Mohapatra (2023). Standard OLS assumes independence across observations, but this assumption often fails in panel data, leading to biased standard errors and incorrect inference (Pesaran, 2015). Driscoll-Kraay corrects for this by adjusting the standard errors, making the inference more reliable (Driscoll & Kraay, 1998). Driscoll-Kraay standard errors are a useful tool in regression while using the pooled Ordinary Least Squares (OLS) method. The method is also robust to serial correlation and heteroskedasticity, making it essential in panel data analysis by improving efficiency and accuracy. Driscoll-Kraay standard errors are suitable for both balanced and unbalanced panels, making them suitable for a wide range of datasets with varying time periods and cross-sectional units.

Data

The data used in this study is originally sourced from Makarov (2022) but were compiled from Wharton Research database, Refinitiv and Compustat Global and is an unbalanced panel data for a sample of 78 individual industries streamlined from 144 sectors from Brazil, Russia, India, China, and South Africa for the period 2019 to 2023. The period was chosen based on the availability of data for the selected countries in the study. In this study, we focus on industrial-level impact rather than firm-level impact. Given this, we aggregate the individual firm data for each variable in each industry for every country.

Following S¸erban et al. (2022), we use market capitalisation as the dependent variable for the study. Market capitalisation, which measures the overall value of a company, is calculated by multiplying the current market price of a company's shares by the total number of outstanding shares. The number of outstanding shares is the total number of shares held by all the shareholders of the company. ESG performance score is the independent variable. The ESG score used in the analysis was calculated and provided by Thomson Reuters Eikon Refinitiv. The score ranges from 0, which indicates the weakest, to 100, which represents the best. This indicator has been used in numerous studies, for example, Garcia et al. (2017), Chen and Yang (2020), S¸erban et al. (2022), among many others. Other variables such as price-to-book ratio, leverage, and cost of equity were used as control variables. The price-to-book ratio is a commonly used measure to assess a company's value in relation to its book value (Nissim & Penman, 2003; Chen *et al.*, 2023b). It provides insight into the market's perception of a company's growth potential. The use of leverage, which is the ratio of debt to equity, has an impact on both the risk level of a company and the cost of its capital (Nissim & Penman, 2003; Raimo *et al.*, 2021; Asimakopoulos *et al.*, 2023). Having higher leverage can increase both the potential gains and losses, which can have an impact on the market value of a company. The cost of equity is a measure of the return that investors anticipate in exchange for assuming the risk of investing in a company's equity (Giese *et al.*, 2019).

Results

Descriptive Statistics

We formally shed light on the descriptive statistics of the variables used in the study. These statistics are presented in Table 1. The average growth rate of market capitalization of firms in the BRICS region for the sample period was 8.17 % with a standard deviation of 1.56 %. ESG performance had a below-average score of 48.29 out of 100 with a standard deviation of 17.99. Among the ESG constituents, the governance performance score showed the greatest improvement with an average score of 52.92 which is better than the social (48.15) and environmental (48.29) performance scores. However, the environment performance score experienced the highest variation with a standard deviation of 23.67. Meanwhile, cost of equity had an average growth rate of 8.10 %, price-to-book ratio had an average growth rate of 2.67 % whereas leverage had an average growth rate of 0.59 %. In contrast, price-to-book ratio experienced the highest variation as compared to leverage and cost of equity, with a standard deviation of 7.07 %.

The descriptive statistics show that the market capitalization of BRICS firms is increasing steadily, with some fluctuations, and perhaps the ESG performance of industries in the BRICS region, especially in governance, is slightly better than average but still has room for improvement. The measures such as leverage, and cost of equity are relatively stable, but the price-to-book ratio is considerably volatile. This further underscores the need for investigations to determine whether ESG performance significantly influences market capitalization. This is particularly relevant given that companies that prioritize ESG performance tend to achieve sustainable growth.

Baseline Linear Model

We present the baseline regression model results in this section. The model assesses the linear relationship between ESG performance and market capitalisation of non-financial publicly listed companies from the BRICS region. The outcome of our findings is presented in Table 1.

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Table 1

Descriptive Statistics

Statistics	Mean	St. Dev.	Min. Value	Max. Value	Obs.
Market capitalisation	8.17	1.56	1.54	12.61	1,394
ESG	48.29	17.99	0.39	91.33	1,394
Environmental	43.36	23.67	0.00	93.98	1,394
Social	48.15	22.76	0.45	97.56	1,394
Governance	52.92	21.48	0.86	97.69	1,394
Cost of equity	8.10	2.65	1.40	19.06	1,394
Leverage	0.59	1.25	0.00	16.49	1,394
Price-to-book ratio	2.67	7.07	-141.13	117.62	1,394

We use eight regression approaches designated as column (1) to column (8). The first six regression methods follow the linear regression approach where column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique that is used to double-check the results of the other seven methods to ensure the robustness of our findings, given that it is flexible enough to handle linear and non-linear relationships and could also explicitly handle repeated observations, which are the characteristics of our data. Our aim here is to extensively comprehend whether the data is more robust to different estimators and specifications.

All the estimators consistently show a relationship between ESG performance and market capitalisation. Our analysis revealed that the ESG performance of non-financial publicly listed companies in the BRICS region, as shown from column (1) to column (8), has the potential to positively impact their market capitalisation. At a significance level of 1 %, an increase of one percentage point in ESG performance scores has the potential to consistently increase market capitalisation by approximately 0.03 %. When considering how market capitalisation is affected, it becomes clear that leverage and the quadratic term of cost of equity may have a negative impact, while the price-to-book ratio and the linear trend of cost of equity are positive factors when implementing ESG policies. This suggests that a significant increase in the cost of equity could greatly reduce the market value of companies, just as a higher debt-to-equity ratio could have a similar impact on companies. We confirmed an inverted U-shaped curve relationship between cost of equity and market capitalisation. This finding is robust to different specifications from the linear regression, mixed effect multilevel regression, and Merlin regression methods as we account for potential biases that might arise from homoskedasticity, heteroskedasticity, and independent cross-sectional correlations while accounting for fixed effects and random effects simultaneously. Notably, the F-statistics of all the estimated models suggest goodness of fit, as the data fit the models and are valid for inference.

Non-Linear Impact of ESG on Market Capitalisation

Here, we assess the non-linear relationship between ESG performance scores and market capitalisation. The results are presented in Table 3. We follow the same methodology used in the baseline linear regression estimations. Chen and Yang (2020) argue that there exists both linear and non-linear relationships between ESG performance and firm value. They contend that in the short-run, ESG factors have a tendency to positively impact the market value of companies. However, this effect is likely to diminish over time, indicating a trade-off between investors' shareholding decisions and potential returns. In contrast to this argument, Behl et al. (2022) emphasised that the relationship between ESG factors may be linear. However, there is a school of thought which argues that moderate improvements in ESG might have a different impact compared to significant improvements or high levels of ESG performance (Nollet *et al.,* 2016; Xie *et al.,* 2019; Albitar *et al.,* 2020; Zhou *et al.,* 2022; Rastogi *et al.,* 2024). Against this backdrop, we assess the nonlinear relationship between ESG performance and market capitalisation of non-financial publicly listed companies in the BRICS region. We find that the quadratic term of ESG performance has no significant relationship with market capitalisation. Evidence from all the eight methods provide no evidence of non-linear relationship between ESG performance and market capitalisation. This further suggests that there is only evidence of linear relationship between ESG and market capitalisation in support of Behl et al. (2022) as shown in Table 2.

Table 2

Baseline Linear Model

Estimator	1	2	3	4	5	6	7	8
ESG	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Leverage	-0.31***	-0.31***	-0.31***	-0.31***	-0.31***	-0.27***	-0.31***	-0.31***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)
Price-to-book ratio	0.02***	0.02**	0.02**	0.02**	0.02*	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cost of equity	0.68***	0.68***	0.68***	0.68***	0.68***	0.85***	0.68***	0.68***
	(0.07)	(0.07)	(0.08)	(0.08)	(0.16)	(0.07)	(0.07)	(0.07)
Cost of equity^2	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.04***	-0.03***	-0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Constant	3.60***	3.60***	3.60***	3.60***	3.60***	2.90***	3.60***	3.60***
	(0.39)	(0.41)	(0.41)	(0.00)	(0.91)	(0.42)	(0.39)	(0.39)
F-stat.	63.99***	52.61***	50.93***	49.12***	13.989	86.10***		
R_2	0.19	0.19	0.19	0.19	0.19	0.24		
Wald chi^2							321.31***	
Var (residual)							1.97*** (0.07)	
sd (residual)								1.40*** (0.03)
observation	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394

*Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.*

Table 3

Non-Linearity of ESG Performance

Estimator	1	2	3	4	5	6	7	8
ESG^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.30***	-0.30***	-0.30***	-0.30***	-0.30***	-0.26***	-0.30***	-0.30***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)
Price-to-book ratio	0.02***	0.02**	0.02**	0.02**	0.02*	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cost of equity	0.71***	0.71***	0.71***	0.71***	0.71***	0.87***	0.71***	0.71***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.15)	(0.07)	(0.07)	(0.07)
Cost of equity^2	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.04***	-0.03***	-0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Constant	4.09***	4.09***	4.09***	4.09***	4.09***	3.40***	4.09***	4.09***
	(0.36)	(0.37)	(0.37)	(0.38)	(0.83)	(0.40)	(0.36)	(0.36)
F-stat.	65.86***	58.10***	56.41***	54.58***	14.72***	86.30***		
R_2	0.19	0.19	0.19	0.19	0.19	0.24		
Wald chi^2							330.75***	
Var (residual)							1.96*** (0.07)	
sd (residual)								1.40*** (0.03)
observation	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Disaggregated ESG Performance on Market Capitalisation

Subsequently, we disaggregate the ESG performance score into its sub-dimensions, that is, environmental performance score, social performance score, and governance performance score. We, however, aim to assess the dimensional impact of the ESG performance score on market capitalisation given that the existing literature finds heterogeneous impact of the disaggregate ESG performance score. For instance, Al-Ahdal et al. (2020) found that governance performance score has an insignificant impact on financial performance. Atan et al. (2018) also argue that there is no significant relationship between ESG factors and firm profitability or market value, and an insignificant relationship exists with cost of capital, but the overall ESG score significantly influences a company's value and profitability. Similarly, Deswanto and Siregar (2018) conclude that environmental disclosure and performance have no discernible impact on the market value of firms. These revelations suggest inconclusive relationship between ESG factors and the financial position or valuation of firms, and perhaps further investigation is needed to unravel the relationship in different perspective. We present the outcome of the findings in Table 4.

Table 4

Disaggregated ESG Performance Scores

Estimator	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Social	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Governance	0.01***	0.01***	0.01***	0.01***	0.01*	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.32***	-0.32***	-0.32***	-0.32***	-0.32***	-0.28***	-0.32***	-0.32***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)
Price-to-book ratio	0.02***	0.02**	0.02**	0.02**	0.02*	0.03***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cost of equity	0.63***	0.63***	0.63***	0.63***	0.63***	0.80***	0.683***	0.63***
	(0.07)	(0.07)	(0.08)	(0.08)	(0.15)	(0.08)	(0.07)	(0.00)
Cost of equity^2	-0.02***	-0.03***	-0.03***	-0.03***	-0.03***	-0.04***	-0.03***	-0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Constant	4.02	4.02***	4.02***	4.02***	4.02***	3.33***	4.02***	4.02***
	(0.39)	(0.42)	(0.42)	(0.42)	(0.94)	(0.42)	(0.38)	(0.38)
F-stat.	51.69***	46.70***	45.41***	43.94***	14.32***	68.64***		
R_2	0.21	0.21	0.21	0.21	0.21	0.26		
Wald chi^2							363.95***	
Var (residual)							1.92*** (0.07)	
sd (residual)								1.39*** (0.03)
observation	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394

*Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique that is flexible enough to handle linear and non-linear relationships.*

Evidence from all eight estimations suggests that environmental and governance performances have the tendency to increase market capitalisation. We observed similar coefficients from all the estimations for both environmental performance and governance performance with market capitalisation. This finding is evident after controlling for leverage, price-to-book ratio, cost of equity, and the quadratic term of cost of equity. Here, we also confirm the linear and non-linear mediation effects of the cost of equity. A plethora of studies have found considerable evidence of environmental performance impact on firm value, which is assumed to be a contributing factor of operation activities; see, for example, Jacobs et al. (2010), and Yadav et al. (2016). The study reveals that higher environmental performance index scores are linked to increased market value, but not to improved operating performance. Moreover, the implementation of good corporate governance is considered as a catalyst of higher stock returns and eventually higher firm valuation (Braga-Alves & Shastri, 2011). This is consistent with our evidence of governance performance showing relatively significant impact on market capitalisation. Social reporting has been pointed as having no significant association with market value or stock prices of listed companies. Carnevale et al. (2012) showed that most investors do not place value on social reporting; hence, social performance may not have a notable impact on the market value of listed firms.

Country-Specific Effects of ESG on Market Capitalization

In this section, we delve into the country heterogeneity on the assumption that the linear regression with robust clustered standard errors may not fully capture the varying impact of ESG on market capitalisation considering the country-specific fixed effects. In light of this, we split our sample based on the respective countries to assess the country-specific ESG impact on market capitalisation. We present the outcome of our findings in Table A1 for Brazil, Table A2 for Russia, Table A3 for India, Table A4 for China, and Table A5 for South Africa.

All the estimators consistently show a positive relationship between ESG and market capitalisation for all the countries. Our analysis revealed that the ESG performance of non-financial publicly listed companies in the BRICS region, as shown from column (1) to column (8), has the potential to homogeneously and positively impact the market capitalisation of the industries. However, when considering how market capitalisation is affected, we observed heterogeneity in the mediation effect of the cost of equity. Given that, in Brazil, Russia, and India, there is an inverted U-shape relationship between the cost of equity and market capitalization. This implies that there are increasing returns in the short run and diminishing returns in the long run in Brazil, Russia, and India. In contrast, the opposite was observed for China, as we observed that in the short run, the cost of equity is likely to have diminishing returns on market capitalisation but increasing returns in the long run, indicating a U-shaped curve, while the cost of equity has no significant influence on the market capitalisation of South African industries, both in linear and quadratic terms, indicating no specific mediation effect. In terms of the magnitude of the impact, we observed that the impact of ESG performance is relatively larger in Brazil and Russia, followed by South Africa, while India and China jointly share the same coefficients.

Industry-Specific Effects of ESG on Market Capitalisation

Market capitalisation is typically influenced by ESG performance, which impacts brand reputation (Maaloul *et al.*, 2023), regulatory compliance (Mooneeapen *et al.*, 2022), operational efficiency (Zhou *et al.*, 2022), and overall sustainability (Oprean-Stan *et al.*, 2020). In general, industry-specific evaluations offer a more precise valuation by considering the specific impact of these factors on companies in a variety of sectors. Unique ESG opportunities and risks are experienced by various industries (Garcia *et al.*, 2017). In particular, the technology sector may prioritise data privacy and governance concerns, while the energy sector may be particularly vulnerable to environmental challenges as a result of its large carbon emissions. A more effective and efficient risk management strategy is developed for each industry by emphasising the comprehension of these specific effects. In view of this, we split our sample based on the respective industries to assess the industry-specific ESG impact on market capitalisation. We present the outcome of our findings in Table A6 for the transportation and utilities industry, Table A7 for mineral resources industry, Table A8 for the food, beverages, industrial goods and services industry, Table A9 for the pharmaceutical and health industry, Table A10 for the energy-fossil fuels industry, Table A11 for the real estate industry, Table A12 for the ICT and telecommunication industry, and Table A13 for other industries comprising of apparel and accessories retail, appliances, tools and housewares, auto vehicle, parts and service retail, broadcasting, casinos and gaming, computer and electron retail, construction supplies and fixtures, consumer goods and conglomerates, department stores, forest and wood products, home furnishings retail, home improvement products and services retail, home building, hotels, motels and cruise lines, educational service providers, non-paper containers and packaging, paper packing, personal products, restaurants and bars.

Our evidence suggests that there is a sizeable impact of ESG performance on the market capitalisation of firms listed under food, beverages, industrial goods and services, ICT and telecommunication, as well as real estate, despite ESG performance exhibiting a consistent, positive, and significant impact on market capitalisation for all industries.

Subsequent to these industries are energy-fossil fuels and mineral resources industries. We observed that a percentage point increase in ESG performance tends to increase the market capitalisation of firms in the food, beverages, industrial goods and services, ICT and telecommunication industries, as well as real estate, by 0.05 % and 0.04 %, respectively, while firms in the energy-fossil fuels and mineral resources industries are likely to experience 0.03 % increase in their market capitalisation. Meanwhile, the pharmaceutical, health and other industries group specified above are likely to experience 0.02% increase in their market capitalisation as a result of improvement in their ESG performance. We observed that the transportation and utilities industry is likely to experience the least impact on ESG on their market capitalisation, that is, 0.01 %. In general, we find that ESG performance is a significant driver of market capitalisation irrespective of the industry in which a firm is established. This is consistent with the existing literature, which suggests that irrespective of firm size, industry-specific, and sector-specific characteristics, ESG factors could potentially increase the market value, market efficiency, and profitability of listed firms; see Bofinger et al. (2022), S¸erban et al. (2022) and Zhou et al. (2022).

Mediating Role of Cost of Equity

The mediating role of cost of equity is considerably a key factor for the ESG-market capitalisation nexus. ESG practices can enhance a company's operational efficiency (Zhou *et al.*, 2022), reputation (Nirino *et al.*, 2021), and market capitalisation (Janicka & Sajnog, 2022), promoting sustainability, investor attraction, and risk management, ultimately influencing its overall market value. We assess the mediation role on the premise of an inverted U-shape curve assumption, which suggests that there is a non-linear relationship between the cost of equity and market capitalisation and perhaps when the cost of equity reaches an inflection point, a further increase in the cost of equity could

likely lead to a decrease in market capitalisation. The outcome of the findings is presented in Table A14 in the Appendix. We used linear robust standard errors regression and mixed effects multilevel regression methods. We exclude leverage and price-to-book ratios from the models. Here, we only focus on the direct mediation effect of cost of equity between ESG performance and market capitalisation. We considered both the linear term and the quadratic term of the cost of equity separately and simultaneously. Our evidence suggests that the linear and quadratic terms of the cost of equity separately have no significant impact or partial mediation role between ESG and market capitalisation. However, in the combined model with both the linear and quadratic terms, both of them simultaneously showed significant coefficients with market capitalisation. The linear term of cost of equity depicted a positive and significant relationship with market capitalisation whereas the quadratic term showed a negative and significant relationship. This confirms that an inverted U-shaped curve relationship exists between the cost of equity and market capitalisation. Despite the cost of equity exhibiting a partial mediating role, it is instructive to emphasise that its role is considerably important for market capitalisation considering the influence of ESG practices.

Robustness

When cross-sectional errors are not independent and the interdependence between cross-sectional units fails to account for it, the error term in a regression shows cross-sectional dependence. The presence of correlation among the units violates the fundamental assumption of ordinary least squares (OLS) that the error term is independent and follows an identical distribution (Pesaran, 2015, 2021). Given this, we follow a different approach to ascertain whether our baseline regression results are sensitive to cross-sectional dependence. By this approach, we aggregate the repeated time values in each country's data for specific industries and consequently use the Driscoll-Kraay standard error regression, which is robust and flexible for addressing cross-sectional and temporal interdependencies of errors among the cross-section of industries in our sample. First, we test for cross-sectional dependence, and the outcome is presented in Table A15 in the Appendix. We use the cross-sectional dependence test proposed by Pesaran (2015). Our evidence suggests that cross-sectional dependence is present in our sample of industries for all series. Additional preliminary tests also suggest that the series used are not susceptible to unit root given that at 1% significance level, the null hypothesis of unit root is rejected for all variables, and therefore, our variables are stationary; see also Table A15.

We now discuss the robustness results with the Driscoll-Kraay standard error regression. We use three approaches: the pooled, fixed effects, and random effects estimation methods. Specifically, in Table A16, column (1) presents the outcome of the pooled regression, column (2) presents the results of the random effects, and column (3) presents the fixed effects results. The first three columns represent the estimations for the overall ESG performance score, while the last three columns represent the estimations for the disaggregated ESG performance scores. Overall, we find that ESG performance and market capitalisation are positively related and consistent with our baseline linear, industry-specific, and country-specific models. These results are robust to cross-sectional dependence, country heterogeneity and industry heterogeneity, as well as homoskedasticity and heteroskedasticity issues that may potentially bias the estimated coefficients.

We further assess whether our findings are sensitive to multicollinearity issues in the respective models since we find that the independent variables are correlated; see Table A17. We present the findings in Table A18. All indications suggest that our model did not suffer from multicollinearity, given that the four models built to systemically unravel the issue suggested otherwise. Specifically, in models 1 and 3, where the linear and quadratic terms of cost of equity are included, the variance inflation factors surpass the acceptable threshold of 10 and the tolerance level is lower than 0.2, suggesting multicollinearity. In spite of this, the mean variance inflation factor was less than 10, which suggests that no issue of multicollinearity existed in our models. Given the evidence from the postestimation statistics, we conclude that the findings are statistically valid for inference and that our methods are robust and flexible in addressing multicollinearity, homoskedasticity, heteroskedasticity, cross-sectional dependence, and country- and industry-specific heterogeneity.

Conclusion

We investigate the relationship between ESG performance and market capitalisation with a keen interest in the mediating role of the cost of equity. The study focuses on industries in the BRICS region with a sample of 78 individual industries streamlined from 144 specific sectors across Brazil, Russia, India, China, and South Africa from 2019 to 2023. We use robust and flexible econometric methods that account for homoskedascity, heteroskedascity, multicollinearity, cross-sectional heterogeneity, and cross-sectional dependence.

We find valid and strong evidence that overall ESG performance plays a crucial role in influencing the market capitalisation of non-financial publicly listed companies in the BRICS region. However, heterogeneity exists among the disaggregated ESG performance indicators, that is, environmental, social, and governance performance scores. Consistently, we observed that environmental performance exhibited a positive and significant relationship with market capitalisation whereas governance performance and social performance showed varied impacts on market capitalisation based on specific econometric estimators. Despite the varying results, it is important to emphasise that governance performance exhibited a noteworthy relationship with market capitalisation more than social performance. Apart from this, we find that the impact of ESG on market capitalization is positive and significant, irrespective of industry-specific and country-specific characteristics, in support of Lo and Kwan (2017), Janicka and Sajnog (2022), Zhou et al. (2022), Espinosa-Méndez et al. (2024). Moreover, the relationship is linear but not non-linear, except for the mediating role of the cost of equity. We established an inverted U-shape curve relationship between the cost of equity and market capitalization.

We validated both value-enhancing and shareholder expense theories in our study. The research highlights the importance of ESG performance in enhancing market capitalization in the BRICS region. It suggests that governments and regulatory bodies should promote ESG practices among non-financial publicly listed companies. Perhaps by enforcing stricter environmental regulations, supporting green technologies, and encouraging industries to adopt sustainable practices. It is important to prioritise strengthening corporate governance and, most especially, develop specific policies that take into account the unique circumstances of each country and industry. By conducting sector-specific studies, developing customised ESG guidelines, and collaborating with industry associations, companies can enhance the effectiveness of their ESG practices. It is important to consider the cost of equity due to the effect of ESG on market capitalization. Financial institutions should take into account environmental, social, and governance (ESG) factors when evaluating risk and determining the costs of equity. Additionally, companies should be acknowledged and encouraged to enhance their ESG performance. We need to take a balanced approach to ensure that our ESG investments continue to yield positive results without reaching a point of diminishing returns.

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Data Availability Statement

The datasets generated during and/or analysed during the current study are available in the Dataverse repository, https://doi.org/10.7910/DVN/RRZ6TC

Appendix Online Supplementary Information

Supplementary Results

Table A1: BRAZIL

Estimator	1	2	3	4	5	6	7	8
ESG	0.04***	0.04***	0.04***	0.04***	0.04**	0.05***	0.04***	0.04***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Leverage	-0.23***	-0.23***	-0.23***	-0.23***	-0.23***	-0.20***	-0.23***	-0.23***
	(0.05)	(0.04)	(0.04)	(0.05)	(0.06)	(0.04)	(0.04)	(0.04)
Price-to-book ratio	0.14***	0.14***	0.14***	0.14***	0.14**	0.17***	0.14***	0.14***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)	(0.04)	(0.03)	(0.03)
Cost of equity	0.43***	0.43**	0.43**	0.43**	0.43*	0.69***	0.43***	0.43***
	(0.12)	(0.14)	(0.15)	(0.15)	(0.23)	(0.14)	(0.12)	(0.12)
Cost of equity^2	-0.03***	-0.03***	-0.03***	-0.03**	-0.03**	-0.04***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	4.28***	4.28***	4.28***	4.28***	4.28**	2.47**	4.28***	4.28***
	(0.72)	(0.85)	(0.86)	(0.88)	(1.78)	(0.80)	(0.71)	(0.71)
F-stat.	56.76***	59.07***	55.96***	51.59***	61.10***	75.76***		
R_2	0.50	0.50	0.50	0.50	0.50	0.57		
Wald chi^2							289.79***	
Var (residual)							1.31***	
							(0.11)	
sd (residual)								1.14***
								(0.05)
observation	290	290	290	290	290	290	290	290

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A2: RUSSIA

Estimator	1	2	3	4	5	6	7	8
ESG	0.04***	0.04***	0.04***	0.04***	0.04**	0.03***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.44***	-0.44***	-0.44***	-0.44***	-0.44*	-0.40***	-0.44***	-0.44***
	(0.09)	(0.09)	(0.10)	(0.10)	(0.21)	(0.08)	(0.09)	(0.09)
Price-to-book ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Cost of equity	0.57**	0.57***	0.57***	0.57***	0.57**	0.52**	0.57***	0.57***
	(0.18)	(0.14)	(0.14)	(0.14)	(0.21)	(0.20)	(0.18)	(0.18)
Cost of equity^2	-0.03***	-0.03***	-0.03***	-0.03***	-0.03**	-0.03***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	5.29***	5.29***	5.29***	5.29***	5.29**	5.86***	5.29***	5.29***
	(1.13)	(0.86)	(0.86)	(0.88)	(1.47)	(1.26)	(1.10)	(1.10)
F-stat.	34.16***	42.13***	40.40***	37.03***	34.52***	38.03***		
R_2	0.56	0.56	0.56	0.56	0.56	0.59		
Wald chi^2							178.54***	
Var (residual)							0.66***	
							(0.08)	
sd (residual)								0.81***
								(0.05)
observation	138	138	138	138	138	138	138	138

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A3: INDIA

Estimator	1	2	3	4	5	6	7	8
ESG	0.01***	0.01***	0.01***	0.01***	0.01**	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.16***	-0.16***	-0.16***	-0.16***	-0.16***	-0.14***	-0.16***	-0.16***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)	(0.03)	(0.03)
Price-to-book ratio	0.00	0.00	0.00	0.00	0.00	0.01*	0.00	0.00
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Cost of equity	0.19**	0.19**	0.19**	0.19**	0.19	0.14*	0.19**	0.19**
	(0.07)	(0.08)	(0.08)	(0.08)	(0.18)	(0.08)	(0.07)	(0.07)
Cost of equity^2	-0.02***	-0.02***	-0.2***	-0.02***	-0.02**	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Constant	8.00***	8.00***	8.00***	8.00***	8.00***	8.35***	8.00***	8.00***
	(0.47)	(0.49)	(0.50)	(0.52)	(1.06)	(0.53)	(0.47)	(0.47)
F-stat.	57.71***	54.61***	50.38***	45.41***	25.86***	84.27***		
R_2	0.53	0.53	0.53	0.53	0.53	0.62		
Wald chi^2							295.29***	
Var (residual)							0.64**	
							(0.06)	
sd (residual)								0.80**
								(0.03)
observation	262	262	262	262	262	262	262	262

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A4: CHINA

Estimator	1	2	3	4	5	6	7	8
ESG	0.01**	0.01**	0.01**	0.01**	0.01	0.1**	0.01**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Leverage	-0.18**	-0.18**	-0.18**	-0.18**	-0.18	-0.19**	-0.18**	-0.18**
	(0.09)	(0.07)	(0.07)	(0.07)	(0.16)	(0.09)	(0.09)	(0.09)
Price-to-book ratio	-0.04**	-0.04**	-0.04**	-0.04**	-0.04	-0.04**	-0.04**	-0.04**
	(0.02)	(0.01)	(0.02)	(0.02)	(0.42)	(0.02)	(0.02)	(0.02)
Cost of equity	-0.78***	-0.78**	-0.78**	-0.78**	-0.78*	-0.77***	-0.78***	-0.78***

Estimator	1	2	3	4	5	6	7	8
	(0.23)	(0.26)	(0.26)	(0.26)	(0.42)	(0.23)	(0.23)	(0.23)
Cost of equity^2	0.04***	0.04***	0.04***	0.04**	0.04**	0.04***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Constant	12.38***	12.38***	12.38***	12.38***	12.38***	12.29***	12.38***	12.38***
	(1.17)	(1.32)	(1.33)	(1.35)	(2.20)	(1.19)	(1.16)	(0.93)
F-stat.	6.82***	8.13***	7.91***	7.55***	1.99	7.04***		
R_2	0.10	0.10	0.10	0.10	0.10	0.10		
Wald chi^2							34.74***	
Var (residual)							0.86**	
							(0.07)	
sd (residual)								0.93**
								(0.04)
observation	321	321	321	321	321	321	321	321

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A5: SOUTH AFRICA

Estimator	1	2	3	4	5	6	7	8
ESG	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Leverage	-0.29***	-0.30***	-0.30**	-0.30**	-0.30***	-0.33***	-0.30***	-0.30***
	(0.07)	(0.07)	(0.10)	(0.14)	(0.06)	(0.07)	(0.07)	(0.07)
Price-to-book ratio	0.16***	0.16***	0.16***	0.16***	0.16**	0.19***	0.16***	0.16***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.05)	(0.03)	(0.02)	(0.02)
Cost of equity	-0.08	-0.08	-0.08	-0.08	-0.08	-0.16	-0.08	-0.08
	(0.20)	(0.22)	(0.22)	(0.23)	(0.39)	(0.23)	(0.20)	(0.20)
Cost of equity^2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)	(0.01)	(0.01)
Constant	4.75***	4.75***	4.75***	4.75***	4.75**	5.10***	4.75***	4.75***
	(0.77)	(0.78)	(0.80)	(0.82)	(1.53)	(0.92)	(0.77)	(0.77)
F-stat.	33.15***	46.77***	44.25***	41.90***	33.33***	35.75***		
R_2	0.31	0.31	0.31	0.31	0.31	0.32		
Wald chi^2							168.37***	
Var (residual)							1.36**	
							(0.10)	
sd (residual)								1.17**
								(0.04)
observation	383	383	383	383	383	383	383	383

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A6: TRANSPORTATION AND UTILITIES INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.01**	0.01**	0.01**	0.01**	0.01	0.01**	0.01**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Leverage	-0.34***	-0.34***	-0.34***	-0.34***	-0.34*	-0.33***	-0.34***	-0.34***
	(0.07)	(0.06)	(0.06)	(0.07)	(0.17)	(0.06)	(0.07)	(0.07)
Price-to-book ratio	0.11***	0.11***	0.11***	0.11***	0.11**	0.11***	0.11***	0.11***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.05)	(0.02)	(0.02)	(0.02)
Cost of equity	0.46**	0.46***	0.46***	0.46***	0.46**	0.58***	0.46**	0.46**
	(0.15)	(0.12)	(0.12)	(0.12)	(0.19)	(0.18)	(0.15)	(0.15)
Cost of equity^2	-0.02**	-0.02**	-0.02**	-0.02**	-0.02*	-0.03**	-0.02**	-0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	5.69***	5.69***	5.69***	5.69***	5.69***	5.17***	5.69***	5.69***
	(0.78)	(0.62)	(0.63)	(0.64)	(1.07)	(0.90)	(0.77)	(0.77)
F-stat.	15.15***	19.52***	18.69***	17.47***	20.40***	18.98***		
R_2	0.22	0.22	0.22	0.22	0.22	0.26		
Wald chi^2							77.38***	

Estimator	1	2	3	4	5	6	7	8
Var (residual)							0.85**	
							(0.07)	
sd (residual)								0.92**
								(0.04)
observation	282	282	282	282	282	282	282	282

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A7: MINERAL RESOURCES INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.03***	0.03***	0.03***	0.03***	0.03	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Leverage	-0.30***	-0.30***	-0.30***	-0.30***	-0.30**	-0.30***	-0.30***	-0.30***
	(0.07)	(0.06)	(0.07)	(0.01)	(0.11)	(0.07)	(0.07)	(0.07)
Price-to-book ratio	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.03
	(0.01)	(0.04)	(0.10)	(0.22)	(0.04)	(0.02)	(0.02)	(0.02)
Cost of equity	0.71***	0.71***	0.71***	0.71***	0.71**	0.83***	0.71***	0.71***
	(0.18)	(0.17)	(0.18)	(0.19)	(0.19)	(0.21)	(0.17)	(0.17)
Cost of equity^2	-0.03***	-0.03***	-0.03***	-0.03***	-0.03**	-0.4***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	3.09**	3.09**	3.09**	3.09**	3.09	2.42*	3.09**	3.09**
	(1.05)	(1.18)	(1.25)	(1.57)	(1.60)	(1.26)	(1.03)	(1.03)
F-stat.	11.65***	12.68***	12.18***	11.43***		13.41***		
R_2	0.21	0.21	0.21	0.21	0.21	0.24		
Wald chi^2							59.86***	
Var (residual)							2.10**	
sd (residual)								1.45**
observation	220	220	220	220	220	220	220	220

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A8: FOOD, BEVERAGES, INDUSTRIAL GOODS AND SERVICES INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.04***	0.05***	0.05***	0.05***	0.05**	0.04***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.47***	-0.47***	-0.47***	-0.47***	-0.47***	-0.42***	-0.47***	-0.47***
	(0.07)	(0.08)	(0.10)	(0.11)	(0.11)	(0.05)	(0.07)	(0.07)
Price-to-book ratio	0.06***	0.06***	0.06***	0.06***	0.06	0.04**	0.06***	0.06***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Cost of equity	-0.03	0.02	-0.03	-0.03	-0.03	0.18	-0.03	-0.03
	(0.22)	(0.01)	(0.25)	(0.26)	(0.39)	(0.22)	(0.21)	(0.21)
Cost of equity^2	0.02	0.02	0.02	0.02	0.02	0.01	0.02*	-0.03
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.21)
Constant	4.75	4.75***	4.75***	4.75***	4.75*	4.13***	4.75***	4.75***
	(1.11)	(1.15)	(1.18)	(1.24)	(2.30)	(1.15)	(1.09)	(1.09)
F-stat.	25.02***	22.75***	20.89***	18.99***	13.08***	25.91***		
R_2	0.34	0.34	0.34	0.34	0.34	0.35		
Wald chi^2							128.14***	
Var (residual)							2.07**	
							(0.18)	
sd (residual)								1.44**
								(0.06)
observation	251	251	251	251	251	251	251	251

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A9: PHARMACEUTICAL AND HEALTH INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.02***	0.02***	0.02***	0.02***	0.02	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
	(0.24)	(0.15)	(0.15)	(0.16)	(0.13)	(0.23)	(0.24)	(0.24)
Price-to-book ratio	0.02**	0.02**	0.02	0.02	0.02	0.02**	0.02**	0.02**
	(0.01)	(0.01)	(0.02)	(0.05)	(0.01)	(0.01)	(0.01)	(0.01)
Cost of equity	0.19	0.19	0.20	0.20	0.19	0.13	0.19	0.19
	(0.20)	(0.14)	(0.14)	(0.15)	(0.13)	(0.26)	(0.20)	(0.20)
Cost of equity^2	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	6.41***	6.41***	6.41***	6.41***	6.41***	6.43***	6.41***	6.41***
	(0.89)	(0.69)	(0.72)	(0.88)	(1.13)	(1.12)	(0.87)	(0.87)
F-stat.	3.68**	4.60***	4.16***	3.89**	3.21	4.53***		
R_2	0.13	0.13	0.13	0.13	0.13	0.16		
Wald chi^2							19.29***	
Var (residual)							0.78	
							(0.10)	
sd (residual)								0.88
								(0.06)
observation	127	127	127	127	127	127	127	127

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A10: ENERGY - FOSSIL FUELS INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.03***	0.03***	0.03***	0.03***	0.03**	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.58**	-0.58***	-0.58***	-0.58**	-0.58**	-0.54**	-0.58**	-0.58**
	(0.19)	(0.17)	(0.18)	(0.19)	(0.14)	(0.18)	(0.19)	(0.19)
Price-to-book ratio	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
	(0.09)	(0.07)	(0.07)	(0.08)	(0.22)	(0.09)	(0.09)	(0.09)
Cost of equity	0.65**	0.65**	0.65**	0.65**	0.65**	0.88**	0.65**	0.65**
	(0.32)	(0.28)	(0.28)	(0.29)	(0.19)	(0.30)	(0.31)	(0.31)
Cost of equity^2	-0.04**	-0.04**	-0.04**	-0.04**	-0.04**	-0.05**	-0.04**	-0.04**
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Constant	5.88***	5.88***	5.88***	5.88***	5.88**	4.63**	5.88***	5.88***
	(1.64)	(1.62)	(1.64)	(1.70)	(1.16)	(1.60)	(1.60)	(1.60)
F-stat.	9.86***	16.05***	15.27***	13.73***		14.91***		
R_2	0.31	0.31	0.31	0.31	0.31	0.41		
Wald chi^2							52.06***	
Var (residual)							1.24**	
							(0.16)	
sd (residual)								1.11
								(0.07)
observation	114	114	114	114	114	114	114	114

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A11: REAL ESTATE INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.04***	0.04***	0.04***	0.04***	0.04**	0.04***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.20***	-0.20***	-0.20***	-0.20***	-0.20**	-0.21***	-0.20***	-0.20***
	(0.05)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Price-to-book ratio	0.55***	0.55***	0.55***	0.55***	0.55**	0.51***	0.55***	0.55***
	(0.09)	(0.11)	(0.11)	(0.12)	(0.12)	(0.08)	(0.08)	(0.08)

Estimator	1	2	3	4	5	6	7	8
Cost of equity	0.46**	0.46**	0.46**	0.46**	0.46*	0.48**	0.46**	0.46**
	(0.15)	(0.14)	(0.15)	(0.15)	(0.12)	(0.17)	(0.15)	(0.15)
Cost of equity^2	-0.02***	-0.02***	-0.02***	-0.02**	-0.02*	-0.02***	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	3.46***	3.46***	3.46***	3.46***	3.46**	3.19**	3.46***	3.46***
	(0.90)	(0.86)	(0.87)	(0.90)	(0.32)	(1.06)	(0.88)	(0.88)
F-stat.	31.33***	59.20***	55.45***	48.10***		36.83***		
R_2	0.59	0.59	0.59	0.59	0.59	0.63		
Wald chi^2							165.35***	
Var (residual)							1.05**	
							(0.14)	
sd (residual)								1.02**
								(0.07)
observation	114	114	114	114	114	114	114	

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A12: ICT AND TELECOMMUNICATION INDUSTRY

Estimator	1	2	3	4	5	6	7	8
ESG	0.05***	0.05***	0.05***	0.05***	0.05**	0.05***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.42	-0.42**	-0.42**	-0.42*	-0.42	-0.46*	-0.42*	-0.42*
	(0.25)	(0.19)	(0.20)	(0.22)	(0.39)	(0.25)	(0.24)	(0.24)
Price-to-book ratio	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cost of equity	0.07	0.07	0.07	0.07	0.07	0.50	0.07	0.07
	(0.36)	(0.32)	(0.34)	(0.36)	(0.83)	(0.40)	(0.35)	(0.35)
Cost of equity^2	0.00	0.00	0.00	0.00	0.00	-0.02	0.00	0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)	(0.02)	(0.02)	(0.02)
Constant	5.42**	5.43**	5.43**	5.43**	5.42	3.58	5.43**	5.43**
	(2.01)	(1.71)	(1.76)	(1.86)	(2.80)	(2.20)	(1.96)	(1.96)
F-stat.	4.02**	8.61***	8.34***	7.72***	193.24***	3.31**		
R_2	0.15	0.15	0.15	0.15	0.15	0.12		
Wald chi^2							21.12***	
Var (residual)							2.36**	
							(0.30)	
sd (residual)								1.53**
								(0.10)
observation	123	123	123	123	123	123	123	123

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A13: OTHER INDUSTRIES

Estimator	1	2	3	4	5	6	7	8
ESG	0.02**	0.02***	0.02***	0.02***	0.02*	0.01*	0.02**	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	0.05	0.05	0.05	0.05	0.05	-0.17	0.05	0.05
	(0.25)	(0.24)	(0.24)	(0.25)	(0.48)	(0.25)	(0.24)	(0.24)
Price-to-book ratio	0.15***	0.15***	0.15***	0.15***	0.15***	0.15***	0.15***	0.15***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Cost of equity	0.05	0.05	0.05	0.05	0.05	0.28	0.05	0.05
	(0.28)	(0.034)	(0.35)	(0.38)	(0.53)	(0.31)	(0.28)	(0.28)
Cost of equity^2	0.01	0.01	0.05	0.01	0.01	-0.01	0.01	0.01
	(0.02)	(0.02)	(0.35)	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)
Constant	5.07***	5.07***	5.07***	5.07***	5.07**	4.82***	5.07***	5.07***
	(1.12)	(1.29)	(1.35)	(1.44)	(2.18)	(1.28)	(1.11)	(1.11)
F-stat.	11.62***	25.02***	24.91***	23.87***	15.13***	11.42***		
R_2	0.27	0.27	0.27	0.27	0.27	0.27		
Wald chi^2							60.31***	

Estimator	1	2	3	4	5	6	7	8
Var (residual)							1.06**	
							(0.12)	
sd (residual)								1.02**
								(0.06)
observation	163	163	163	163	163	163	163	163

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A14: MEDIATING ROLE OF COST OF EQUITY

Estimator	1	2	3	4	5	6	7	8
ESG	0.02***	0.02***	0.02***	0.03***	0.02***	0.02***	0.02***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cost of equity		0.01		0.69***		0.01		0.69***
		(0.02)		(0.07)		(0.02)		(0.07)
Cost of equity^2			0.00	-0.04***			0.00	-0.04***
			(0.00)	(0.00)			(0.00)	(0.00)
Constant	7.15***	6.99***	7.34***	3.81***	7.15***	6.99***	7.34***	3.81***
	(0.12)	(0.24)	(0.17)	(0.40)	(0.12)	(0.24)	(0.17)	(0.40)
F-stat.	87.86***	44.21***	45.15***	62.82***				
R_2	0.06	0.06	0.06	0.12				
Wald chi^2					87.98***	88.62***	90.49***	188.99***
Var (residual)					2.28**	2.28**	2.28**	2.14**
					(0.09)	(0.09)	(0.09)	(0.08)
observation	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels. Column (1) uses the hascons technique that is sensitive to multicollinearity, column (2) uses robust standard errors, columns (3) and (4) use the bias-corrected model that deals with homoskedasticity and heteroskedasticity, respectively, whereas columns (5) and (6) use clustered standard error, allowing for independent cross-sectional correlations, and weighted regression, allowing for the effect of cost of equity. Column (7) uses mixed effects multilevel regression, which is flexible for handling unbalanced data and apparently provides accurate results for random effects and fixed effects of the hierarchical structure of our sample. Finally, column (8) is a Merlin technique which flexible enough to handle linear and non-linear relationships.

Table A15: PANEL UNIT ROOT AND CROSS-SECTION DEPENDENCE TESTS

Fisher Unit root test	P	Z	L*	Pm	CD
Market capitalisation	919.43***	-5.31***	-13.88***	26.66***	27.30***
ESG	781.37***	-2.78**	-9.33***	20.87***	29.69***
Environmental	764.15***	-1.07	-7.92***	20.15***	32.21***
Social	931.00***	-2.70**	-12.35***	27.15***	31.90***
Governance	653.52***	-3.97***	-8.66***	15.50***	3.40***
Leverage	576.83***	0.63	-3.52***	12.29***	22.59***
Cost of equity	936.73***	-5.18***	-13.83***	27.39***	14.28***
Price-to-book ratio	904.47***	-3.47***	-11.53***	26.03***	12.96***

Notes: Asterisks ***, ** denote 1% and 5% significance levels. P = inverse ch^2, Z = inverse normal, $L*$ = inverse logit and Pm = modified inverse ch^2 ADF fisher type unit root tests by Choi (2001).

Table A16: ROBUSTNESS: DRISCOLL-KRAAY STANDARD ERRORS REGRESSION

Estimator	Pooled	RE	FE	Pooled	RE	FE
ESG	0.03***	0.01**	0.01**			
	(0.00)	(0.00)	(0.00)			
Environmental				0.03***	0.03**	0.02**
				(0.00)	(0.00)	(0.00)
Social				-0.01**	0.00	0.03*
				(0.00)	(0.00)	(0.00)
Governance				0.00	0.00	0.00
				(0.00)	(0.00)	(0.00)
Leverage	-0.38***	-0.32***	-0.32***	-0.43***	-0.32***	-0.32***
	(0.03)	(0.01)	(0.02)	(0.03)	(0.01)	(0.03)
Price-to-book ratio	0.03**	0.00	0.00	0.04**	0.00	0.00

Estimator	Pooled	RE	FE	Pooled	RE	FE
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Cost of equity	0.71***	-0.06	-0.08**	0.62***	-0.06	-0.08**
	(0.04)	(0.04)	(0.02)	(0.05)	(0.05)	(0.03)
Cost of equity^2	-0.03***	0.00	0.00	-0.03***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	3.20***	8.21	8.38***	3.98***	8.26***	8.44***
	(0.35)	(0.25)	(0.07)	(0.32)	(0.28)	(0.11)
F-stat.	314.02***		423.04***	654.71***		572.13***
R2	0.15	0.06	0.26	0.22	0.07	0.26
Wald chi^2		15734.63***			13108.06***	
observation	699	699	699	699	699	699

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels.

Table A17: PAIRWISE CORRELATIONS

Variables	Market cap.	ESG	Leverage	Cost of equity	Price-to-book ratio
Market capitalisation	1.00				
ESG	0.24***	1.00			
Leverage	-0.26***	-0.06**			
Cost of equity	0.12***	0.01	-0.10***	1.00	
Price-to-book ratio	-0.11***	-0.53***	0.31***	-0.10***	1.00

Note: Asterisk *** and ** represent 1% and 5% significance levels.

Table A18: ROBUSTNESS: ADDRESSING MULTICOLLINEARITY

Estimator	Model 1	VIF/Tol.	Model 2	VIF/Tol.	Model 3	VIF/Tol.	Model 4	VIF/Tol.
ESG	0.03***	1.49/0.67	0.03***	1.42/0.71				
	(0.00)		(0.00)					
Environmental					0.02***	1.85/0.54	0.02***	1.85/0.54
					(0.00)		(0.00)	
Social					0.00	2.01/0.50	0.00	1.96/0.51
					(0.00)		(0.00)	
Governance					0.01***	1.12/0.89	0.04**	1.11/0.90
					(0.00)		(0.00)	
Leverage	-0.31***	1.15/0.87	-0.34***	1.13/0.88	-0.32***	1.16/0.86	-0.36***	1.14/0.88
	(0.03)		(0.03)		(0.03)		(0.03)	
Price-to-book ratio	0.02***	1.02/0.98	0.02***	1.02/0.98	0.02***	1.02/0.98	0.03***	1.02/0.98
	(0.01)		(0.01)		(0.01)		(0.01)	
Cost of equity	0.68***	23.65/0.04	0.09***	1.57/0.64	0.63***	23.64/0.04	0.08***	1.56/0.64
	(0.07)		(0.02)		(0.07)		(0.02)	
Cost of equity^2	-0.03***	22.23/0.04			-0.03***	22.30/0.04		
	(0.00)				(0.00)			
Constant	3.60		3.60***		4.02***			
	(0.39)		(0.39)		(0.39)			
F-stat.	63.99***		63.99***		51.69***		46.62***	
R_2	0.19		0.19		0.21		0.17	
Mean VIF		9.91		1.29		7.59		1.44
observation	1,394		1,394		1,394		1,394	

Notes: Asterisk ***, ** and * represent 1%, 5% and 10% significance levels.

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