Research article

The moderating role of stakeholder management and societal characteristics in the relationship between corporate environmental and financial performance

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ABSTRACT

This study contributes to the debate about the moderating factors that affect the relationship between environmental and financial performance. Combining stakeholder theory, stakeholder salience, and legitimacy theory, and based on a large international sample, we demonstrate that stakeholder prioritization and engagement jointly positively moderate the relationship between environmental and financial performance. However, this moderating effect is only found when both formal and informal societal characteristics are strong and support the business environment surrounding the firm and its stakeholders. Contributions and implications for managers and regulators are discussed.

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1. Introduction

Despite environmental, social, and governance information and activities being proved to be useful for various economic agents and for the broader economic and business environment (Amel-Zadeh and Serafeim, 2017), researchers have spent 40 years debating whether firms themselves benefit from such activities. We join this debate by investigating the moderating role of stakeholder management and societal characteristics on the relationship between corporate sustainability and corporate financial performance.

From a theoretical point of view, two streams of literature have provided opposite views on this relationship (El Ghoul et al., 2017). On one hand, according to neoclassical theory, the integration of environmental and social policies into a firm's strategy increases its costs and potentially destroys shareholders' wealth (e.g., Palmer et al., 1995). On the other hand, the positive revisionist approach suggests that such activities increase both private and public wealth (e.g., Porter and Kramer, 2011). Applying the latter approach, stakeholder theory underpins a positive relationship between corporate sustainability and corporate financial performance (e.g., Wang et al., 2016).

Empirical studies have not succeeded in clarifying the theoretical debate because of inconsistent results (Grewatsch and Kleindienst, 2015). A potential motivation is that examining the link between corporate sustainability and corporate financial performance "spans academic disciplines (i.e., management, finance, economics, accounting, and marketing) and theoretical lenses making synthesis and interpretation difficult" (Dixon-Fowler et al., 2013, p. 354). As a result, in recent years the academic debate has moved on to concentrate on the contingent aspects that moderate the link, shifting from answering the question "Does it pay to be good?" to "When does it pay to be good?" (Orlitzky et al., 2011).

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Prior literature identifies two main topics that need to be considered when investigating the consequences of corporate sustainability actions. First, stakeholders are able to evaluate corporate sustainability actions when managers listen, coordinate, and operate in ways that allow each stakeholder group to feel their views are heard (Kaptein and van Tulder, 2003). To achieve this objective, managers should implement and communicate corporate sustainability in a way that alleviates concerns from stakeholders (Selmier et al., 2015). Conversely, stakeholders' ability to evaluate corporate sustainability is reduced as they are unable to disaggregate responsible and irresponsible actions (Strike et al., 2006). Second, societal characteristics are fundamental in understanding causes and consequences of corporate sustainability. In fact, institutional pressure is a key factor in determining a firm's need for societal goodwill (Husted and Allen, 2006). Thus, both economic and legitimacy-seeking arguments influence the implementation and effectiveness of corporate sustainability practices (Young and Makhija, 2014).

Perhaps surprisingly, prior literature neglected the contemporaneous examination of the moderating effect of stakeholder management and societal characteristics on the relationship between corporate sustainability and corporate financial performance. We investigate the relationship between corporate environmental performance (CEP)[1] and corporate financial performance (CFP) using three theoretical lenses: stakeholder theory, stakeholder salience, and legitimacy theory. Building on the interaction between stakeholder theory and stakeholder salience, we first hypothesize that the link between CEP and CFP is stronger when firms decide to manage relationships with stakeholders by prioritization and engagement. Reflecting on legitimacy theory, and its interplay with stakeholder theory and stakeholder salience, we argue that the positive moderating effect of stakeholder prioritization and engagement on the relationship between CEP and CFP only holds when formal and informal societal characteristics are strong.

Using an international sample of 13,627 firm-year observations from 37 countries spanning the period 2003–2014, we confirm that stakeholder prioritization and engagement positively moderate the association between CEP and CFP only when they are jointly implemented. Additionally, we document that these results are valid only when high formal and informal societal characteristics support the business environment surrounding the firm and its stakeholders.

Our study contributes to the debate on moderators of the relationship between CEP and CFP in three ways. First, we investigate the simultaneous effect of two stakeholder management tools likely to influence the relationship between CEP and CFP that, to our knowledge, have never been studied together. This allows us to provide a more complex and systematic view of the matter, which is missing in prior literature. We show that stakeholder management needs to be conscientiously implemented through both prioritization and engagement to positively affect the CEP-CFP relationship. In doing so, responding to the plea in prior literature to invest in theory building, we contribute by constructing a framework based on three different theories. This also allows us to select moderators that do not fall into list of the "usual suspects" (Grewatsch and Kleindienst, 2015). Second, our results provide support for managers to design better environmental strategies. In fact, by prioritizing the needs of stakeholders and engaging them in the decision-making process, managers will be able to identify and select the most appropriate and profitable environmentally responsible investment strategies. We also advise managers about the importance of concordance between prioritization and engagement strategies, and inform managers of multinational companies about the role of societal characteristics and country differences in supporting the moderating role of stakeholder prioritization and engagement on the relationship between CEP and CFP. Finally, policymakers can also benefit from our results. While our results show that being more environmentally friendly always pays off in terms of financial performance, they also reveal that the effectiveness of environmental management practices critically depends on societal characteristics. Reflecting on legitimacy theory, policymakers can design appropriate environmental regulations to induce virtuous environmental management practices that enhance the effect of environmental performance on financial performance.

The remainder of the paper is organized as follows. We discuss the theoretical framework and the three theories used to develop the hypotheses. Next, we explain the sample, data, and methodology of this study. Finally, we report the results and offer a discussion of the main findings and concluding remarks.

2. Theoretical framework

Stakeholder theory and the resource-based view are generally used to support a positive relationship between CEP and CFP (Grewatsch and Kleindienst, 2015; Ramanathan, 2016; Wang et al., 2016). The major difference between these two theories is that the former focuses on maximizing financial performance by managing external constraints imposed by stakeholders (Freeman, 1984). Conversely, the latter emphasizes the creation of valuable, rare, inimitable, and non-substitutable resources as a driver of enhanced financial performance (Russo and Fouts, 1997). This study focuses on stakeholder theory, since it allows us to bridge internal managerial practices to both external needs and pressures imposed by stakeholders and expectations derived from societal characteristics. We use the lens of stakeholder salience to examine managerial practices and analyze societal characteristics from a legitimacy theory perspective.

According to stakeholder theory, stakeholders are defined as all individuals connected directly, or indirectly, with the firm, and are those who may affect or be affected by the achievement of the firm's objectives (Freeman, 1984). Based on this, firms must look beyond merely maximizing shareholders' wealth, and consider all individuals who have an interest in the firm's operations (e.g., Parmar et al., 2010). By satisfying the needs of different groups of stakeholders, firms can enhance financial performance through increases in effectiveness and efficiency, which will not occur if the needs of any group are ignored (Platonova et al., 2016). Given its innate characteristics, stakeholder theory has also become a useful framework for linking stakeholders' pressure for implementation of good firm-level environmental strategies to improved financial performance (Cordeiro and Tewari, 2015). In fact, sound environmental performance lowers the probability that stakeholders will undermine firm operations through penalties, legal actions, or customer boycotts (Cordeiro and Tewari, 2015), thus leading to a competitive advantage for the firm (Wang et al., 2016).

While stakeholder theory suggests that taking care of all stakeholders is fundamental for a firm's survival, it is also commonly acknowledged that managers cannot satisfy all stakeholders' needs due to limited resources (Unerman, and Bennett, 2004). Boesso and Kumar (2009a, p. 163) argue that "the pragmatic reality is that, despite their obligations to a range of multiple primary stakeholders, managers cannot attend to all of the actual and potential claims of all stakeholders." To rationally solve

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[1] We concentrate on CEP since prior literature documents a relatively strong interest in environmental information and activities compared to other elements of corporate sustainability (Eccles et al., 2011).

concerns stemming from stakeholder theory, Mitchell et al. (1997) proposed the notion of stakeholder salience, offering a unique framework for examining how managers should determine which stakeholders are the most important to the firm and should receive greater attention. According to this framework, the combination of power, legitimacy, and urgency determines the importance of competing stakeholder claims. The more attributes a manager attaches to a stakeholder group, the higher its salience, and the higher the importance of managing the relationship with that group of stakeholders (Boesso and Kumar, 2009b; Mitchell et al., 1997).

Although stakeholder management is a complex mix of different strategic tasks, stakeholder salience identifies prioritization and engagement as pivotal activities for a firm (Mitchell et al., 1997). The former is determined depending on competing stakeholder claims and results in a firm's activities and investment being directed to benefit the most relevant group(s) of stakeholders (Agle et al., 1999). The latter "can be understood as practices that the organization undertakes to involve stakeholders in a positive manner in organizational activities." (Greenwood, 2007, p. 318).

In the act of prioritizing and engaging with stakeholders, firms are supposed to make decisions and behave in a manner that is most consistent with stakeholders' views and expectations. Along this line, prior studies stress the importance of legitimacy theory in providing additional insights into the contingencies surrounding the relationship between firm advantages and stakeholder claims (Hybels, 1995; Suchman, 1995). Legitimacy theory focuses on the importance of societal acceptance to ensure a firm's survival (Singh et al., 1986) and assumes that a firm can only prosper when operating in accordance with societal expectations (Gray et al., 1996). In this vein, Boesso and Kumar (2009b, p. 65) argue that it is fundamental that managers "establish congruence between the societal values associated with or implied by their activities and the acceptable behaviors in the larger social system." Thus, societal characteristics may be a critical aspect to consider when it comes to using prioritization and engagement to manage stakeholders and maximize value creation.

Reflecting on previous literature, we deduce that a strong link exists between stakeholder theory, stakeholder salience, and legitimacy theory. These lenses and their interplay help us develop our hypotheses and interpret how stakeholder management and societal characteristics moderate the relationship between CEP and CFP.

3. Hypotheses development

Many studies that adopt stakeholder theory as a main theoretical underpinning to investigate the relationship between CEP and CFP provide mixed evidence. Nevertheless, a high percentage of studies document a positive correlation between CEP and CFP, meaning that a real commitment to environmental performance may result in higher financial performance (Ramanathan, 2016).

Relying on the same theoretical framework, other studies focus on the contingent aspects affecting the relationship between CEP and CFP.[2] Among the various moderators, competing arguments have been made regarding whether firm characteristics like size (Clemens, 2006), ownership structure (Dean et al., 1998), firm resources and competitive advantages (López-Gamero et al., 2009), and industry characteristics (Baird et al., 2012) contribute to a higher or lower impact of CEP on CFP.

While firm characteristics are certainly crucial in this setting,

other studies focus on different contingencies, like managerial characteristics (Kim and Statman, 2012), stakeholder relationships (Jayachandran et al., 2013), and the business environment (Flammer, 2013). In their critical review, Grewatsch and Kleindienst (2015) compile a useful classification of the several moderators investigated in prior studies, distinguishing between internal and external moderators. Not surprisingly, stakeholder management falls into both categories. In fact, stakeholder engagement can be considered an external moderator, while stakeholder prioritization is an internal moderator since it is part of managerial activity.

Through the lens of stakeholder theory, prioritizing can increase the strength of environmental activities' influence on CFP because the firm's resources are concentrated on satisfying the stakeholders that are believed to be most relevant. Similarly, engaging with stakeholders can also increase the impact of CEP on CFP because stakeholders are involved and informed of the firm's environmental strategy and results (Selmier et al., 2015). Empirical studies seem to confirm the above arguments separately on stakeholder engagement (Boesso and Michelon, 2010; Kim and Statman, 2012; Michelon et al., 2013) and prioritization (Jayachandran et al., 2013; Madsen and Rodgers, 2015).

While previous results may appear comprehensible under the overrated lens of stakeholder theory, various arguments challenge their validity. On stakeholder engagement, Greenwood (2007, p. 315) states that there seems to be an assumption that "the more an organization engages with its stakeholders, the more it is responsible." Admittedly, the simplistic act of activating an external dialogue with stakeholders does not necessarily mean that the organization is internally following their suggestions and requests. Thus, the mere act of engaging with stakeholders may appear insufficient to moderate the relationship between CEP and CFP. Similar arguments can be made on stakeholder prioritization. Madsen and Rodgers (2015, p. 778) argue that "implicit in the argument that stakeholder groups may reward firms for their CSR activities is the assumption that stakeholders attend to firm social initiatives." Following this line of reasoning, stakeholder prioritization is at risk of remaining an internal and powerless instrument if managers do not activate an external channel to engage with stakeholders.

The conjunct adoption of stakeholder theory and stakeholder salience helps alleviate the above concerns, reconcile prior mixed results, and visualize a more appropriate mechanism through which stakeholder prioritization and engagement moderate the relationship between CEP and CFP. In fact, stakeholder salience recognizes the importance of both stakeholder prioritization and engagement in resolving competing stakeholder claims. If managers capably recognize and prioritize salient stakeholders, they also correctly allocate firm resources. Engaging with relevant stakeholders shows that their claims are being adequately satisfied and environmental risks properly managed. Consequently, firms that strategically manage stakeholders via prioritization and engagement are better able to benefit from the positive relationship between CEP and CFP than firms that implement one or neither of the two strategies. Thus, based on stakeholder theory and stakeholder salience, we test the following hypothesis:

Hypothesis 1. When used together, stakeholder prioritization and engagement positively moderate the relationship between CEP and CFP.

Prior literature stresses the importance of considering societal characteristics in analysing the relationship between CEP and CFP (Dixon-Fowler et al., 2013; Grewatsch and Kleindienst, 2015). In fact, despite managers' perception of stakeholder salience, decisions regarding stakeholder management may be influenced by society-specific expectations (Langlois and Schlegelmilch, 1990;

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[2] For a detailed literature review on moderators of the relationship between CEP and CFP, see Dixon-Fowler et al. (2013).

Ricart et al., 2004). On one hand, environmental issues and stakeholder management are directly connected to policies, regulations, and legal enforcement. As a result, "these national differences are likely to have an impact on the effectiveness of investments in stakeholders" (Garcia-Castro and Francoeur, 2016, p. 410). On the other hand, media attention, and people's expectations and beliefs are also fundamental when dealing with the environment. Therefore, it makes sense to argue that "the relationship between CEP and CFP may be influenced by social norms, public pressure, and expectations regarding environmental practices" (Dixon-Fowler et al., 2013, p. 356).

Legitimacy theory, in conjunction with stakeholder theory and stakeholder salience, offers a rich background for establishing the mechanism through which societal characteristics moderate the relationship between CEP and CFP. In fact, stakeholder prioritization and engagement do not exist in a social vacuum, and in choosing between competing stakeholders' interests, managers

4. Research design

4.1. Empirical model

Prior literature adopts various approaches to investigate environmental and financial performance (Simões and Marques, 2012b). We test our hypotheses through an empirical approach based on an ordinary least squares regression model. According to Grewatsch and Kleindienst (2015), while theoretical arguments can only implicitly validate a moderator, regression analysis helps explicitly identify the effect of the moderator on the relationship between CEP and CFP. We draw upon previous literature and rely on a commonly accepted model designed to test the relationship between CEP and CFP (e.g., Clarkson et al., 2013).[3] Accordingly, we regress future financial performance on environmental performance, stakeholder prioritization, and engagement as follows (firm subscripts are suppressed):

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\begin{aligned}
CFP_{t+1} = \; & \beta_0 + \beta_1 CFP_t + \beta_2 Size_t + \beta_3 Lev_t + \beta_4 CrossListing_t + \beta_5 BoardSize_t \\
& + \beta_6 CSRIndex_t + \beta_7 GovScore_t + \beta_8 EnvScore_{t-1} + \beta_9 PriorEnv_{t-1} + \beta_{10} StEngage_{t-1} \\
& + \beta_{11} PriorEnv_{t-1} \; x \; StEngage_{t-1} + \beta_{12} PriorEnv_{t-1} \; x \; EnvScore_{t-1} \\
& + \beta_{13} StEngage_{t-1} \; x \; EnvScore_{t-1} + \beta_{14} PriorEnv_{t-1} \; x \; StEngage_{t-1} \; x \; EnvScore_{t-1} \\
& + Year, \; Industry, \; Country \; Fixed \; Effects + \varepsilon_t
\end{aligned}
\tag{1}
$$

may face constraints because of societal norms (Boesso and Kumar, 2009b). Prior literature shows that the regulatory background can influence the approach to and performance of environmental strategies (e.g. Simões and Marques, 2012a). Thus, a positive moderating effect of stakeholder prioritization and engagement on the relationship between CEP and CFP can only be observed if societal norms are designed to allow and favour prioritization and engagement with stakeholders according to their salience. Conversely, managers may be forced to inadequately allocate resources and engage with stakeholders that are not salient because of the need to legitimize the institutional structure in which they operate. In these cases, a confounding effect may occur in the moderating role of stakeholder prioritization and engagement on the CEP-CFP relationship.

Similarly, in prioritizing and engaging with stakeholders, firms need to consider stakeholders' views and expectations (Boesso and Kumar, 2009b). In this context, managers need to evaluate legitimacy decisions based on cultural values and pressure received from stakeholders more than on their knowledge and skills (Panwar et al., 2014). Thus, salient stakeholders are more likely to induce a manager's need for legitimization in a setting where societal characteristics adequately support their claims, and managers are not allowed to disregard them, partially or totally. However, the moderating effect of stakeholder prioritization and engagement on the relationship between CEP and CFP is less clear, because managers may perceive the highest pressure from a group of stakeholders that is not salient, resulting in incorrect prioritization and engagement.

Thus, based on the interplay between stakeholder theory, stakeholder salience, and legitimacy theory, we test the following hypothesis:

Hypothesis 2. Strong societal characteristics enable the combination of stakeholder prioritization and engagement to positively moderate the relationship between CEP and CFP.

Since prior literature documents that accounting measures are more appropriate than market measures in our setting (e.g., Hull and Rothenberg, 2008), we proxy CFP through one-year ahead return on assets (*FROA*) and return on equity (*FROE*) (e.g., Hart and Ahuja, 1996; Orlitzky et al., 2003; Qi et al., 2014).[4]

Consistent with prior literature (e.g., Tan et al., 2017), CEP is measured according to Thomson Reuters Asset4 environmental performance score (*EnvScore*) which reflects *inter alia* firm's environmental risk management and capitalization on environmental opportunities that generate long-term shareholder value. We expect the coefficient of *EnvScore* to be positive and significant, since prior literature predominantly demonstrates a positive correlation between CEP and CFP.

Stakeholder prioritization (*PriorEnv*) and engagement (*StEngage*) are also retrieved from Thomson Reuters Asset4. *PriorEnv* is a dummy variable that takes the value of 1 if the standard deviation of the environmental score sub-pillars—Emission Reduction (*ENER*), Product Innovation (*ENPI*), and Resource Reduction (*ENRR*)—is greater than the median standard deviation measured by country-year-industry (e.g., Boesso and Michelon, 2010). A higher standard deviation means that the performance over the three sub-pillars is not close to the mean, which implies that managers are prioritizing some categories of stakeholders over others. In contrast, stakeholder engagement is a dummy variable that takes the value of 1 if the company explains how it engages with its stakeholders and 0 otherwise (e.g., Dal Maso et al., 2016).[5]

We follow previous studies documenting that it takes time for

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[3] Unlike the original Clarkson et al. (2013) model, we use as the dependent variable the value of financial performance one year ahead instead of the average of three years ahead to preserve our final sample size.

[4] Although prior literature motivates our choice, we also corroborate our main analysis when we replace CFP_{t+1} (CFP_t) in model (1) with the one year ahead (current) value of Tobin's Q and return on sales.

[5] Consistent with Dal Maso et al. (2016), we assume that stakeholder engagement becomes effective when a firm activates a communication channel by explaining how it engages with stakeholders.

Table 1
Sample selection.

16,857	Firm-year observations with availability of stakeholder engagement information and a CSR committee appointed as provided in Asset4.
1,403	Missing accounting data from Datastream
922	Missing Asset4 data for calculating stakeholder prioritization
187	Negative book value of equity
718	Missing country data
13,627	Final sample [t = 2003, 2014; 2559 firms]

environmental performance and strategies to influence CFP (Hull and Rothenberg, 2008). Consequently, we use lagged values of *EnvScore*, *PriorEnv*, and *StEngage*. This procedure also alleviates potential reverse causality and endogeneity concerns typically arising in this setting (e.g., Ramanathan, 2016).[6]

Moreover, we introduce additional firm level controls that can influence CFP. More specifically, we control for the natural logarithm of total assets in U.S. dollars (*Size*), the leverage ratio (*Lev*), whether a company is listed on more than one exchange (*CrossListing*), the natural logarithm of the number of board members (*BoardSize*), whether a firm belongs to a sustainability index (*CSRIndex*), and the overall governance performance score (*GovScore*). We also control for time-invariant characteristics by adding industry (ICB industry code), country, and year fixed effects. Additional information on variable sources and descriptions are provided in the Appendix.

To test H1, which examines the moderating role of stakeholder prioritization and engagement on the relationship between CEP and CFP, we compute the interaction between environmental score (*EnvScore*), stakeholder prioritization (*PriorEnv*), and stakeholder engagement (*StEngage*). We expect this coefficient (i.e., β_{14}) to be positive.

Regarding H2, which tests the influence of societal characteristics on this moderating effect, we rely on the measures proposed by Williamson (2009) and categorize countries based on strong versus weak levels of formal and informal institutions. Specifically, we classify a country as a strong (weak) formal or informal institution if it presents a score equal to or higher (lower) than the median for our sample. We create four clusters based on the combination of strong and weak formal and informal institutions. If our second hypothesis is correct, we expect a significant and positive coefficient for β_{14} only in countries with high levels of formal and informal institutions.

4.2. Sample selection

We start our sample selection procedure by including all firm-year observations with available stakeholder engagement information in Thomson Reuters Asset4[7] during the period 2002–2014. Relying on the assumption that stakeholder engagement can be truly effective only when a company adopts an adequate governance structure (e.g., Shahzad et al., 2016), we refine our sample by dropping observations with missing or non-appointed CSR committees (Dal Maso et al., 2016).[8] We further drop firm-year observations with missing Datastream and Asset4 accounting, market, or environmental data, as well as missing country data.

Table 2
Descriptive statistics.

Variable	Obs.	Mean	St. Dev.	Min	Median	Max
FROA[w]	13,627	0.0433	0.0726	−0.2309	0.0380	0.2769
ROA[w]	13,627	0.0473	0.0700	−0.1888	0.0392	0.2857
FROE[w]	13,627	0.1231	0.2217	−0.6729	0.1112	1.1803
ROE[w]	13,627	0.1296	0.2068	−0.5696	0.1150	1.0804
Size[L]	13,627	16.1990	1.6740	10.2045	16.0407	22.2839
Lev[w]	13,627	0.2673	0.1803	0	0.2501	0.8082
CrossListing	13,627	0.4978	0.5000	0	0	1
BoardSize[L]	13,627	2.3465	0.3182	0	2.3026	3.6376
CSRIndex	13,627	0.4461	0.4971	0	0	1
GovScore[w]	13,627	61.1627	29.3473	3.23	71.76	96.03
EnvScore[w]	13,627	68.3586	26.8836	10.32	79.49	96.45
PriorEnv	13,627	0.5113	0.4999	0	1	1
StEngage	13,627	0.4343	0.4957	0	0	1

[w] Variables winsorised at the 1st and 99th percentiles.
[L] Variables expressed in natural logarithm.
See the Appendix for variable definitions.

As reported in Table 1, these refining criteria lead us to a final sample of 13,627 firm-year observations (i.e., 2,559 firms spread across 37 countries). Unreported results reveal that most observations are from the U.S. (3,190), Japan (2,024), the U.K. (1,897), and Canada (1,128) and are mostly clustered in the industrials (2,700), financials (2,288), basic materials (1,807), and consumer goods (1,708) industries.

5. Results

5.1. Descriptive statistics

Table 2 reports descriptive statistics for the dependent and independent variables used in the multivariate analysis for our full sample. Focusing on the main variables of interest, the mean (median) environmental performance score (*EnvScore*) is 68.35 (79.49), while roughly 43% of our sample firms disclose how they engage with stakeholders (*StEngage*), and roughly 51% prioritize environmental stakeholders (*PriorEnv*). Table 3 contains the classification of countries into clusters of strong versus weak formal and informal institutions, together with the scores for each country.

Table 4 presents Pearson's correlation coefficients among all variables employed in the multivariate analysis. We notice that *FROA* (*ROA*) and *FROE* (*ROE*) are positively and significantly correlated with *EnvScore* ($p < 0.01$) and *StEngage* ($p < 0.01$). Conversely, CFP appears not to be correlated with stakeholder prioritization (*PriorEnv*). Moreover, future and current CFP is positively correlated with *CSRIndex* and *GovScore* ($p < 0.01$).

5.2. Multivariate analysis

5.2.1. Results for Hypothesis 1
Table 5 reports results of the moderating role of stakeholder prioritization and engagement on the relationship between CEP and CFP. We observe that the correlation between *EnvScore* and future financial performance is positive and significant ($p < 0.01$),

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[6] Our main inferences are robust even when using non-lagged values of *EnvScore*, *PriorEnv*, and *StEngage*.

[7] Accessed on August 29, 2016.

[8] Although we believe that stakeholder engagement can be truly effective only when a company adopts an adequate governance structure by appointing a CSR committee, we replicate our analysis by relaxing this criterion in our sample selection. Untabulated results show that our main results hold when we include all observations with non-appointed CSR committees.

Table 3
Country classification according to formal and informal societal characteristics.

Country	Formal	Informal	Strong Formal	Strong Informal
Cluster 1 (Weak-Weak)				
Belgium	0.46	4.24	0	0
Colombia	0.00	2.53	0	0
Indonesia	1.17	4.02	0	0
Mexico	3.67	2.96	0	0
Portugal	0.38	2.55	0	0
South Africa	0.75	2.34	0	0
Turkey	0.96	2.52	0	0
Cluster 2 (Strong-Weak)				
Brazil	4.68	0.75	1	0
Chile	9.15	3.52	1	0
Egypt	8.94	3.36	1	0
Greece	4.68	3.06	1	0
India	4.91	3.40	1	0
Jordan	9.52	3.40	1	0
Philippines	9.44	1.66	1	0
Singapore	9.44	2.57	1	0
Spain	4.75	4.21	1	0
Taiwan	7.25	4.07	1	0
UK	10.00	3.89	1	0
Cluster 3 (Weak-Strong)				
Austria	0.38	5.90	0	1
Denmark	0.62	9.25	0	1
Finland	1.17	7.99	0	1
Iceland	0.47	7.02	0	1
Ireland	0.62	4.88	0	1
Israel	1.31	5.20	0	1
Italy	1.54	4.69	0	1
Japan	4.40	6.89	0	1
Netherlands	0.52	9.34	0	1
Norway	0.62	6.62	0	1
Sweden	0.96	10.00	0	1
Cluster 4 (Strong-Strong)				
Australia	4.91	6.78	1	1
Canada	9.52	6.20	1	1
France	6.23	5.05	1	1
Germany	4.91	5.42	1	1
Korea (Republic)	4.55	4.36	1	1
New Zealand	8.65	7.26	1	1
Switzerland	5.09	5.88	1	1
USA	9.31	5.63	1	1
Median	***4.55***	***4.36***	**-**	**-**

Table 5
The influence of stakeholder prioritization and engagement on the relationship between CEP and CFP.

Dependent Variable:	Column (1)		Column (2)	
	FROA^w	t-stat	FROE^w	t-stat
Constant	0.0612***	(6.91)	0.1519***	(4.83)
ROA^w	0.6365***	(45.02)		
ROE^w			0.5343***	(23.06)
Size^L	−0.0033***	(-7.10)	−0.0080***	(-4.68)
Lev^w	−0.0241***	(-7.70)	0.0088	(0.62)
CrossListing	0.0018	(1.50)	0.0058	(1.32)
BoardSize^L	0.0033*	(1.71)	0.0148**	(2.17)
CSRIndex	0.0035***	(3.15)	0.0119***	(2.80)
GovScore^w	−0.0000	(-1.56)	−0.0002	(-1.42)
EnvScore^w	0.0002***	(5.10)	0.0004***	(3.85)
PriorEnv	0.0098***	(3.07)	0.0207**	(2.08)
StEngage	0.0047	(0.68)	0.0334	(1.35)
PriorEnv x StEngage	−0.0320***	(-3.50)	−0.0980***	(-3.25)
PriorEnv x EnvScore^w	−0.0001**	(-2.44)	−0.0002*	(-1.66)
StEngage x EnvScore^w	−0.0000	(-0.34)	−0.0003	(-1.02)
PriorEnv x StEngage x EnvScore^w	**0.0004***	**(3.49)**	**0.0012***	**(3.18)**
Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Country FE	Yes		Yes	
Observations	13,627		13,627	
Adjusted R^2	0.481		0.330	
F	158.86		44.65	

This table presents the results of Model (1). Dependent and independent variables are as described in Appendix. *t* statistics in parentheses, standard errors are clustered by firm. ***, **, * Denote significance at the 1%, 5%, and 10% percent levels, respectively. ^{w} Variables winsorised at the 1st and 99th percentiles. ^{L} Variables expressed in natural logarithm.

meaning that our model is correctly applied (Clarkson et al., 2013). Our multivariate analysis confirms H1, since the coefficient for *PriorEnv x StEngage x EnvScore* is positive and statistically significant ($p < 0.01$). This means that stakeholder prioritization and engagement together positively moderate the relationship between CEP and CFP. Conversely, the insignificant coefficient for *StEngage x EnvScore* suggests that implementing stakeholder engagement alone has no effect on the relationship. Moreover, we report that stakeholder prioritization has a negative moderating role on the

Table 4
Pearson correlation coefficients.

		1	2	3	4	5	6	7
FROA^w	1	1						
FROE^w	2	0.781***	1					
ROA^w	3	0.663***	0.487***	1				
ROE^w	4	0.492***	0.540***	0.745***	1			
Size^L	5	−0.106***	−0.015*	−0.121***	−0.001	1		
Lev^w	6	−0.157***	−0.003	−0.147***	−0.006	0.123***	1	
CrossListing	7	−0.003	0.006	−0.005	−0.001	0.214***	−0.005	1
BoardSize^L	8	−0.001	0.039***	−0.018**	0.031***	0.485***	0.091***	0.130***
CSRIndex	9	0.042***	0.058***	0.026***	0.050***	0.285***	0.018**	0.005
GovScore^w	10	0.076***	0.105***	0.100***	0.113***	0.018**	−0.021**	0.136***
EnvScore^w	11	0.055***	0.056***	0.021**	0.036***	0.372***	0.033***	0.088***
PriorEnv	12	0.006	−0.002	0.005	0	−0.087***	−0.017**	0.008
StEngage	13	0.034***	0.036***	0.042***	0.044***	0.231***	0.034***	−0.015*

		8	9	10	11	12	13
BoardSize^L	8	1					
CSRIndex	9	0.177***	1				
GovScore^w	10	−0.012	0.115***	1			
EnvScore^w	11	0.236***	0.428***	0.007	1		
PriorEnv	12	−0.041***	−0.164***	0.018**	−0.185***	1	
StEngage	13	0.151***	0.370***	0.125***	0.406***	−0.145***	1

Number of observations: *13,627*.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 6
The role of societal characteristics in the moderating effect of stakeholder engagement and prioritization on the relationship between CEP and CFP.

Dependent Variable:	Cluster (1)	Cluster (2)	Cluster (3)	Cluster (4)
	FROA[a]	FROA[a]	FROA[a]	FROA[a]
Panel A: Dependent variable future ROA.				
Constant	0.1143[*]	0.1103[***]	0.0475[***]	0.0379[***]
	(1.89)	(6.75)	(3.35)	(2.70)
ROA[a]	0.7144[***]	0.6557[***]	0.6068[***]	0.6031[***]
	(17.49)	(26.06)	(15.45)	(29.27)
Size[b]	−0.0078[***]	−0.0052[***]	−0.0021[***]	−0.0029[***]
	(−4.20)	(−5.77)	(−3.33)	(−3.70)
Lev[a]	−0.0287[**]	−0.0317[***]	−0.0204[***]	−0.0246[***]
	(−2.33)	(−5.51)	(−4.22)	(−4.66)
CrossListing	−0.0072[*]	0.0057[*]	0.0018	0.0009
	(−1.65)	(1.96)	(1.06)	(0.44)
BoardSize[b]	−0.0062	0.0014	−0.0028	0.0096[**]
	(−0.86)	(0.34)	(−1.36)	(2.49)
CSRIndex	0.0045	0.0090[***]	0.0036[**]	0.0013
	(1.01)	(3.60)	(2.09)	(0.71)
GovScore[a]	−0.0001	−0.0000	−0.0001[*]	−0.0000
	(−1.02)	(−0.53)	(−1.69)	(−0.43)
EnvScore[a]	−0.0000	0.0001	0.0001[*]	0.0002[***]
	(−0.29)	(1.37)	(1.77)	(4.30)
PriorEnv	0.0027	0.0086	0.0202[***]	0.0091[**]
	(0.23)	(1.19)	(3.03)	(2.05)
StEngage	−0.0113	−0.0302[*]	−0.0332	0.0209[*]
	(−1.07)	(−1.73)	(−1.33)	(1.67)
PriorEnv x StEngage	−0.0050	0.0052	0.0011	−0.0532[***]
	(−0.28)	(0.24)	(0.04)	(−3.26)
PriorEnv x EnvScore[a]	−0.0003	−0.0001	−0.0002[**]	−0.0001
	(−1.32)	(−1.26)	(−2.52)	(−1.56)
StEngage x EnvScore[a]	0.0001	0.0003[*]	0.0004	−0.0002
	(0.90)	(1.69)	(1.49)	(−1.43)
PriorEnv x StEngage x EnvScore[a]	0.0002	0.0000	−0.0000	0.0006[***]
	(0.83)	(0.16)	(−0.06)	(3.25)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Formal Institution	Weak	Strong	Weak	Strong
Informal Institution	Weak	Weak	Strong	Strong
Observations	717	3,048	3,187	6,675
Adjusted R^2	0.641	0.522	0.486	0.444
F	49.82	68.95	43.77	81.67
Panel B: Dependent variable future ROE.				
	FROE[a]	FROE[a]	FROE[a]	FROE[a]
Constant	0.4149[*]	0.2940[***]	0.1264[**]	0.0575
	(1.71)	(4.23)	(2.48)	(1.28)
ROE[a]	0.5762[***]	0.5614[***]	0.4672[***]	0.5038[***]
	(6.02)	(12.40)	(9.92)	(15.87)
Size[b]	−0.0192[**]	−0.0175[***]	−0.0031	−0.0046[*]
	(−2.56)	(−4.60)	(−1.33)	(−1.76)
Lev[a]	−0.1022[**]	0.0065	−0.0186	0.0269
	(−2.25)	(0.21)	(−0.99)	(1.16)
CrossListed	0.0018	0.0236[*]	0.0063	0.0016
	(0.11)	(1.87)	(1.14)	(0.22)
BoardSize[b]	−0.0305	0.0329	−0.0088	0.0317[***]
	(−0.85)	(1.53)	(−1.24)	(2.75)
CSRIndex	0.0005	0.0307[***]	0.0120[**]	0.0050
	(0.03)	(2.95)	(2.07)	(0.70)
GovScore[a]	−0.0003	0.0002	−0.0002	−0.0002
	(−0.84)	(0.77)	(−1.36)	(−1.17)
EnvScore[a]	0.0003	0.0001	0.0001	0.0006[***]
	(0.50)	(0.31)	(0.84)	(3.79)
PriorEnv	0.0234	0.0031	0.0422[**]	0.0232[*]
	(0.48)	(0.11)	(2.54)	(1.75)
StEngage	−0.0161	−0.0406	−0.0699	0.1258[**]
	(−0.38)	(−0.69)	(−1.16)	(2.13)
PriorEnv x StEngage	0.0192	−0.0626	0.0290	−0.2118[***]
	(0.30)	(−0.88)	(0.45)	(−3.15)
PriorEnv x EnvScore[a]	−0.0008	−0.0002	−0.0003	−0.0003
	(−1.06)	(−0.50)	(−1.55)	(−1.54)
StEngage x EnvScore[a]	0.0005	0.0004	0.0009	−0.0013[**]
	(0.73)	(0.56)	(1.31)	(−2.01)
PriorEnv x StEngage x EnvScore[a]	−0.0001	0.0012	−0.0004	0.0025[***]
	(−0.09)	(1.30)	(−0.59)	(3.11)

Table 6 (continued)

Dependent Variable:	Cluster (1)	Cluster (2)	Cluster (3)	Cluster (4)
	FROA[a]	FROA[a]	FROA[a]	FROA[a]
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Formal Institution	Weak	Strong	Weak	Strong
Informal Institution	Weak	Weak	Strong	Strong
Observations	717	3,048	3,187	6,675
Adjusted R^2	0.446	0.342	0.288	0.313
F	16.08	19.02	18.52	32.91

This table presents the results of Model (1). Dependent and independent variables are as described in Appendix. t statistics in parentheses, standard errors are clustered by firm. ***, **, * Denote significance at the 1%, 5%, and 10% percent levels, respectively.

[a] Variables winsorised at the 1st and 99th percentiles.
[b] Variables expressed in natural logarithm.

CEP-CFP relationship ($p < 0.05$ in column 1, $p < 0.10$ in column 2). We conclude that stakeholder salience offers an additional contribution to stakeholder theory and explains the underlying mechanism through which only firms that jointly implement both prioritization and engagement can benefit from the positive relationship between CEP and CFP.

5.2.2. Results for Hypothesis 2

In Table 6 we report results from testing our second hypothesis. Our findings show a positive and significant association between *EnvScore* and CFP when both formal and informal institutions are strong. This result confirms prior literature demonstrating that societal characteristics play an important role in moderating this relationship (e.g., Dixon-Fowler et al., 2013).

Looking at our variable of interest, we report a positive and significant coefficient for *PriorEnv x StEngage x EnvScore* ($p < 0.01$) only in the cluster where formal and informal institutions are strong. Therefore, our results corroborate H2, showing that stakeholders are more likely to induce managers' need for legitimization in a setting where societal characteristics adequately support their claims. We conclude that legitimacy theory, in relation to stakeholder theory and stakeholder salience, serves as an additional lens for investigating the subject matter. We further reflect on these results and provide additional insights in the discussion section.

5.3. Sensitivity analyses[9]

In the spirit of ensuring the robustness of our main findings, in this section we report and explain the results of various sensitivity analyses.

Although we derive our measure of stakeholder engagement from prior literature, we consider potential concerns with its construct. Thus, we consider that *StEngage* is a dummy variable that does not measure the quality of engagement or the channel through which this becomes effective. While we acknowledge this in the limitations of the present study, we also construct a more complex variable of stakeholder engagement as the sum of three distinct dummy variables: *StEngage*, whether the firm appoints a CSR Committee, and whether the firm issues a CSR report. By doing this, we ensure that our stakeholder engagement proxy not only considers whether a firm explains how it engages with stakeholders, but also whether it implements a governance practice through a CSR committee, and activates a main channel of communication through a CSR report. Our main results are qualitatively similar when replicating our analysis with this alternative measure of stakeholder engagement.

Further, although the model used to test our hypotheses is well established in the literature, other studies provide different equations for testing the relationship between CEP and CFP. Therefore, we replicate our analysis using the alternative model proposed by Lys et al. (2015), which considers change in future CFP as a function of change in current CFP and the value of lagged CFP. We then replace our dependent variable (CFP_{t+1}) in model (1) with ΔCFP_{t+1} and CFP_t with ΔCFP_t and CFP_{t-1}. In doing so, we control for mean reversion of the dependent variable. Untabulated results show that our main results are unchanged when using this alternative model.

Another potential concern is the distribution of the environmental score. Even though in our main analysis we use the raw *EnvScore* provided by Asset4, we acknowledge that some studies also use transformations, claiming various potential benefits. Thus, we first deflate *EnvScore* by its country-year-industry average as proposed by Luo et al. (2015). Untabulated results employing the transformed score are consistent with our main findings.

In testing H2, the selection of a proxy for societal characteristics is crucial. In our main findings, we employ formal and informal institutions provided by Williamson (2009), as they are commonly accepted in prior literature. However, we check the robustness of our results by replacing formal institutions with an anti-self-dealing index (Djankov et al., 2008) and informal institutions with the level of trust (World Values Survey, V23, 5th wave). We believe the former can serve as a measure of the strength of stakeholder protection against managers and primary shareholders, while the latter is a critical informal characteristic when dealing with non-financial performance. Although data unavailability forces us to drop some countries, untabulated results indicate that our main findings hold even when using these two alternative measures.

Additionally, we also perform numerous tests to ensure that our sample is not biased towards any country, year, or industry. First, we check whether our main results are influenced by the most represented countries. Consequently, we drop all observations in the U.S. and Japan, which represents roughly 40% of our sample. Second, we restrict our sample to the period after 2010 to remove any potential impact of the financial crisis on our results. Last, we check whether our results are robust even if we drop observations in industries with high environmental impact, since these can derive more benefit from environmental performance. Therefore, we replicate our analysis by dropping the observations related to healthcare, industrials, oil and gas, telecommunications, and utilities (Schreck, 2011). Results for these tests confirm our main findings and prove that our sample is not biased toward any country, year, or industry characteristic.

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[9] Results are available upon request.

6. Discussion

Our first conjecture is that when jointly implemented, stakeholder prioritization and engagement are crucial in moderating the relationship between CEP and CFP. In addition, because these practices are influenced by societal norms (Boesso and Kumar, 2009b), our second conjecture is that societal characteristics might influence not only the CEP-CFP relationship, but also the moderating role of stakeholder engagement and prioritization. Our results support both hypotheses. First, based on the interplay between stakeholder theory and stakeholder salience, the positive coefficient of β_{14} reveals that stakeholder prioritization and engagement are fundamental tools that together positively moderate the relationship between CEP and CFP ($p < 0.01$). In addition, as shown in Table 6 (Panels A and B) and based on the interplay between stakeholder salience and legitimacy theory, this moderating effect is found when formal and informal societal characteristics are both strong ($p < 0.01$), confirming the idea that "the relationship between CEP and CFP may be influenced by social norms, public pressure, and expectations regarding environmental practices" (Dixon-Fowler et al., 2013, p. 356).

In confirming our first hypothesis, we implicitly offer empirical evidence that stakeholder prioritization and engagement practices separately have a different impact on the CEP-CFP relationship. When prioritizing without engaging, managers are attending to the needs of the most salient group of stakeholders without showing them their prioritization, and, most importantly, not showing the other stakeholders why their needs are not being adequately considered. Thus, the first group of stakeholders may not even know that it has been prioritized, while the other groups may start enforcing their needs; this threat constitutes a potential danger to the firm's future financial performance and may explain the negative coefficient of β_{12} (*PriorEnv x EnvScore*) in Table 5. Similarly, stakeholder engagement may result in an empty shell if it is not accompanied by prioritization. In fact, in this case, firms are implicitly helping stakeholders realize that they are being equally treated. Consequently, salient stakeholders will assert their importance and compromise future financial performance. Our findings provide empirical evidence of these arguments, since stakeholder prioritization and engagement separately do not moderate the relationship between CEP and CFP. Contrariwise and consistent with our prediction, we show that these practices positively affect the relationship only when jointly implemented and when supported by the right set of societal characteristics.

7. Conclusions

After many years of disputes without a clear-cut answer to "Does it pay to be green?" the recent academic debate shifted to investigating "When does it pay to be green?" Our study contributes to this debate by employing three different theories: stakeholder theory, stakeholder salience, and legitimacy theory, and selecting moderators that are likely to affect the CEP-CFP relationship. Particularly, we join the debate by investigating the moderating role of stakeholder management and societal characteristics in the relationship between corporate sustainability and corporate financial performance. Using a worldwide sample of firms followed by Thomson Reuters Asset4 during 2003–2014, we show that stakeholder prioritization and engagement are fundamental tools that together positively moderate the relationship between CEP and CFP. Moreover, this moderating effect is found when formal and informal societal characteristics are both strong. Taken together, these findings confirm the importance of investigating the relationship between CEP and CFP and its potential moderators by investing in theory building.

We contribute not only to the existing academic debate, but we also provide insights for managers and policy makers. The results of this study allow managers to better design their environmental strategies. In fact, by prioritizing the needs of stakeholders and engaging them in the decision-making process, they will be able to identify and select the most appropriate and profitable environmentally responsible investment strategies. Additionally, we inform managers of multinational companies about the role of societal characteristics and country differences in supporting the moderating effect of stakeholder prioritization and engagement on the relationship between CEP and CFP.

Our results are informative for policy makers interested in implementing regulations to induce firms to invest in environmentally sustainable business practices to increase CFP. While our results reveal that being more environmentally friendly pays off in terms of financial performance, policymakers should pay extra attention to societal characteristics while designing environmental regulations. Reflecting on legitimacy theory, the effectiveness of environmental regulations can be either amplified by the societal and legal background or not.

Despite its contributions, our study has limitations that serve as venues for future research. First, we investigate the moderating role of stakeholder prioritization and engagement on the relationship between CEP and CFP by focusing on a sample of listed firms covered by Thomson Reuters Asset 4. Future research could extend our analysis to private firms to explore potential sources of heterogeneity across public and private firms. Second, our work does not enter the debate on the impact of the financial crisis on the relationship between CEP and CFP. While we control for time fixed effects, we do not specifically investigate how the financial crisis has changed the relationship between CEP and CFP over time, along with the moderators explored in our study. Third, despite being commonly accepted in prior literature, our measure of stakeholder prioritization is inferred from actual environmental performance score sub-pillars and does not provide a specific assessment of the motivation and quality of managerial practices. Similarly, we do not control for the quality of engagement and the channels through which firms engage their stakeholders. The identification of alternative measures of the quality of stakeholder engagement and prioritization can complement and extend our results. Fourth, we see opportunities for future research that could complement our study by concentrating attention on either a specific industry or country. Specifically, future research can explore how cross-country and -industry differences can influence the impact of stakeholder prioritization and engagement on the relationship between CEP and CFP. Finally, future research may also consider enhancing the model by including potential mediating variables (e.g., ownership composition, firm's level of risk, board characteristics, etc.) when assessing the relationship between CEP, stakeholder prioritization, stakeholder engagement, and CFP.

Appendix. Variable definitions

Variables	Description
ROA	Net income basic for EPS scaled by total assets at the beginning of the year. (Datastream Code: WC01706, WC02999).
ROE	Net income basic for EPS scaled by book value of equity at the beginning of the year. (DC: WC01706, WC03501).
FROA & FROE	One year ahead ROA and ROE, respectively.
Size	Natural logarithm of total assets in U.S. dollars. (DC: WC02999).
Lev	Total value of debt scaled by total assets at the beginning of the year. (DC: WC03255, WC02999).
CrossListing	Dummy variable which takes the value of 1 if a firm is listed in more than 1 stock exchange, 0 otherwise. (DC: W05427).
BoardSize[*]	Natural logarithm of the total number of board members at the end of the fiscal year. (DC: CGBSDP060).
CSRIndex[*]	Dummy variable which takes the value of 1 if a firm reports belonging to a specific sustainability index, such as FTSE4Good or DJSI, 0 otherwise. (DC: CGVSDP013)
CSRCommittee[*]	Dummy variable which takes the value of 1 if the company has a CSR committee or team, 0 otherwise. (DC: CGVSDP005)
GovScore[*]	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 practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances to generate long-term shareholder value" (DC: CGVSCORE).
EnvScore[*]	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 to generate long-term shareholder value" (DC: ENVSCORE).
PriorEnv	Dummy variable which takes the value of 1 if the standard deviation at time t-1 in the three environmental category scores provided by Asset4 for each firm-year observation is greater than the median standard deviation measured by country-year-industry at time t-1, 0 otherwise. Following the rating structure of Asset4, we select the following environmental categories: Emission Reduction, Product Innovation and Resource Reduction (DC: ENER, ENPI and ENRR).
StEngage[*]	Dummy variable which takes the value of 1 if the company explains how it engages with its stakeholders at time t-1, 0 otherwise. (DC: CGVSDP023).
Industry	Industry sector based on the Industry Classification Benchmark (ICB).
Formal Institutions	This index, created by Williamson (2009), is the first principal component extracted from the following constitutional rules: plurality, proportional representation, judicial independence, and constitutional review. This index is normalized to range between zero and ten, with ten representing countries with strong formal institutions.
Informal Institutions	This index, created by Williamson (2009), is the first principal component extracted from the following cultural categories: trust, respect, individual self-determination, and obedience. This index is normalized to range between zero and ten, with ten representing countries with strong informal institutions.

[*]Information on Asset4 data are taken from the Asset4 Glossary (available on the extranet).

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