Vol. 12(12), pp. 381-397, 28 June, 2018
DOI: 10.5897/AJBM2018.8562
Article Number: 675E97557494
ISSN: 1993-8233

http://www.academicjournals.org/AJBM

ACADEMIC JOURNALS
expand your knowledge

African Journal of Business Management

Full Length Research Paper

Does sustainability foster the cost of equity reduction? The relationship between corporate social responsibility (CSR) and riskiness worldwide

Antonio Salvi*, Felice Petruzzella and Anastasia Giakoumelou

Department of Economics and Management, LUM Jean Monnet University, Italy.

Received 26 April, 2018; Accepted 28 May, 2018

The relationship between sustainable practices and a firm's financial performance is an open debate among academics, managers and investors worldwide. Despite large literature in the field of corporate social responsibility (CSR) and corporate financial performance (CFP), there is still a lack of unanimous consensus around the impact of sustainability on a firm's economic achievements. This study aims to analyse this relationship and fill some of the gaps within existing literature using two geographical samples, a European and a global one, proceeding to compare obtained results. Such analysis was performed employing an ex ante implied proxy for the cost of equity, which has been selected in order to overcome methodological weaknesses of previous studies. Results show that sustainability can reduce the cost of equity due to lower firm riskiness, as perceived by markets and investors. Geographical specificities, on the other hand, do not play a significant role. CSR practices have the potential to create a type of goodwill or moral capital for more sustainable firms that acts as protection when negative events occur, preserving shareholder value and reducing the firms' cost of equity.

Key words: Cost of equity, Price Earnings Growth (PEG) ratio method, corporate social responsibility (CSR), EPS forecasts, riskiness.

INTRODUCTION

The relationship between corporate social responsibility (CSR) and firm performance is a strongly debated topic among academics, managers and policy-makers. According to majority of CEOs worldwide, for example, CSR is considered an "*important*" or "*very important*" task for their firms (UN Global Compact-Accenture, 2010). Nevertheless, the idea that stronger environmental, social and governance (ESG) practices and improved financial performance are positively related is not yet universally endorsed (Di Giulio et al., 2011; Endrikat, 2015; Margolis and Walsh, 2003; Margolis et al., 2007; Murphy, 2002; Perrini et al., 2011).

There is still have a vast part of the world, including Africa, South America and the Middle East, unexplored in

*Corresponding author. E-mail: salvi@lum.it.

terms of CSR and its antecedents (Gruber and Schlegelmilch, 2015; Kühn et al., 2018; Munro, 2013). In the meantime, the open question still seems to be: "*does CSR lead to value creation and, if so, in what ways?"* (Cheng et al., 2014) or does more suitable CSR practices merely represent an additional financial burden for firms (Sharfman and Fernando, 2008)?

Taking off from the view of the firm as a nexus of relationships with various stakeholders (Boulding, 1956; Freeman, 1984; Wood, 2010), a series of pioneer researches have examined the benefits to be drawn from an improved co-existence between firms and the environment (Bragdon and Marlin, 1972; Chen and Metcalf, 1980; Nelson, 1994; Porter and Van der Linde, 1995; Spicer, 1978). This initial stream of research, based on the economic theory of stakeholder management, has indicated that sustainability can increase value for the firm by creating value for the stakeholders involved in and around it (Di Giulio et al., 2011; Post et al., 2002), financial benefits for shareholders, protection for the environment, compliance with lawmakers, improved reputation among consumers, surrounding communities and investors.

At this point, it is worth noting that the theory often incorporates CSR within the concept of reputation. In fact, following Barnett et al. (2006), reputation can be defined as "*observers' collective judgment of a corporation based on assessments of the financial, social, and environmental impact attributed to the corporation over time*". In this context, a firm's reputation plays a crucial role in determining behavior (Wilson, 1985), reducing agency issues in the absence of formal contracts and firms cost and access to finance (Anginer et al., 2016; Jo and Na, 2012). However, empirical evidence concerning the benefits deriving from improved reputation on equity financing is relatively scarce.

Measuring the cost of equity capital and understanding how it can be affected by exogenous variables is crucial for both managers and investors, due to its impact on a firm's value (Kempf and Osthoff, 2007). Indeed, the higher the perceived risk, the higher the returns required by investors (Himme and Fischer, 2014). Such line of studies has also greatly focused on the differences that pricing models present between developed and emerging economies, such as Africa and the Middle East (Hearn, 2009; Hearn and Piesse, 2015; Paulo, 2011).

According to Lozano (2013), sustainable investments that go beyond mere compliance towards a holistic view of CSR can generate lower costs of equity for firms, making it also interesting to understand whether investors reward firms that make higher CSR disclosures, given the growing importance of the "Socially Responsible Investing" (SRI) over the past twenty years. Following Richardson and Welker (2001), it seems clear that comprehensive and transparent disclosures of value-relevant information can behoove firms with superior financial achievements.

This study aims to tackle the aforementioned methodological issue and fill the gap within existing literature that leaves European firms, as well as comparative data uncovered (Reverte, 2012). Starting from the commonly shared idea that the relationship between strong CSR commitment and corporate financial performance is positive and statistically significant (Heart and Ahuja, 1996; King and Lenox 2001, 2002; Klassen and McLaughlin, 1996), this work delves deeper into whether a superior level of governance, social and environmental sustainability influences a firm's creditworthiness and reduces its cost of equity.

LITERATURE REVIEW

The popularity that CSR has gained over the past decades has given birth to a vast stream of academic works that study its nature and effects on firms. From a financial point of view, the starting point of most research studies has been the relationship between sustainability and the direct financial outcomes of firms implementing it. As previously mentioned, however, it is quite clear that no consensus regarding the effects of sustainable practices on financial performance has been reached (Endrikat, 2015; Margolis and Walsh, 2003; Margolis et al., 2007).

More specifically, various authors highlight a positive and statistically relevant connection between CSR and CFP (Dowell et al., 2000; Golicic and Smith, 2013; Hart and Ahuja, 1996; King and Lenox, 2001; Klassen and McLaughlin, 1996; Russo and Fouts, 1997; Statman and Glushkov, 2009), while another group of researchers show a null or a negative relationship (Brammer et al., 2006; Gregory and Whittaker, 2012; Khanna and Damon, 1999; Wagner, 2005). According to Endrikat (2015), this misalignment of findings may be the consequence of validity issues among the various measures used to operationalize the selected explanatory variables and the timeframes used to run the econometric analyses.

In the meantime, the majority of researchers have focused their attention on the effect of strong sustainable practices on accounting and financial measures of a firm's performance, such as return on assets (ROA), return on equity (ROE) and return on sales (ROS) or on stock market measures, such as Tobin's Q and stock returns (Christmann, 2000; Hart and Ahuja, 1996; Khanna and Damon, 1999; King and Lenox, 2001; Konar and Cohen, 2001; Russo and Fouts, 1997; Wagner, 2005), while normally neglecting the impact of sustainable actions on the cost of capital. This work was drawn from the theoretical background linking CSR to corporate reputation in order to examine the benefits that governance, environmental and social practices can bestow upon a firm's cost of capital, more specifically its cost of equity. According to Cao et al. (2015) a firm's

reputation can reduce the cost of equity for several reasons:

(1) Signaling higher company quality (Chan et al., 2001),
(2) Offering higher investor recognition and a lower return as a consequence (Loughran and Schultz, 2005) and
(3) Improving the quality of financial reports' (Cao et al., 2012).

A firm's cost of equity, that is the discount rate the market applies to expected future cash flows to equity, is a pivotal value for managers despite the fact that it is not directly observable. Naturally, the cost of equity constitutes a fundamental input for firms to outline their operating and financial strategies, with risk of being the driver of such cost. Lozano (2005), highlighted that risk management is crucial for firms due to its effect on the relational nexus built between the firm and a series of internal and external entities, since risk has the potential to take a toll on reputation, processes and ordinary management (Di Giulio et al., 2011).

Various authors have supported the existence of a relationship between CSP and the degree of operational risk, highlighting a positive impact generated by environmental, social and governance efforts on a company's risk reduction (Orlitzky and Benjamin, 2001). Graham et al. (2005), highlighted the importance of managing the cost of equity, showing that reducing the latter is one of the main factors urging managers to adopt strong sustainable practices and non-financial disclosure (Botosan, 1997). The relationship between corporate disclosure and the cost of equity has been thoroughly studied (Diamond and Verrecchia, 1991; Easley and O'Hara, 2004; Lambert et al., 2006) with the majority of researchers pointing to a negative and statistically significant connection between the two, as stronger disclosure policies seem to lead to lower operational risk.

Jo and Na (2012) define firm risk "*as a risk inherent in a firms' operations as a result of external or internal factors that can affect a firm's profitability*"; it represents the uncertainty concerning future events and outcomes and can be measured as the volatility of financial performance. Such volatility may affect the share price (market risk) or the accounting returns (accounting risk) (Orlitzky and Benjamin, 2001). From a stakeholder theoretical point of view, as well as within the management theory (managerial credibility employed to produce signaling effects) (Waddock and Graves, 1997), higher levels of CSP are associated with lower levels of firm risk. Thus, according to Orlitzky and Benjamin (2001), lawsuits against various air and water polluters, cigarette manufacturers, and harvesters of old-growth redwoods and wetlands developers are examples of higher firm risk due to lower CSP. As Godfrey (2005) and Godfrey et al. (2009) suggest, CSR practices, due to their voluntary nature, can create a form of goodwill or moral capital for firms that are able to encourage stakeholders to take a more lenient stance in case of negative future events (Uzzi, 1997) significantly influencing the firm's riskiness.

In contrast to the previous literature, the relationship between CSR practices and the cost of equity is poorer in terms of firms and countries analysed. Beaver et al. (1970) have been precursors in this field, suggesting that firm systematic risk is strongly related to "*lower dividend payout, higher growth, smaller asset size, and greater leverage*"; this is also suggested by Himme and Fisher (2014). There are considerably less studies focusing on the relationship between strict social and environmental management and reductions in the cost of equity. Feldman et al. (1997), found a positive effect of strong environmental management on the firm's beta and stock price, while, successively, Garber and Hammitt (1998) demonstrated a positive impact of sustainable practices on the cost of equity for large firms and a null relationship for smaller ones. Following Chava (2010), firms should also improve their environmental practices, due to the growing trend of socially responsible investing (SRI) worldwide.

The Social Investment Forum (2006), described SRI as "*an investment process that considers the social and environmental consequences of investments, both positive and negative, within the context of rigorous financial analysis*" (Statman and Glushkov, 2009). A growing number of investors incorporate SRI in their investment decisions because they prefer firms with a higher environmental commitment for their portfolios (Chava, 2010; Stubbs and Cocklin, 2007).

In this direction, implementing a simple trading strategy based on sustainable investments, Kempf and Osthoff (2007) suggested that investing in stock with strong CSR ratings while discarding stock with poor ones can generate high abnormal returns reaching up 8.7% per year. Dhaliwal et al. (2011) assumed that CSR can reduce the cost of equity stressing its crucial role for a firm's operational and strategic decisions. This conclusion is also shared by corporate executives, as pointed out by Graham et al. (2005), who interviewed hundreds of CFOs worldwide to grasp the key factors that drive decisions related to performance measurement and voluntary disclosure.

On the other hand, Brammer et al. (2006) examined the link between sustainability (environment, employment and community activities) and expected stock returns, using a sample of sustainable UK firms. The study pointed out that lower returns are to be expected by firms performing better on social rather than environmental aspects of CSR. Sharfman and Fernando (2008) argued that a firm's commitment to environmental risk management is positively reflected in its cost of capital due to the lower riskiness of environmentally friendly firms (Heinkel et al., 2001; Mackey et al., 2007).

Chava (2014) and Goss and Roberts (2011), instead, posit that a cost of debt reduction benefits firms with stronger social and environmental tasks. Following these authors, the cost of equity, the cost of debt and the weighted average cost of capital are strongly influenced by social, environmental and governance practices. Analysing a sample of Canadian listed companies, Richardson and Welker (2001), in line with existing literature in the field, found a negative relationship between the cost of equity and financial disclosure, while, in contrast with other relevant findings, they suggest a positive relationship exists between social disclosure and the cost of equity. They argue that this potential bias is moderated by ROE with more successful firms appearing less penalized for their social disclosures. In addition, Cao et al. (2015), revealed a negative relationship between companies with higher reputation and their cost of equity.

As pointed out by Graham et al. (2005), a crucial reason driving firms to publish voluntary disclosure reports is the effect of such disclosures on the firm's performance and, in particular, on the firm's cost of equity, given that better disclosure practices can reduce the cost of equity in two ways:

(1) Decreasing the estimation risk in the capital markets and
(2) Mitigating the transaction costs and information asymmetries issue (Leuz and Verrecchia, 2000, 2008; Verrecchia, 2001).

Indeed, many international firms publish separate annual social and environmental performance reports (Klassen and McLaughlin, 1996) as response to investor's expectations, as well as a common measure to mitigate reputational risk (Bebbington et al., 2008; Unerman, 2008). In the meantime, evidence comes from emerging markets as well, which enhances the significance of voluntary disclosures worldwide with specific cases being made regarding the efforts introduced in African countries (Bimha and Nhamo, 2017; Dachs, 2010; Mensah and Kwame, 2016). These data are provided by firms in a clear and verifiable manner, similar to economic and financial data, in order to provide a comprehensive picture concerning the firm's sustainable efforts (KPMG, 2008). Social and environmental issues and the way in which firms manage these concerns is growing in importance both for companies and investors selecting their strategies (Sullivan, 2011).

More in depth sustainability reporting (SR) "*is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities*" (globalreporting.org). SR can be viewed as the most direct measure of a company's tendency towards social responsibility (Perrini, 2005), providing a large set of performance indicators and following the triple-bottom line approach developed by Elkington (1997). Researchers have further suggested that firms may opt for CSR reporting to "*legitimize various aspects of their respective organizations*" (Deegan, 2002). Better social and environmental reputation and management credibility is believed to reduce the perceived risk (Gardberg and Fonbrun, 2006; Godfrey, 2005; Jensen and Meckling, 1976) of the organization from a creditor's perspective, a signaling effect known as good management theory (Waddock and Graves, 1997).

According to Weber et al. (2010), a firm's sustainability can improve the validity of its credit rating process, influencing the company's creditworthiness as a part of its financial goals (Reverte, 2012). Sustainability-oriented companies, according to Schaltegger and Burritt (2005), face risk in a positive manner because they perceive it as an element that is able to enhance financial performance and stability by exploiting its potential upside and not just as an element that can destroy value.

Moving towards the core of this study, there are different ways to measure a firm's cost of equity. The average realized periodical returns seem to be too weak and unreliable as proxy for expected returns (Elton, 1999). As a consequence, this measure has been avoided, given that academics also agree it is necessary to define new, more robust proxies (Botosan and Plumlee, 2002; Chava and Purnanandam, 2010; Easton, 2004; Elton, 1999; Pastor et al., 2008).

Ohlson (1995) highlighted that the "ex ante *implied cost of equity that is impounded in current market prices and analysts' earnings forecasts*" can represent a truthful and reliable proxy to this purpose. In this light, Botosan and Plumlee (2002) suggested two methods, among others, to calculate a firm's cost of equity: (1) the Price Earnings Growth ratio method (PEG) and (2) the Target price method. The authors pointed out that the results obtained using these methods are consistent among them.

Concluding, as mentioned previously, researchers agree that a negative and statistically significant relationship between CSR and cost of equity exists (Botosan, 2006; Core, 2001; Leuz and Wysocki, 2008). According to Reverte (2012), who analysed this relationship using a sample of Spanish listed firms, previous researchers in the field of interest have mainly focused their attention on US and Canadian companies. To bridge this gap, the present paper conducts an analysis on two different geographical samples and proceeds with a comparative analysis in a comprehensive manner. Stronger sustainable behavior may be considered a soft metric able to reduce the cost of capital (Blume et al., 1998) in addition to the classic hard metrics that include operating margin, assets growth, leverage and earnings volatility (Beaver et al., 1970; Blume, 1998; Elton et al., 2001).

As Feldman et al. (1997) postulated, lower systematic risk can foster a reduction in the cost of equity manifested

as a decrease of the equity beta, which is the measure of systematic risk traditionally applied according to the Capital Asset Pricing Model (CAPM) and developed by Sharpe (1964) and Lintner (1965). In light of this, the main research hypothesis developed here is the following: *does stronger environmental, social, governance and economic behaviors (measured by the Equal Weighted Rating - EWR) foster a reduction in the firm's cost of equity, ceteris paribus?*

METHODOLOGY

This research aims to test the impact of superior environmental, social and governance commitment on a firm's cost of equity, under a holistic perspective. Managing a firm's risk to reduce financial, social and environmental criticalities is the best way to preserve (or improve) its financial performance (Jo and Na, 2012) and CSR could represent an interesting and viable option to do so. The cost of equity is a crucial value, for managers and investors, mainly for two reasons: (1) "*it represents the expected rate of return demanded by a firm's investors for investing in the firm and* (2) *it is the rate that investors use to discount a firm's future cash flows. The higher the cost of capital, the lower the present value of the firm's future cash flows*" (Sharfman and Fernando, 2008). Therefore, it represents the returns expected by investors holding the firm's stock (Lintner, 1965; Sharpe, 1964).

The realized stock market returns, as stated previously, is a weak and unreliable measure for the cost of equity since historical returns have frequently been lower than the risk-free rate (Elton, 1999). In order to avoid this problem, it is necessary to compute an ex ante proxy for the cost of equity. Ambiguous findings among various works regarding firm performance that have employed realized returns indicate the attractiveness of an ex ante implied cost of capital proxy, although no universally accepted alternative seems to exist. There are various ways to compute a proxy for the cost of equity; in Botosan and Plumlee (2005), the authors analysed and discussed the reliability of five different methodologies to compute this variable, all deriving from the original dividend discount model, whose basic formula is reported below (Equation 1):

$$P_0 = \sum_{t=1}^{\infty}(1+r)^{-t}\ E_0\ (dps_t) \quad (1)$$

where P_0 represents the share price at time t = 0, r the estimated cost of equity, E_0 the expectation operator, and dps_t the dividend per share. Table 1 describes and summarizes the five methods analysed by Botosan and Plumlee (2005) to compute a consistent proxy of the ex ante cost of equity. The authors concluded that two methods, in particular, are more reliable than the others. The most reliable proxies appear to be: (1) the Target price method (r_{div}) and (2) the PEG ratio method (r_{PEG}) that consistently incorporate market, leverage, information and residual risk, as well as growth. In light of the latter, in line with Reverte (2012), the PEG ratio method (r_{PEG}) may represent a viable way to gauge the implied ex ante cost of equity, in order to test the role of robust sustainable patterns and their impact on the cost of equity.

Dependent variable

The PEG ratio method, developed by Easton (2004), derived from the Economy-Wide Growth Method (r_{OJN}) elaborated by Ohlson and Juettner-Nauroth (2005), is reported in Table 1. Starting from the no arbitrage condition, Easton (2004) highlights the difference between economic earnings (the product of the expected rate and beginning-of-period price) and accounting earnings (eps_1). Due to this difference and according to the author, it is necessary to introduce the role of two-period-ahead forecasts of accounting earnings and the concept of "agr" [1] ($agr = eps_2 + rdps_1 - (1 + r)eps_1$)[2]. Easton recursively rewrites the previous equation and modifies it to accommodate a finite forecast horizon, defining a perpetual rate of change in abnormal growth[3] ($\Delta agr = \left(\frac{agr_{t+1}}{agr_t}\right) - 1$). Imposing $\Delta = 0$ and $rdps_1 = 0$, Easton obtains the PEG ratio method's formula, reported in Equation (2):

$$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}} \quad (2)$$

where eps_2 and eps_1 represent the analysts' consensus forecasts of earnings per share for firms for two years and one-year ahead respectively and P_0 represents stock price at the end of year *t*. To compute the cost of equity using the PEG method it is necessary that $eps_2 \geq eps_1 > 0$.

Easton (2004) tested this method on a sample comprised of 1,499 portfolios of 20 stocks formed annually confirming its reliability and robustness. The high correlation between the PEG ratio method and the refined estimate of the expected rate of return (0.90) supports the use of this method as a simple basis stock recommendation that implicitly reflects the ranking of expected return on portfolios of stocks.

The robustness of this methodology was further corroborated by Botosan et al. (2011), who demonstrated that the PEG ratio method and the Target price method are good proxies of the cost of equity for a firm due to their relationship with both a future realized returns and firm-specific risk. The authors prove that:

"*(1) The impact of analysts forecast bias*

[1] "agr" is the "*expected abnormal growth in accounting earnings insofar as it is expected (period 2) cum-dividend accounting earnings less the normal accounting earnings that would be expected given earnings of period 1. This abnormal growth in earnings reflects the effects of generally accepted accounting practices that leads to a divergence of accounting earnings from economic earnings. For example, consider Microsoft, which was trading at a price per share of $75 at the end of its fiscal year (June 30) 2001 and was not expected to pay dividends for the foreseeable future. If Microsoft's expected rate of return was 10 percent, then its expected economic earnings for 2002 and 2003 would have been $7.5 and $8.25, respectively. If accounting earnings (eps_1 and eps_2) were equal to economic earnings in these years, then agr_1 = $8.25 – 1.1($7.50) = 0 and eps_1 would be sufficient for valuation (that is, $75 = $7.50/0.1). Yet analysts were forecasting accounting earnings for 2002 and 2003 of $1.90 and $2.15, respectively, so that agr_1 = $2.15 – $1.1($1.90) = 0.06. In other words, the difference between expected accounting earnings and expected economic earnings in 2002 and 2003 implies accounting earnings growth of 6 cents more than the cost of capital".* (Easton, 2004, p. 79).

[2] $rdps_1$ is the expected dividends per share at the date t=1.

[3] "*Returning to the Microsoft example, the estimate of* Δagr *that equates the price of $75 and the forecasts of accounting earnings is 8.9 percent (this estimate is obtained by recognizing that, for this Microsoft example, the only unknown term in equation is agr. In other words, 8.9 percent is the geometric average rate at which the abnormal growth in earnings of 6 cents will increase as accounting earnings eventually "correct" for the short-run difference between accounting and economics earnings in the two-years forecast horizon (this growth reflects the attribute of accounting that differences between accounting earnings and economics in any one period must be captured in accounting earrings of another period)"* (Easton, 2004, p 80).

Table 1. Summary of assumption and data requirements for ex ante proxy of cost of equity calculation.

Method	Formula	Author(S)	Short-term horizon	Terminal value
Target price method	$P_0 = \sum_{t=1}^{5}(1 + r_{div})^{-t}(dps_t) + (1 + r_{div})^{-5}(P_5)$	Botosan and Plumlee (2002)	During the forecast horizon, analysts' forecast of dividends equals the market's expectation	Beyond the forecast horizon analysts' forecasts of stock price equal the market expectation
Industry method	$P_0 = b_0 + \sum_{t=1}^{11}(1 + r_{GLS})^{-t}\left((ROE_t - r_{GLS})b_{t-1}\right) + r_{GLS}(1 + r_{GLS})^{-11})^{-1}((ROE_{t2} - r_{GLS})b_{11})$	Gebhardt et al. (2001)	-During the forecast horizon with analyst forecasts, analysts of earnings and book value equal the market's expectation. -During the forecast horizon without analyst forecasts, firm ROE fades linearly to industry ROE	-Beyond the forecast horizon, firms earn their industry ROE in perpetuity. -Beyond the forecast horizon, firms have a 100% dividend payout ratio
Finite horizon method	$P_0 = \sum_{t=1}^{4}(1 + r_{GOR})^{-t}(dps_t) + (r_{GOR}(1 + r_{GOR})^4)^{-1}(eps_5)$	Gordon (1997)	During the forecast horizon, analysts' forecasts of dividend equal the market's expectation	Beyond the forecast horizon, each firm's ROE equals its cost of equity
Economy-wide growth method	$P_0 = y_0 + \sum_{t=1}^{\infty}(1 + r)^{-t}(y_t - (1 + r)y_{t-1}) + \sum_{t=1}^{\infty}(1 + r)^{-t}(dps_t)$	Ohlson and Juettner-Nauroth (2005)	-Analysts' forecasts of earnings in years 1 and 2 and analysts' forecasts of dividends in year 1 equal the market's expectation -Year 1 earnings and year 2 "abnormal earnings" defined as $r^{-1}(eps_2 + rdps_1 - R\,eps_1)$ are positive	-Growth in "abnormal earnings" defined as $r^{-1}(eps_2 + rdps_1 - R\,eps_1)$ occurs at a constant rate for all t. -Estimated constant rate of growth in abnormal earnings equals the market's expectation. -Constant rate of growth is less than the cost of equity and greater than zero
PEG ratio method	$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}}$	Easton (2004)	-Analysts' forecasts of earnings in years 1 and 2 equal the market's expectation -Zero dividends in year 1. -Year 1 earnings and year 2 "abnormal earnings" defined $r^{-1}(eps2 - R\,eps_1)$ as are positive	Beyond the forecast horizon zero growth in "abnormal earnings"

Source: authors' elaboration based on Botosan and Plumlee (2005).

(2) The efficacy of realized returns for expected returns before and after controlling cash flow news,
(3) The effectiveness of averaging several proxies to produce superior measures, and (4) the substitution of realized values for analysts' forecast of cash flows or earnings" do not influence the obtained results using the PEG method, further validating this approach.

Following Easton (2004), Botosan and Plumlee (2005), Reverte (2012) and Cao et al. (2015), this work employs the PEG ratio method to estimate the implied ex ante cost of equity to measure if, and to what extent, sustainability can influence a firm's access to equity finance as a consequence of improved perceived corporate reputation, in terms of economic, social, governance and environmental tasks. Under this perspective, Easton (2004) continues that the PEG method may result in an effective way to study the impact of a series of factors, such as

disclosure quality,cross-listing and so on, on equity costs.

Control variables

The cost of equity is the dependent variable employed in this study to explore the influence sustainable practices have on this aspect of a firm's financial performance. To control the validity of our dependent variable, a set of control variables, most commonly used in this field, was used (Beaver et al., 1970; Reverte, 2012): the firm's beta, market to book value and size.

(1) Beta is a measure of market risk which shows the relationship between a stock's volatility of the stock and that of the market. This coefficient is computed on 23 and 35 consecutive month-end price percent changes and their relativity to a local market index (IBES Thomson Reuters). The value of beta obtained from Thomson Reuters database is levered. In order to obtain the unlevered beta and to avoid the leverage effect in the econometric part of the analysis, transition was made to the levered beta and to the unlevered one, using the following formula (3):

$$Unlevered\ Beta = \frac{Levered\ \ Beta}{1+\frac{Debt}{Equity}} \quad (3)$$

Debt represents the sum of all interest bearing and capitalized lease short- and long-term obligations, while equity represents the sum of preferred stock and common shareholders' equity. Leverage is a variable used to control the reliability of the unlevered beta in the econometric part of the analysis, in order to consider the impact of the firm's financial structure on the cost of equity due to the relationship between the amount of debt and a firm's riskiness separately. Leverage is calculated as debt divided by equity.

(2) Market to book value represents the share price divided by the book value of net tangible assets per share for the appropriate financial year end, adjusted for capital changes. It is calculated as price divided by assets per share.

(3) The adopted measure of a firm's size, following Fama and French (1992) and their Three-factor model, is the natural logarithm of a firm's market capitalization where market capitalization is equal to market price-year end times common shares.

Independent variable

The independent variable employed in this study is the "Equal Weighted Rating" (EWR)[4]. The EWR varies in a range from 0 to 100, where 0 represents firms with the poorest sustainability performance and 100 firms with the best one. The ESG Asset4 Thomson Reuters Datastream data are reliable proxies of environmental, social and governance aspects and several studies in relevant literature have proven their robustness (Semenova and Hassel, 2014). Additionally, the EWR is a comprehensive measure that is able to cover all principal aspects of a firm's sustainability profile, revealing if sustainable practices can reduce perceived riskiness and the cost of equity. To test the relationship between strong sustainable practices and the cost of equity, this work applies a multiple Ordinary Least Square regression (OLS) with temporal dummies, also defined as a Least Square Dummy Variable model (LSDV), controlled for temporal, country, industry effects (Waddock and Graves, 1997), as well as firm specific effects caused by the unobserved heterogeneity (Hamilton and Nickerson, 2003; Reverte, 2012). The Equations used to explain the relationship between CSR and the cost of equity reduction are reported below (Equations 4 and 5). Table 2 summarizes the variables used in this analysis (more details can be found in Appendix A).

$$Ke=\alpha+\beta_1\,Beta(U) + \beta_2\,MTBV + \beta_3\,LnMc + \beta_4\,Lev + \varepsilon_i \quad (4)$$

$$Ke=\alpha+\beta_1\,Beta(U) + \beta_2\,MTBV + \beta_3\,LnMc + \beta_4\,Lev + EWR + \varepsilon_i \quad (5)$$

Equation 4 contains all the variables used by Fama and French (1992) in their Three-factor Asset-Pricing Model, where they demonstrated that such model outperforms the CAPM. This equation is, thus, necessary to validate our measure for the cost of equity due to the strong and widely supported relationship between the cost of equity and a firm's beta, market to book value and size. Equation 5, instead, is the equation employed to analyse the relationship between a higher degree of sustainability and the cost of equity, controlled for all variables tested in Equation (4). Findings are reported and discussed in the paragraph titled "Results".

Data collection

To test the hypothesis that strong sustainable practices can foster reductions in cost of equity, two different samples have been employed in order to compare obtained results among different geographical areas.

The first sample (sample one) consists of the firms included in the S&P 1200 Global[5] index within a period spanning from 2002 to 2016. This sample represents a global sample of firms useful to test the hypothesis under a worldwide perspective given that the aforesaid index "*provides efficient exposure to the global equity*

[4] According to Thomson Reuters "*the EWR reflects a balanced view of a company's performance in all four areas, economic, environmental, social and corporate governance.* (1) *The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management.* (2) *The economic pillar measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is reflection of a company's overall financial health and its ability to generate long-term shareholder value through its use of best management practices.* (3) *The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as the complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value.* (4) *The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value*".

[5] The index is constructed as a composite of 7 headline indices, many of which are accepted leaders in their regions. These include the S&P 500® (US), S&P Europe 350, S&P TOPIX 150 (Japan), S&P/TSX 60 (Canada), S&P/ASX All Australian 50, S&P Asia 50 and S&P Latin America 40 (Source: us.spindices.com).

Table 2. Variables description.

Variable	Symbol	Description
Dependent variable		
Cost of equity	Ke	The proxy of the implied ex ante cost of capital is calculated using the Price Earning Growth method (PEG) developed by Easton (2004)
Independent variable		
Equal Weighted Rating	EWR	The equal weighted rating reflects a balanced view of a company's sustainable performance in four areas: economic, environmental, social and corporate governance
Control variables		
Levered beta	B(L)	Measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market
Unlevered beta	B(U)	Measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. The unlevered beta is obtained dividing the levered beta for (1 + (debt/equity))
Market to book value	MTBV	Price dividend by the book value or net tangible assets per share for the appropriate financial year end, adjusted for capital changes
Leverage	Lev	Leverage is calculated as financial debt divided by shareholder's equity
Natural logarithm of market cap	LnMc	The measure of a firms' size is the natural logarithm of a firms' market capitalization where market cap is equal to market price-year end times common shares outstanding

Source: authors' elaboration.

market, capturing approximately 70% of global market capitalization" (us.spindices.com). It includes 1,220 firms and 18,300 observations.

The second sample (sample two) is made up of the companies included in the STOXX Europe 600 [6] index, an index that "*represents large, mid and small capitalization companies across 17 countries of the European region*" (stoxx.com), using the same timeframe as sample one. The STOXX Europe 600 is a reliable basis to test the impact of CSR on the cost of equity exclusively for European firms. This second sample includes 600 firms and 9,000 observations. The choice of the samples is due to the existing gap in literature which has mainly focused on American and Canadian companies (Reverte, 2012). Tables 3, 4 and 5 summarize the main descriptive characteristics of this study's samples, in terms of geographical area and industry sector. It is important to highlight that the financial sector has not been removed from the samples due to the growing importance of sustainability in this field, despite the absence of a wide literature to such regard (de-los-Salmones et al., 2005; Garbarino and Johnson, 1999; Kolk, 2003; Matute-Vallejo et al., 2011; Scholtens, 2006;).

Indeed, according to Matute-Vallejo et al. (2011), banks, financial institutions and all the other firms that make up the financial sector are improving their corporate image, brand loyalty, and consumer perception in terms of CSR because of lowered consumer empathy towards the sector. Moreover, Kolk (2003) highlights that CSR practices are not reserved for big firms operating in particular sectors with high pollution levels; sustainability is increasing rapidly also among small and medium firms operating in sectors with a low environmental impact (banks and insurance for example) worldwide, without any significant geographical and dimensional differences.

This study is not focused on investigating the impact of pure environmental management on the cost of equity but rather it adopts a 360-degree point of view on sustainability, as demonstrated by the applied measure for the latter. The EWR is a comprehensive metric based on environmental, social, governance and economic indicators able to optimally synthetize corporate commitment in the aforementioned fields. This is the rationale behind the choice to preserve the financial sector within the two samples examined. To corroborate this intuition, additional analyses excluding financial firms from the two samples are conducted.

RESULTS

Tables 6 and 7 provide the descriptive statistics and matrix correlation concerning the dependent, independent and control variables employed for the two samples used here. As these two tables show, the correlation coefficients are low and only in one case (between unlevered beta and leverage) it got to the threshold of 0.62 and 0.63, in sample one and two respectively (Tables 6 and 7). Coherent with previous results obtained by researchers in this field, the measure

[6] The STOXX Europe 600 Index is derived from the STOXX Europe Total Market Index (TMI) and is a subset of the STOXX Global 1800 Index. With a fixed number of 600 components, the STOXX Europe 600 Index represents large, mid and small capitalization companies across 17 countries of the European region: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Table 3. Sample one composition by geographical area.

Geographical area	No. of firms	% in sample
North America	567	46
Europe	363	30
Asia	200	17
Australia	50	4
South America	40	3
Total	1,220	100

Source: authors' elaboration.

Table 4. Sample two composition by geographical area.

Geographical area	No. of firms	% in sample
United Kingdom	173	29
France	85	14
Germany	72	12
Switzerland	48	8
Sweden	44	7
Italy	31	5
Spain	29	5
Netherlands	28	5
Denmark	22	4
Finland	16	3
Belgium	15	3
Norway	12	2
Ireland	8	1
Austria	7	1
Luxembourg	3	0.3
Portugal	3	0.3
Czech Republic	2	0.2
Others	2	0.2
Total	600	100

Source: Authors' elaboration.

Table 5. Samples composition by industry.

Industry	S&P 1200 global		STOXX Europe 600 index	
	No. of firms	% in sample	No. of firms	% in sample
Financials	253	21	137	23
Industrials	212	17	126	21
Consumer Goods	159	13	73	12
Consumer Services	155	12	76	12
Basic Materials	93	8	45	7
Health Care	91	8	46	8
Technology	81	6	25	4
Oil & Gas	72	6	21	4
Utilities	71	6	30	5
Telecommunications	33	3	21	4
Total	1.220	100	600	100

Source: Authors' elaboration.

Table 6. Descriptive statistics and matrix correlation: sample one (S&P 1200 Global).

Variable	Mean	SD	Ke	Beta(U)	MTBV	LnMC	Lev	EWR
Ke	0.0963	0.4333	1.00	-	-	-	-	-
Beta(U)	0.5748	0.3703	0.1211***	1.00	-	-	-	-
MTBV	2.7968	2.4156	-0.1796***	-0.0976***	1.00	-	-	-
LnMc	17.0650	1.9523	-0.0856***	0.0171**	-0.0964***	1.00	-	-
Lev	41.3099	22.9476	0.1108***	-0.6208***	0.0341***	-0.0626***	1.00	-
EWR	67.6250	27.3164	-0.0003	-0.0079	-0.0287***	0.0268***	0.0405***	1.00

Source: authors' elaboration; Note: * p < 0.10, ** p < 0.05, *** p < 0.01 (two-tailed test).

Table 7. Descriptive statistics and matrix correlation: sample two (STOXX Europe 600).

Variable	Mean	SD	Ke	Beta(U)	MTBV	LnMC	Lev	EWR
Ke	0.0980	0.0518	1.00	-	-	-	-	-
Beta(U)	0.5530	0.3651	0.0483***	1.00	-	-	-	-
MTBV	2.6687	2.3730	-0.2166***	-0.0631***	1.00	-	-	-
LnMc	15.7443	1.4331	-0.1209***	-0.0579***	0.0174	1.00	-	-
Lev	42.9405	23.7313	0.1554***	-0.6328***	-0.0355***	0.0926***	1.00	-
EWR	71.3555	26.7430	-0.0762***	-0.0117	-0.0163	0.3459***	0.0547***	1.00

Source: authors' elaboration; Note: * p < 0.10, ** p < 0.05, *** p < 0.01 (two-tailed test).

for CSR and risk are negatively correlated in both samples (Jo and Na, 2012; Reverte, 2012). Using the levered beta does not substantially modify the conclusions. The results are robust to the effect of multicollinearity, as the Variance Inflation Factor test (VIF) generates VIF values (Appendix B) considerably lower than the critical value of 10 (Stock and Watson, 2005).

Regarding the dependent variable, the mean value of the ex ante implied cost of equity is equal to 9.63% in sample one and 9.80% in sample two; these values are consistent with relevant literature (Reverte, 2012, on European firms; Claus and Thomas, 2001, on US firms). This enforces Easton's intuition (2004), concerning the robustness of the PEG method as a viable way to compute the ex ante implied cost of equity.

The Hausman test has helped in the selection between fixed and random effects analyses and render the model more robust, supporting a fixed effects model for the two samples. Table 8 summarizes all findings regarding the two samples, depicting three different models to understand in-depth the reliability of the dependent variable and the relationship between sustainability and cost of equity. The cost of equity should be positively related to the unlevered beta (Sharpe, 1964) and leverage, because according to Lintner (1995) "*the CAPM indicates that the cost of equity is increasing in unlevered beta*" (Botosan and Plumlee, 2005) and according to Modigliani and Miller (1958), there is a positive relationship between the amount of debt in a firm's capital structure and its riskiness. Moreover, the cost of equity should be negatively related to the market to book value (Fama and French, 2004) and the firm's size, because market value and firm risk are "*inherently inversely related*" (Berk, 1995).

Results are strongly consistent with the cited literature, with a statistical significance of 1% (p<0.00) and an adjusted R^2 equal to 0.54 and 0.59 in samples one and two respectively; providing support for the robustness of the proxy used for the cost of equity. Models 2 and 3 in Table 8 highlight a negative and statistical relevant relationship, at a 1% level of significance, between strong sustainable commitment (EWR) and the cost of equity (Ke), both in sample one and sample two, supporting the main hypothesis. It is crucial to further stress that in models 2 and 3 the dependent variable is positively related to beta and negatively related to the market to book value and the firm's size, as in model 1, boosting the idea that strong CSR practices are able to foster equity cost reductions. More in-depth and as a robustness check, model 2 regressed the cost of equity on unlevered beta and leverage degree to isolate potential leverage effects. As an alternative, model 3 regresses the cost of equity on levered beta (omitting the leverage degree) and the results do not change further, supporting the research hypothesis.

A further analysis excludes the financial sector from both samples (to avoid specific sector

Table 8. Impact of EWR on Ke for samples one and two.

Variable	S&P 1200 global			STOXX Europe 600		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	0.03901*** (0.0325)	0.4259*** (0.0733)	0.4358 (570.8957)	0.2240*** (0.0482)	0.2795*** (0.0316)	0.3339*** (0.0804)
Beta (U)	0.0099*** (0.0014)	0.0090*** (0.0016)	-	0.0135*** (0.0023)	0.0142*** (0.0027)	-
Beta (L)	-	-	0.0091*** (0.0010)	-	-	0.0149*** (0.0016)
MTBV	-0.0014*** (0.0002)	-0.0011*** (0.0002)	-0.0003 (0.0002)	-0.0015*** (0.003)	-0.0016*** (0.0004)	-0.0011*** (0.0004)
LnMc	-0.0151*** (0.0007)	-0.0160*** (0.0009)	-0.0177*** (0.0008)	-0.0187*** (0.0011)	-0.0175*** (0.0013)	-0.0189*** (0.0013)
Lev	0.0005*** (0.00003)	0.0004*** (0.00003)	-	0.0004*** (0.00005)	0.0004*** (0.00006)	-
EWR	-	-0.0001*** (0.00002)	-0.0001*** (0.00002)	-	-0.0001*** (0.00003)	-0.0001*** (0.00003)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Temporal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Firms' effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2 Adjusted	0.54	0.51	0.50	0.59	0.63	0.59
No. of firms	1.164	1.151	1.167	534	534	542
No. of obs.	13.365	11.860	12.341	6.247	5.292	5.489

Source: authors' elaboration; Note: Standard errors are in the parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01 (two-tailed test).

issues) generating almost identical results and verifying what has already been presented in the "Data" section of this work.

DISCUSSION

Academics, managers and practitioners have demonstrated a growing interest on how and to what extent sustainable practices can improve corporate financial performance and consequently a firm's value. Although extensive literature in this field is present, the lack of consensus urges new studies to corroborate the actual relationships and fill gaps relating to their dynamics. This paper employs two samples in terms of geographical composition in order to explore the relationship between sustainable practices, measured as environmental, social, economic, and governance efforts (EWR) and a firm's cost of equity. The study mainly aim to:

(1) Analyse the impact of CSR on the cost of equity and
(2) Compare the results obtained by the two geographical samples covering the gap in existing literature by focusing on European companies.

Using two samples of 1,220 and 600 firms respectively and a timeframe spanning from 2002 to 2016 (18,300 and 9,000 observations respectively), the relationship between CSR and the cost of equity under a holistic view of the former and the crucial importance of the latter for a firm's financial viability were analyzed. This study's results point out how more sustainable companies generate higher returns and achieve cost cuttings through innovation, as well as reduce their risk as perceived by the stock market and investors benefiting, as a consequence, from a lower cost of equity and better access to finance.

The findings are in agreement with the branch of researchers that sustain the idea that strategic stakeholder management combined with investments in sustainability reduce the firm's overall riskiness (Di Giulio et al., 2011) and should be included in policy assessment procedures

(Weaver and Jordan, 2008).

Multiple possible conclusions can be drawn. First off, Reverte (2012) suggests that the negative relationship between CSR and the cost of equity could "*be interpreted as evidence that the cost of equity is an important channel to the market prices CSR disclosure*". Second, more sustainable firms reduce information asymmetries, giving investors the chance of more informed investment decisions, especially in the light of the growing importance SRI is gaining worldwide. Third, sustainable firms are perceived less risky by the market and investors and this is a crucial driver behind lower cost of equity.

Another potential factor for cost reductions in the equity of more sustainable firms lies in the green firms attraction theory according to which "*'green' investors will only invest in firms with good environmental risk management (i.e., more legitimate firms) while 'non-green' investors are indifferent about environmental risk management and will not necessarily invest in 'green' firms*" (Sharfman and Fernando, 2008). This work contributes to the existing literature in three fundamental ways:

(1) It further corroborates the robustness of the PEG ratio method, as a useful and reliable methodology to compute an ex ante implied cost of equity proxy
(2) It demonstrates that more sustainable firms benefit from a cost of capital reduction
(3) It provides a thorough comparison between a worldwide and a European sample, trying to fill the existing gap in literature that mainly focuses on American firms (Dhaliwal et al., 2011; El Ghoul et al., 2011).

Moreover, this study can be a useful tool for politicians and regulatory authorities to urge firms towards increased sustainability efforts, as well as more thorough and comprehensive non-financial disclosure. This would boost investors' confidence and reduce asymmetries worldwide while rewarding more sustainable firms that adopt, free of any enforcement, massive voluntary disclosure and sustainable policies. Finally, the work is in agreement with those that opine that CSR activity can create value for their shareholders through the creation of insurance-link protection fostering cost of equity reductions. As repeatedly analysed in our work, moral capital generated by superior sustainable practices seems to be able to protect firms when negative events occur, reducing firm risk. CSR is beneficial not only to society, but to firms as well.

Conclusion

In conclusion, great grounds for future research works have been identified. From a methodological point of view, researchers may use different metrics to operationalize key variables, especially the ex ante implied measure of the cost of equity and the sustainable score, as well as expand the sample, in terms of firms, countries and timeframe, in order to corroborate and improve these results. Another interesting stream of research can be located within the relationship between sustainable practices and the cost of debt, reviewing the impact of CSR on the weighted average cost of capital, combining the results of equity and debt analyses to obtain a 360-degree overview on this filed. These results could magnify implications for managers, investors and policymakers all around the world.

From a less technical but more substantial perspective, a myriad amount of works can be developed around specific sectors or markets. More to the point, the financial sector, banks in particular, may represent an interesting and viable way to develop future studies, due to the growing importance these firms attribute to CSR practices and corporate image; while still remaining vastly marginalized in CSR literature.

At this point we have to recognize the high potential for study that emerges with regard to less explored markets, especially in developing and frontier economies. African countries, especially newborn economies recently liberated from totalitarian political regimes have been the focus of novel interesting research that defies classic capital pricing models.

In addition to such limited line of work, even less literature has thoroughly explored CSR in emerging economies. While investors placing financial resources in such countries face a myriad of challenges in comparison with mature markets, integrating sustainability into their analysis can provide additional lenses into firms that possess the necessary capabilities to create value over time.

Furthermore, ESG considerations can be studied as a potential moderator of inevitable risks (political, currency and so on) embedded in certain countries and a compass helping international capital to identify the most promising candidates within a high risk high return context. Concluding, given the lack of maturity in these markets and the still unexploited grounds to develop sustainability skills, the hot topic of active ownership can be unfolded. Interacting constructively with the firm organization in order to enhance its ESG profile can lead to operational and risk management improvements, as well as boost investors' perception and confidence in the underlying firms helping to bring in much needed and expensive capital so far.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Anginer D, Mansi S, Warburton A, Yildizhan C (2016). Firm Reputation and the Cost of Debt Capital. Working paper, available at SSRN:

https://ssrn.com/abstract=1873803.
Barnett M, Jermier J, Lafferty B (2006). Corporate reputation: The definitional landscape. Corporate Reputation Review 9(1):26-38.
Beaver W, Kettler P, Scholes M (1970). The Association between Market-Determined and Accounting-Determined Risk Measures. The Accounting Review 45(4):654-682.
Bebbington K, Larrinaga-Gonzales C, Moneva J. (2008). Corporate social reporting and reputation risk management. Accounting, Auditing and Accountability Journal 21(3):337-362.
Berk J (1995). A critique of size-related anomalies. The Review of Financial Studies 8(2):275-286.
Bimha A, Nhamo G (2017). Sustainable Development, Share Price and Carbon Disclosure Interactions: Evidence From South Africa's JSE 100 Companies. Sustainable Development 25(5):400-413.
Blume M, Lim F, Mackinlay A (1998). The Declining Credit Quality of U.S. Corporate Debt: Myth or Reality? The Journal of Finance 53(4):1389-1413.
Botosan C (1997). Disclosure Level and the Cost of Equity Capital. The Accounting Review 72(3):323-349.
Botosan C (2006). Disclosure and the cost of capital: What do we know? Accounting and Business Research International Accounting Policy Forum 36(1):31-40.
Botosan C, Plumlee M (2002). A re-examination of disclosure level and the expected cost of equity capital. Journal of Accounting Research 40(1):21-40.
Botosan C, Plumlee M (2005). Assessing alternative proxies for expected risk premium. The Accounting Review 80(1):21-53.
Botosan C, Plumlee M, Wen H (2011). The Relation between Expected Returns, Realized Returns, and Firm Risk Characteristics. Contemporary Accounting Research 28(4):1085-1122.
Boulding K (1956). General systems theory: the skeleton of science. Management Science 2(3):197-208.
Brammer S, Brooks C, Pavelin S (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. Financial Management 35(3):97-116.
Cao Y, Myers L, Omer T (2012). Does company reputation matter for financial reporting quality? Evidence from restatements. contemporary accounting research 29(3):956-990.
Cao Y, Myers J, Myers L, Omer T (2015). Company reputation and the cost of equity capital. Review of Accounting Studies 20 (1):42-81.
Chan L, Lakonishok J, Sougiannis T (2001). The stock market valuation of research and development expenditures. The Journal of Finance 56 (6):2431-2456.
Chava S (2010). Socially Responsible Investing and Expected Stock Returns. Working paper, available at SSRN: https://ssrn.com/abstract=1678246.
Chava S (2014). Environmental externalities and cost of capital. Management Science 60(9):2223-2247.
Chava S, Purnanandam A (2010). Is default-risk negatively related to stock returns? The Review of Financial Studies 23(6):2523-2559.
Chen K, Metcalf R (1980). The relationship between pollution control record and financial indicators revisited. Accounting Review 55(1):168-177.
Cheng B, Ioannou I, Serafeim G (2014). Corporate social responsibility and access to finance. Strategic Management Journal 35(1):1-35.
Christmann P (2000). Effects of Best Practices of Environmental Management on Cost Advantage: The Role of Complementary Assets. Academy of Management Journal 43(4):663-680.
Claus J, Thomas J (2001). Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets. The Journal of Finance 56(5):1629-1666.
Core J (2001). A review of the empirical disclosure literature: Discussion. Journal of Accounting and Economics 31(1-3):441-456.
Dachs P (2010). South Africa makes plans for voluntary disclosure programme. International Tax Review 21(8):48-48.
de-los-Salmones M, Crespo A, del Bosque I (2005). Influence of corporate social responsibility on loyalty and valuation of services. Journal of Business Ethics 11(4):369-385.
Deegan C (2002). The legitimising effect of social and environmental discloses – a theoretical foundation. Accounting, Auditing and Accountability Journal 15(3):282-311.
Dhaliwal D, Li O, Tsang A, Yang G (2011). Voluntary nonfinancial disclosure and the cost of equity capital: the initiation of corporate social responsibility reporting. The Accounting Review 86(1):59-100.
Di Giulio A, Migliavacca P, Tencati A (2011). Corporate Social Performance and Cost of Capital: A Meaningful Relationship? In A. Tencati & F. Perrini (Eds.), Business Ethics and Corporate Sustainability, Cheltenham, UK: Edward Elgar Publishing. pp.132-146.
Diamond D, Verrecchia R (1991). Disclosure, liquidity and the cost of equity capital. The Journal of Finance 46(4):1325-1360.
Dowell G, Hart S, Yeung B (2000). Do Corporate Global Environmental Standards Create or Destroy Market Value? Management Science 46(8):1059-1074.
Easton P (2004). PE Ratios, PEG Ratios, and Estimating the Implied Expected Rate of Return on Equity Capital. The Accounting Review 79(1):73-95.
Easley D, O'Hara M (2004). Information and the cost of capital. The Journal of Finance 59(4):1553-1583.
El Ghoul S, Guedhami O, Kwok C, Mishra D (2011). Does corporate social responsibility affect the cost of capital? Journal of Banking & Finance 35(9):2388-2406.
Elkington J (1997). Cannibals with forks: The Triple Bottom Line of 21st Century Business. Oxford: Capstone publishing.
Elton E (1999). Expected return, realized return, and asset pricing tests. The Journal of Finance 54(4):1199-1220.
Elton E, Gruber M, Agrawal D, Mann C (2001). Explaining the Rate Spread on Corporate Bonds. The Journal of Finance 56(1):247-277.
Endrikat J (2015). Market Reactions to Corporate Environmental Performance Related Events: A Meta-analytic Consolidation of the Empirical Evidence. Journal of Business Ethics 138(3):535-548.
Fama E, French K (1992). The cross-section of expected stock returns. Journal of Finance 47(2):427-465.
Fama E, French K (2004). Profitability, Growth, and Average Returns. CRSP Working Paper, Vol. 558, University of Chicago, US. Available at SSRN: https://ssrn.com/abstract=570343.
Feldman S J, Soyka P A, Ameer PG (1997). Does improving a firm's environmental management system and environmental performance result in a higher stock price? Environmental Group Study, ICF Kaiser International, Inc.: Fairfax, VA.
Freeman R (1984). Strategic Management. A stakeholder Approach. Pitman/Ballinger (Harper Collins): Boston.
Garbarino E, Johnson M (1999). The different roles of satisfaction, trust and commitment in customer relationships. Journal of Marketing 63(2):70-87.
Garber S, Hammitt J (1998). Risk premiums for environmental liabilities: superfund and the cost of capital. Journal of Environment and Economic Management 36(3):267-294.
Gardberg N, Fombrun C (2006). Corporate Citizenship: Creating Intangible Assets across Institutional Environment. Academy of Management Review 31(2):329-346.
Gebhardt W, Lee C, Swaminathan B (2001). Toward an implied cost of capital. Journal of Accounting Research 39(1):135-176.
Godfrey P (2005). The Relationship between Corporate Philanthropy and Shareholder Wealth: A Risk Management Perspective. Academy of Management Review 30(4):777-798.
Godfrey P, Merrill C, Hansen J (2009). The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. Strategic Management Journal 30(4):225-245.
Golicic S, Smith C (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. Sustainable CSM Practices and Performance 49(2):78-95.
Gordon J, Gordon M (1997). The finite horizon expected return model. Financial Analysts Journal 53(3):52-61.
Goss A, Roberts G (2011). The impact of corporate social responsibility on the cost of bank loan. Journal of Banking & Finance 35(7):1794-1810.

Graham J, Harvey C, Rajgopal S (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics 40(1-3):3-37.
Gregory A, Whittaker J (2012). Exploring the Valuation of Corporate Social Responsibility-A comparison of Research Methods. Journal of Business Ethics 116(1):1-20.
Gruber V, Schlegelmilch B (2015). MNEs' regional headquarters and their CSR agenda in the African context. International Marketing Review 32(5):576-602.
Hamilton B, Nickerson J (2003). Correcting for endogeneity in strategic management research. Strategic Organization 1(1):51-78.
Hart S, Ahuja G (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. Business Strategy and the Environmental 5(1):30-37.
Hearn B (2009). Liquidity and Valuation in East African Securities Markets. South African Journal of Economics 77(4):553-576.
Hearn B, Piesse J (2015). The Impact of Firm Size and Liquidity on the Cost of External Finance in Africa. South African Journal of Economics 83(1):1-22.
Heinkel R, Kraus A, Zechner J (2001). The effect of green investment on corporate behavior. Journal of Financial and Quantitative Analysis 36(4):431-449.
Himme A, Fischer M (2014). Drivers of the Cost of Capital: The Joint Role of Non-Financial Metrics. International Journal of Research in Marketing 31(2):224-238.
Jensen M, Meckling W (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3(4):305-360.
Jo H, Na H (2012). Does CSR Reduce Firm Risk? Evidence from Controversial Industry Sectors. Journal of Business Ethics 110(4):441-456.
Khanna M, Damon L (1999). EPA's Voluntary 33/50 Program: Impact on Toxic Releases and Economic Performance of Firms. Journal of Environmental Economics and Management 37(1):1-25.
Kempf A, Osthoff P (2007). The Effect of Socially Responsible Investing on Portfolio Performance. CFR-Working Paper. No. 06–10, University of Cologne, Germany. Available at https://www.econstor.eu/bitstream/10419/57725/1/702962686.pdf
King A, Lenox M (2001). Does It Really Pay to Be Green? An Empirical Study of Firm Environmental and Financial Performance. Journal of Industrial Ecology 5(1):105-116.
King A, Lenox M (2002). Exploring the locus of profitable pollution reduction. Management Science 48(2):289-299.
Klassen R, McLaughlin C (1996). The Impact of Environmental Management on Firm Performance. Management Science 42(8):1199-1214.
Kolk A (2003). Trends in sustainability reporting by the Fortune Global 250. Business Strategy and the Environment 12(5):279-291.
Konar S, Cohen M (2001). Does the Market Value Environmental Performance? Review of Economics and Statistics 83(2):281-289.
KPMG (2008). KPMG International survey of responsibility reporting 2008. Amstelveen. The Netherlands: KPMG International. Available at http://s3.amazonaws.com/zanran_storage/www.kpmg.bg/ContentPages/45691987.pdf
Kühn A, Stiglbauer M, Matthias S (2018). Contents and Determinants of Corporate Social Responsibility Website Reporting in Sub-Saharan Africa: A Seven-country Study. Business & Society 57(3):437-480.
Lambert R, Leuz C, Verrecchia R (2006). Information Asymmetry, Information Precision, and the Cost of Capital. Review of Finance 16(1):1-29.
Leuz C, Verrecchia R (2000). The economic consequences of increased disclosure. Journal of Accounting Research 8(S):91-124.
Leuz C, Wysocki P (2008). Economic Consequences of Financial Reporting and Disclosure Regulation: A Review and Suggestions for Future Research. Working Paper, University of Chicago, US. Leuz, Christian and Wysocki, Peter D., Economic Consequences of Financial Reporting and Disclosure Regulation: A Review and Suggestions for Future Research (March 2008). Available at SSRN: https://ssrn.com/abstract=1105398.
Lintner J (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. Review of Economics and Statistics 47(1):13-37.
Loughran T, Schultz P (2005). Liquidity: Urban versus rural firms. Journal of Financial Economics 78(2):341-374.
Lozano JM (2005). Towards the relational corporation: from managing stakeholder relationships to building stakeholder relationships (waiting for Copernicus). Corporate Governance: The International Journal of Business in Society 5(2):60-77.
Lozano R (2013). A Holistic Perspective on Corporate Sustainability Drivers. Corporate Social Responsibility and Environmental Management 22(1):32-44.
Mackey A, Mackey T, Barney J (2007). Corporate social responsibility and firm performance: investor preferences and corporate strategies. Academy of Management Review 32(3):817-835.
Margolis J, Elfenbein H, Walsh J (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working paper, Harvard Business School, Harvard University, Boston, MA. Available at SSRN: https://ssrn.com/abstract=1866371.
Margolis J, Walsh J (2003). Misery Loves Companies: Rethinking Social Initiatives by Business. Administrative Science Quarterly 48(2):268-305.
Matute-Vallejo J, Bravo R, Pina J (2011). The Influence of Corporate Social Responsibility and Price Fairness on Customer Behaviour: Evidence from the Financial Sector. Corporate Social Responsibility and Environmental Management 18(6):317-331.
Mensah A, Kwame B (2016). Internal control information disclosure and corporate governance: evidence from an emerging market. Corporate Governance: The International Journal of Effective Board Performance. 16(1):79-95.
Modigliani F, Miller M (1958). The cost of equity capital, corporation finance, and the theory of investment. American Economic Review 48(3):261-297.
Munro V (2013). Stakeholder Preferences for Particular Corporate Social Responsibility (CSR) Activities and Social Initiatives (SIs). Journal of Corporate Citizenship 51:72-105.
Murphy C (2002). The Profitable Correlation: Between Environmental and Financial Performance: A Review of the Research. Light Green Advisors Inc.: Seattle, WA.
Nelson K (1994). Finding and implementing projects that reduce waste, Industrial ecology and global change. New York: Cambridge University Press.
Ohlson J (1995). Earnings, book value, and dividends in security valuation. Contemporary Accounting Research 11(2):661-687.
Ohlson J, Juettner-Nauroth B (2005). Expected EPS and EPS Growth as Determinants of Value. Review of Accounting Studies 10(2-3):340-365.
Orlitzky M, Benjamin JD (2001). Corporate social performance and firm risk: a meta-analytic review. Business & Society 40(4):369-396.
Pastor L, Sinha M, Swaminathan B (2008). Estimating the Intertemporal Risk-Return Tradeoff Using the Implied Cost of Capital. The Journal of Finance 63(6):2859-2897.
Paulo S (2011). The South African Companies Act of 2008 (SACA2008), and the Sarbanes-Oxley Act of 2002. International Journal of Law & Management 53(5):340-354.
Perrini F (2005). Building a European Portrait of Corporate Social Responsibility Reporting. European Management Journal 23(6):611-627.
Perrini F, Russo A, Tencati A, Vurro C (2011). Deconstructing the Relationship between Corporate Social and Financial Performance. Journal of Business Ethics 102(S1):59-76.
Porter M, van der Linde C (1995). Toward a New Conception of the Environment-Competitiveness Relationship. Journal of Economic Perspectives 9(4):97-118.
Post J E, Preston L E, Sachs S (2002). Managing the extended enterprise: the new stakeholder view. California Management Review 45(1):6-28.
Reverte C (2012). The Impact of Better Corporate Social Responsibility Disclosure on the Cost of Equity Capital. Corporate Social

Responsibility and Environmental Management 19(5):253-272.
Richardson A, Welker M (2001). Social disclosure, financial disclosure and the cost of equity capital. Accounting, Organization and Society 26(7):597-616.
Russo M, Fouts P (1997). A Resource-Based Perspective on Corporate Environmental Performance and Profitability. Academy of Management Journal 40(3):534-559.
Schaltegger S, Burritt (2005). Corporate Sustainability, in H. Folmer and T. Tietenberg (Eds.), The International Yearbook of Environmental and Resource Economics 2005/2006, Chetenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp. 185-222.
Scholtens B (2006). Finance as a driver of corporate social responsibility. Journal of Business Ethics 68(1):19-33.
Semenova N, Hassel L (2014). On the validity of environmental performance metrics. Journal of Business Ethics 132(2):1-10.
Sharfman M, Fernando C (2008). Environmental risk management and the cost of capital. Strategic Management Journal, 29(6):569-592.
Sharpe W (1964). Capital asset prices: a theory of market equilibrium under conditions of risk. The Journal of Finance 19(3):425-442.
Spicer B (1978). Investors, corporate social performance and information disclosure: an empirical study. Accounting Review 53(1):94-111.
Statman M, Glushkov D (2009). The Wages of Social Responsibility. Financial Analysts Journal 65(4):33-46.
Stock J, Watson M (2005). Introduction to Econometrics, 1st ed. Pearson & publishing as A.-W. Education, Inc, eds.
Stubbs W, Cocklin C (2007). Cooperative, community-spirited and commercial: social sustainability at Bendigo bank. Corporate Social Responsibility and Environmental Management 14(5):251-262.
Sullivan R (2011). Valuing Corporate Responsibility: How do investors really use corporate responsibility information? Greenleaf Publishing, US.
Verrecchia RE (2001). Essays on disclosure. Journal of Accounting and Economics 32(1-3):97-180.
Waddock S, Graves S (1997). The Corporate Social Performance-Financial Performance Link. Strategic Management Journal 18(4):303-319.
Wagner M (2005). How to reconcile environmental and economic performance to improve corporate sustainability: corporate environmental strategies in the European paper industry. Journl of Environmental Management 76(2):105-118.
Weaver P, Jordan A (2008). What roles are there for sustainability assessment in the policy process? International Journal of Innovation and Sustainable Development 3(1-2):9-32.
Wilson R (1985). Reputations in games and markets. In A. E. Roth (Ed.), Game-theoretic models of bargaining. New York: Cambridge University Press.
Weber O, Scholz R, Michalik G (2010). Incorporating sustainability criteria into credit risk management. Business Strategy and the Environment 19(1):39-50.
Wood D (2010). Measuring Corporate Social Performance: A Review. International Journal of Management Reviews 12(1):50-84.
UN Global Compact-Accenture (2010). A new era of sustainability. Available at https://microsite.accenture.com/sustainability/research_and_insights.
Unerman J (2008). Strategic reputation risk management and corporate social responsibility reporting. Accounting, Auditing and Accountability Journal 21(3):362-364.
Uzzi B (1997). Social structure and competition in interfirm networks: the paradox of embeddedness. Administrative Science Quarterly 42(1):35-67.

Appendix A. Analytical variables description.

Variable	Symbol	Description
Dependent variable		
Cost of equity	Ke	The ex ante cost of capital proxy is calculated using the Price Earning Growth (PEG) method, developed by Easton (2004) and validated by Botosan and Plumlee (2005) and Botosan et al. (2011). The formula to compute the cost of equity is the following: $Ke = \sqrt{\frac{(EPS\ t+2) - (EPS\ t+1)}{P\ t0}}$ where EPS_{t+2} and EPS_{t+1} represent analyst forecasts of earnings per share for firm *i* for two and one year ahead (with $EPS_{t+2} > EPS_{t+1}$) and P_{t0} is the stock market price of firm *i* at the forecast data (end of year t). Source: IBES Thomson Reuters Datastream.
Independent variable		
Equal weighted rating	EWR	The "Equal Weighted Rating" reflects a balanced view of a company's performance in all four areas, economic, environmental, social and corporate governance. - The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management. - The economic pillar measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is reflection of a company's overall financial health and its ability to generate long term shareholder value through its use of best management practices. - The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value. - The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value. Source: Thomson Reuters Datastream.
Control variables		
Levered beta	B (L)	A measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. This coefficient is based on between 23 and 35 consecutive month end price percent changes and their relativity to a local market index. Source: IBES Thomson Reuters Datastream
Unlevered beta	B (U)	A measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. This coefficient is based on between 23 and 35 consecutive month end price percent changes and their relativity to a local market index. The unlevered beta is obtained dividing the levered beta for (1 + (debt/equity)) as suggested by Botosan and Plumlee Botosan (2005). Source: author's elaboration on data come from Thomson Reuters Datastream.
Price to book value	PTBV	This is the price dividend by the book value or net tangible assets per share for the appropriate financial year end, adjusted for capital changes. It is calculated as: (P/assets per share). Source: Thomson Reuters Datastream.
Leverage	Lev	The leverage is calculated as debt/equity. Debt represents all interest bearing and capitalized lease obligations. It is the sum of long and short-term debt; total shareholders' equity represents the sum of preferred stock and common shareholders equity. This item is available in the annual time series and the quarterly, semi-annual and trimester interim time series. It is only available at the company level. Source: Thomson Reuters Datastream.
Natural logarithm of market cap	LnMc	The adopted measure of firm size is the natural logarithm of a firm market capitalization where market cap is equal to market price-year end multiplied by Common shares outstanding. Source: Thomson Reuters Datastream.

Source: author's elaboration.

Appendix B. Variance inflation factor (VIF) test – two samples.

Variable	S&P 1200 Global	STOOX Europe 600 Index
	VIF	VIF
Unlevered beta	1.69	1.75
Market to book value	1.02	1.02
Leverage	1.69	1.73
Natural logarithm of market cap	1.02	1.15
EWR	1.01	1.14
MEAN VIF	1.29	1.36

Source: author's elaboration.