

DOES STAKEHOLDER ENGAGEMENT ENCOURAGE ENVIRONMENTAL REPORTING? THE MEDIATING ROLE OF FIRM PERFORMANCE

Abstract

Stakeholder engagement policies become to be a relevant strategy in firms because it may signal stakeholders the commitment of firms with stakeholder's needs and demands. In this regard, in this research we aim to examine if firms with stakeholder engagement policies tend to disclose more environmental information. Additionally, we further analyse the moderating role played by firm performance on the association between stakeholder engagement and environmental disclosure. As far as we know, prior research has not addressed these two questions. Our evidence shows that firms with stakeholder engagement policies are more likely to report environmental information, while firm performance moderates negatively the association between stakeholder engagement and environmental disclosure. These findings have several implications for policy-makers, firms, stakeholders and other researchers.

1. INTRODUCTION

Stakeholder engagement (SE) is a relevant factor in the integrated reporting process of a firm because it shows if companies are receptive to the legitimate demands, interests and needs of crucial stakeholders (Manetti and Bellucci, 2016). SE lets us know if firms engage with relevant stakeholders in their strategic and business decisions in order to get common outcomes. Firms have to interact with key stakeholders to survive in increasingly challenging business environments and, therefore, a strong stakeholder engagement model is essential for firms to be able to understand and react to legitimate stakeholder concerns.

Authors such as Bebbington et al. (2007) and Brown and Dillard (2014) argue that SE can be an influential instrument for dialogic communication and for learning in an interactive mutual way while also promoting social change and transformative action. Furthermore, SE may be a milestone policy in environmental disclosure as it allows firms to cooperate with their stakeholders in a two-way dialogue, in which firms and stakeholders mutually learn from this collaboration and potentially amend their strategies, behaviours and expectations (Manetti & Bellucci, 2016; Manetti, Bellucci, & Bagnoli, 2016).

According to Dienes et al. (2016), the most analysed drivers of environmental disclosure are ownership structure, company size and media visibility. However, the role played by corporate governance mechanisms on environmental reporting has received less attention by earlier researchers, who have focused mainly on factors such as board composition, capital structure or profitability, among others. The evidence concerning the association between these mechanisms and the disclosure of environmental issues has been inconclusive. The analysis of the impact of SE on corporate disclosure has been also scarce. In this regard, Kaur and Lodhia (2014) reported that SE is a determinant of sustainability reporting because it transmits issues, material concerns and aspirations of crucial stakeholders. Herremans et al. (2016) found that SE's strategy explains diversity in sustainability reporting. Chen (2018) also showed that the level of SE has a positive impact on sustainability reporting quality. Nevertheless, the effect of firms' SE policies on environmental disclosure has not been addressed by past research, as far as we know.

On the other hand, firm performance can be considered an indicator of the long-term survival of companies just like a strong SE process. But, it remains unresolved how the interaction between SE and firm performance will affect environmental reporting. In this regard, does corporate performance moderate the association between SE and environmental disclosure? Thus, the aim of this paper is to analyse if SE encourages environmental reporting

in a sample of international firms. Additionally, we also examine the moderating role played by firm performance on the relationship between SE and environmental reporting.

Our findings show that SE is positively associated with environmental disclosure. Furthermore, firm performance moderates negatively the positive effect of SE on the reporting of environmental information.

Through this empirical examination, our purpose is to contribute to the stakeholder theory and environmental disclosure empirical evidence by showing that SE policies of firms are positively associated with environmental disclosure. SE is an important part of good business practices and it may be helpful for managing risks successfully and for achieving enhanced stakeholders' benefits. SE brings shared value to society and business. Environmental information deficit may be improved by enhancing the relationships with vital stakeholders, namely, by implementing SE policies in firms. Additionally, preceding research has focused on examining how SE policies affect CSR disclosure, sustainability reporting or voluntary disclosure, in general terms. However, to the best of our knowledge, this is the first paper in addressing the impact of SE strategies on environmental disclosure individually and in analysing the moderating role of firm performance on this association. In this regard, our evidence shows that the positive impact of SE policies on environmental disclosure is negatively moderated by firm performance. Thus, firms with good performance will tend to mitigate the reporting of environmental issues if they have also implemented SE policies. Therefore, it is reasonable to presume that the analysis of the relationship between SE strategies and environmental disclosure and the moderating role played by firm performance will improve existing literature beyond pre-conceived views and will make a productive ground for further research.

The rest of the paper is organised as follows. In section two, we describe the theoretical framework and the hypotheses. In section three, the methodology and variables used are provided. In section four, we analyse and discuss the findings and, finally, in section five, the conclusions, implications and limitations are drawn.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

2.1 Conceptual Framework

We build our conceptual framework on stakeholder theory, which argues that organisations have to inform stakeholders the effects of those operations that affect them (Freeman, 1984; Mitchell et al., 1997). This communication between firms and stakeholders will lead to a balance of benefits and interests. One of the different ways used by firms to attain

a dialogue with stakeholders is through the reporting process (Morsing and Schultz, 2006), a formalised means of communication to disclose firm's performance such as environmental or social actions (Kaur and Lodhia, 2018). Stakeholder approach also suggests that firms are more likely to report information about environmental and social matters when their reputation and image face to a legitimacy crisis, for instance, when stakeholders have a negative perception or opinion of a firm due to a company's behaviour. Firm managers will tend to report the information expected by relevant stakeholders in order to gain or maintain their support. Preceding research (i.e., Patten, 1992; Deegan et al., 2002) supports these ideas by showing that when firms perceive that their legitimacy may be threatened lead them to disclose more corporate social responsibility information such as environmental issues. By this way, organisations may impact on the decision of those key stakeholders.

Contrary to this view, some organisations may be willing to voluntarily disclose environmental or social information because they are interested in addressing and understanding stakeholders' interests and demands. Stakeholders' opinions and views can be collected through engagement and ongoing stakeholders' dialogue (Cooper and Owen, 2007). Through this consultation process, organisations, and particularly their managers, can address expectations' stakeholders through stakeholder engagement policies.

Firms may develop three strategies in order to engage stakeholders, according to Morsing and Schultz (2006): informing, responding and involving. When organisations inform stakeholders, they are attempting to show them their actions and operations in one-way communications and, according to Herremans et al. (2016), most times firms use this SE in order to access vital resources at least cost.

On the other hand, some firms also integrate the "responding" SE in the reporting process. This two-way communication is asymmetrical because firms transfer more information to stakeholders than vice versa and can be face-to face or not. With this reporting process, organisations may get opportunities to improve their market power or competitiveness and might search for business opportunities or prevent damage (Van Huijstee and Glasbergen, 2008).

Finally, the "involving" SE is also a two-way communication process based on an active dialogue between organisations and relevant stakeholders, requiring symmetrical information both from firms to stakeholder and vice versa. In this SE, all key stakeholders are involved in joint decision-making or joint management of a project. Therefore, the different SE's strategies will imply the disclosure of information by organisations in order to keep stakeholders informed for meeting their expectations.

Gao and Zhang (2001) support the view that organisations can benefit from stakeholders and vice versa. Stakeholders may impact firm's goals through their participation and activities by benefiting organisational performance such as social and environmental performance. Therefore, this leads us to think that the integration of SE in the decision-making process may result in a better organisational performance. But, stakeholders can be also impacted by firm goals, which attributes them the right for SE. This requires firms to disclose more information about the impact of their operations on the environment and the society in order to address stakeholders' demands and interests.

These arguments seem to support the idea that firms implementing SE policies will be more likely to report environmental information. According to Isenmann and Kim (2006), firms need to cooperate with their stakeholders when preparing sustainability reports in order to detect environmental and social matters as they perceive them. This cooperation can be reached by adopting SE strategies. By this way, organisations may adapt strategies and policies in line with stakeholders' interests and expectations, avoiding ineffective actions and initiatives (Yau, 2012).

2.2 Hypotheses development

2.2.1 Stakeholder engagement and environmental reporting

According to the Institute of Social and Ethical Accountability (ISEA, 1999, p. 91), SE can be defined as "the process of seeking stakeholder views on their relationship with an organisation in a way that may realistically be expected to elicit them". In words of Andriof and Waddock (2002, p. 42), SE can be described as "trust-based collaborations between individuals and/or social institutions with different objectives that can only be achieved together" and Gable and Shireman (2005, p.9) define it as "a process of relationship management that seeks to enhance understanding and alignment between company and their stakeholders." These definitions support the idea that in SE two parties interact; firms and their stakeholders. This interaction provides benefits from firms to stakeholders and vice versa. In this regard, companies with active SE policies may voluntarily disclose information such as social and environmental matters. As a result, stakeholders receiving such information may benefit firms by providing their feed-back to firms, which might enhance firms' legitimacy and reputation. Therefore, this may lead firms to be interested in maintaining and improve their SE strategies.

Few authors (Manetti, 2011; Manetti and Toccafondi, 2012; Onkila et al., 2014; Prado-Lorenzo et al., 2009) show that SE policies may have an effect on sustainability disclosure. Bellucci et al. (2019) also find that firms, which implement a two-way communication with

their stakeholders, report stakeholder perceptions, problems in engaging stakeholders and what actions are thinking to take for interacting with stakeholders. This evidence finds that an effective SE is positively related to sustainability reporting. Dobbs and Van Staden (2016) demonstrate that voluntary reporting is determined by factors such as assurance, CSR committees and SE. Adams and Frost (2006) demonstrate that firms engaging stakeholders with their web pages disclose more social and environmental performance. Hassan and Ibrahim (2012) reveal that firms with SE policies tend to disclose information on specific environmental activities such as packaging, waste management, recycling, climate change risk, climate change activities, and carbon footprint.

Most of past evidence shows the effect of SE on sustainability reporting, but there is no literature focused on examining the relationship between the existence of firms' SE policies and environmental reporting, as far as we know. Thus, we propose the following hypothesis:

H1: Stakeholder engagement policies are positively associated with environmental reporting

2.2.2 The moderating role of firm performance

Previous studies have analysed the relationship between board characteristics and firm value (e.g., Kiel & Nicholson, 2005, Westphal & Bednar, 2005, Jermias & Gani, 2014). Most of these studies agree that it is vital that boards are effective in performing the functions entrusted to them, since in this way they will create value in firms and, hence, lead to better performance (Aguilera, 2005). Some of these papers examine the role of board of directors by linking the organization with its environment, arguing that the board of directors is necessary to attract resources to improve firm performance. This can be possible for the ties and contacts that the directors have with their surroundings (Hendry & Kiel, 2004; Hillman, Cannella & Paetzold, 2000).

Relationships between stakeholders and companies may trigger agency problems due to the information asymmetries between them (Jensen and Meckling, 1976). Due to the existence of information asymmetries and incomplete contracts, there are agency conflicts between organisations and stakeholders that are associated with an agency cost. Firm performance may allow these costs to be reduced by enhancing environmental reporting. Authors such as Omnamasivaya and Prasad (2016) and Alipour et al. (2019) find a positive relationship between environmental disclosure and corporate performance. This is due to the fact that more environmental disclosure may improve the firm's reputation and, as a consequence, may improve its firm value. On the contrary, Sarumpaet (2005) shows that environmental

performance is not associated with financial performance, and Malarvizhi and Matta (2016) also find that there is no relationship between environmental disclosure and corporate performance. The no-association between environmental reporting and firm performance can be due to the fact that companies report environmental information, although their performances are low. As shown, it seems that most past research is focused on exploring the effect of environmental disclosure on firm performance, but there is less research in the inverse way. In this regard, Cormier and Magnan (1999) find that big companies with good financial performance tend to disclose more environmental information. Marshall et al. (2009) show that firm performance is positively associated with the quality of voluntary environmental disclosure and Matsumura et al. (2014) also demonstrate the positive impact of corporate performance on the voluntary disclosure of carbon emissions.

However, to the best of our knowledge, the moderating impact of firm performance on the relationship between SE and the disclosure of environmental information has not been analysed. Thus, the effect of how good firm performance affects environmental disclosure when interacting with SE merits our attention. The coexistence of SE policies with a higher firm performance is expected to impact positively on environmental reporting. Firms with SE strategies will be more likely to disclose environmental reporting in order to show a greater commitment with stakeholders' interests and needs. Additionally, companies with a better corporate performance may signal society and stakeholders an orientation toward economic goals more than toward social and environmental goals, which may be perceived negatively by stakeholders and society. Therefore, a higher disclosure of environmental information might help mitigate this negative perception.

According to this, it is reasonable to suggest that a higher firm performance will positively moderate the relationship between SE policies and environmental reporting. In view of the above, the following hypothesis is formulated:

H2: Firm performance moderates the relationship between stakeholder engagement policies and environmental disclosure

3. EMPIRICAL DESIGN

3.1 Sample

Our initial unbalanced panel data sample is taken from an initial population of 32,962 firm-year observations for the period 2007-2018. From this initial sample, we have removed financial entities and those firms for which not all relevant data were available. The exclusion of financial entities is due to the fact that they prepare their financial statements by complying

with different accounting rules than non-financial firms comply, which makes more difficult to compare the financial statements of financial and non-financial firms. Thus, the final sample is composed of 16,807 firm-year observations collected from the Thomson Reuters. In our sample are represented firms from 16 countries. In Table 1, we present the percentage representation of each country in our sample, and the most represented countries are United States, Canada and Japan with 40.01%, 12.80% and 12.67%, respectively. In contrast to these figures, Austria, Norway and New Zealand have the lowest representation in the sample with, 0.4%, 0.5% y 0.9%, respectively.

Insert Table 1 here

The Thomson Reuters Business Classification (TRBC) is the industry classification used in this research. In Table 2, we provide the following nine industries considered: basic materials, consumer cyclicals, consumer non-cyclicals, energy, healthcare, industrial, technology, telecommunications services and utilities. The industries with the highest representation are industrial, consumer cyclicals and basic materials with 21.30%, 17.90% and 12.00%, respectively. Contrary to this, telecommunications services and consumer non-cyclical show the lowest representation with 4.60% and utilities with 7.30%.

Insert Table 2 here

3.2 Dependent variable

Environmental reporting is our dependent variable and is defined as ENV_REPORT. This variable is calculated as the ratio between the aggregation of 58 items focused on environmental issues and the total number of items analysed, in line with Gallego-Álvarez et al. (2017). If the company discloses information concerning each item, it will take the value 1 and 0, otherwise. The 56 items analysed are split up in three groups: resource use, emissions and innovation, as provided in Table 3.

Insert Table 3 here

3.3 Independent variables

Our independent variable is SE policies and is labelled as STAKEHOL_ENGAG. It is measured as a dummy variable that takes the value 1 if the company explains how it engages with its stakeholders and complies with regulations regarding SE, resolutions or proposals and 0, otherwise (Dal Maso et al., 2017). We are not examining the quality or levels of SE, but if firms implement SE policies. Our moderating variable is firm performance, denoted by Q_TOBIN, and is calculated as the ratio between of the market capitalization of common stock plus the book value liabilities divided by the book value of total assets (Pucheta-Martínez et al., 2018).

3.4 Control variables

We control other potential factors that may influence environmental reporting. The first control variable used is firm size, SIZE, calculated as the log of total assets, consistent with Alsaifi et al. (2020) and Kong et al. (2020). The second control variable employed is the leverage, denoted by LEV and calculated as the ratio between debts over total assets (Dal Maso et al., 2017; Wei et al., 2020). Board size is another control variable used, labelled as B_SIZE and measured as the total number of directors on board (Tingbani et al., 2020). CSR_COMMITTEE is also a control variable used, which is calculated as a dummy variable that takes the value 1 if the company has a CSR committee and 0, otherwise (Dal Maso et al., 2017). Female directors are also controlled, labelled as FEM_DIRECT and calculated as the ratio between the total numbers of female directors on boards and total number of directors on boards (Pucheta-Martínez & Gallego-Álvarez, 2019). Other control variable board independence, denoted by B_INDEP and calculated as the ratio between the total numbers of independent directors on boards and total number of directors on boards, in line with Pucheta-Martínez and Gallego-Álvarez (2019). Furthermore, we also take into account the variable regions (Asia, Europe, North America and Oceania) (Pucheta-Martínez & Gallego-Álvarez (2019), which is calculated as a dummy variable which take a value 1 if the country of the sample belongs to the region examined and 0, otherwise. Moreover, we use the variable industry type denoted as INDUSTRY and is measured as a dummy variable that takes the value 1 if the firm operates in the industry analysed and 0, otherwise. As indicated above, we use the nine economic sectors considered by Thomson Reuters TRBC: basic materials, consumer cyclical, consumer non-cyclical, energy, healthcare, industrials, technology, telecommunication services and utilities. Finally, we use the year fixed effects (YEAR) calculated as a set of dummies variables. Table 4 offers a summary of all the variables addressed in this paper.

Insert Table 4 here

Regression model specification

The hypothesis proposed will be estimated with the following model:

$$\begin{aligned} \text{ENV_REPORT}_{it} = & \beta_0 + \beta_1 \text{STAKEHOL_ENGAG}_{it} + \beta_2 \text{Q_TOBIN}_{it} + \\ & \beta_3 \text{STAKEHOL_ENGAG} \times \text{Q_TOBIN}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{B_SIZE}_{it} + \\ & \beta_7 \text{CSR_COMMITTEE}_{it} + \beta_8 \text{FEM_DIRECT}_{it} + \beta_9 \text{B_INDEP}_{it} + \beta_{10} \text{EUROPE}_{it} + \\ & \beta_{11} \text{NORTHAMERICA}_{it} + \beta_{12} \text{OCEANIA}_{it} + \beta_{13} \text{BASIC MATERIALS}_{it} + \\ & \beta_{14} \text{CONSUMER CYCLICAL}_{it} + \beta_{15} \text{CONSUMER NON-CYCLICAL}_{it} + \beta_{16} \text{ENERGY}_{it} \end{aligned}$$

$$+ \beta_{17}\text{HEALTHCARE}_{it} + \beta_{18}\text{INDUSTRIALS}_{it} + \beta_{19}\text{TECHNOLOGY}_{it} + \beta_{20}\text{TELECOMMUNICATION SERVICES}_{it} + \sum \beta_j \text{YEAR}_t + U_i + \delta_{it}$$

Where “i” represents each firm and “t” the year. Additionally, U_i represents the unobservable heterogeneity (firm-fixed effects) and is controlled because may potentially be associated with environmental reporting. These firm-fixed effects are constant over time, but vary among individuals. Finally, δ_{it} represents the error term and does vary over time among firms.

The Generalized Method of Moments (GMM) estimator has become one of the main statistical tools for the analysis of economic and financial data. Thus, in this research we use the GMM procedure developed for dynamic models of panel data (Arellano and Bond, 1991; Blundell and Bond, 1998, 2000). The GMM estimator will allow us to solve the problems of serial correlation, heteroscedasticity and endogeneity in the model (Leitao, 2010). The GMM estimator is more powerful and consistent than other procedures because it addresses the unobservable heterogeneity and deals with potential endogeneity issues. Furthermore, the GMM also mitigates the estimation bias.

The following statistics are provided by the GMM: the Wald χ^2 test, the Arellano–Bond tests AR(1) and AR(2), and the Hansen test. The model fitness is assessed by the Wald χ^2 statistic. With the Arellano-Bond statistic AR(2) will assess if a second-order serial correlation in the first difference residuals exists. The rejection of the null hypothesis of ‘no serial correlations’ supports the non-existence of second-order serial correlation. Lastly, the Hansen test of over-identifying restrictions also allows us to assess the fitness of the instruments considered in the model. The rejection of the null hypothesis of non-correlation between the instruments and the error term shows us that the instruments are appropriate.

4. ANALYSIS OF RESULTS

4.1 Descriptive statistics

Table 5 summarise the mean, standard deviation, and the percentiles 25, 50 and 75. The score of the environmental information disclosed is 25.30% of the 58 items analysed in the environmental disclosure index. Additionally, 36.4% of firms in our sample explain how they engage with its stakeholders and comply with regulations regarding SE, resolutions or proposals. This figure shows that more than a third of the companies in the sample has a SE policy, suggesting that firms are more and more interested in stakeholders’ needs and demands. Corporate performance is, on average, 0.74. Additionally, firm size (SIZE) is 10.86 (log of total

assets, expressed in euros), the level of leverage (LEV) is, on average, 24.85% and the number of board members (B_SIZE) is, on average, 12.53. The proportion of independent board directors (B_INDEP) is 81.60%, the proportion of female directors on boards (FEM_DIRECT) is 13.75% and firms with a CSR committee (CSR_COMMITTEE) is, on average, 63.30%. Concerning the regions where firms are domiciled, 12.60% of the firms are located in Asia (ASIA), 29.40% in Europe (EUROPE), 52.80% in North America (NORTHAMERICA) and 5% in Oceania (OCEANIA). Finally, the basic materials (BASIC MATERIALS) sector accounts for 12.00%, consumer cyclical (CONSUMER CYCLICAL) 17.90%, consumer non-cyclical (CONSUMER NON-CYCLICAL) 7.30%, energy (ENERGY) 8%, healthcare sector (HEALTHCARE) 10.80%, industrials (INDUSTRIALS) 21.30%, technology (TECHNOLOGY) 7.80%, telecommunications services (TELECOMMUNICATION SERVICES) 4.60%, and utilities (UTILITIES) 10.00%.

Insert Table 5 here

In Table 6, we present the correlation matrix in order to assess if multicollinearity concerns exist. As shown in Table 6, all the coefficients are lower than 0.8 (Archambeault and DeZoort, 2001), suggesting that there are no multicollinearity problems.

Insert Table 6 here

4.2. Regressions analysis

In Table 7, we report the findings of the two models estimated with the GMM estimator. In Model 1, we explore the association between SE and environmental reporting. The variable SE (STAKEHOL_ENGAG) exhibits a positive sign and is statistically significant. Thus, the hypothesis 1 cannot be rejected. This finding suggests that firms with SE policies tend to disclose environmental information, consistent with Adams and Frost (2006), who demonstrate the positive effect of SE on reporting CSR issues through the firms' web page, and Dobbs and Van Staden (2016), who show the positive association between SE and voluntary reporting. . Furthermore, authors such as Favotto et al. (2016) find that SE is essential in the disclosure of environmental information, which results in a better financial performance. Moreover, SE may be considered as an instrument for dialogic communication and for learning in an interactive mutual way between firms and stakeholders. In this regard, this communication allows them to learn and change from this collaboration some aspects such as strategies, behaviours and expectations, as well as may promote social changes or disclose more environmental information. The disclosing of environmental issues by firms may improve their reputation and

legitimacy. Then, the implementation of SE strategies may be a driver for reaching this goal because SE policies are positively associated with environmental disclosure.

The Model 2 analyses the moderating effect of firm performance on the relationship between SE and environmental reporting. The variables SE (STAKEHOL_ENGAG) and firm performance (Q_TOBIN) provide a positive sign and are statistically significant. The interaction term between SE and firm performance (STAKEHOL_ENGAG x Q_TOBIN) presents a negative sign and is statistically significant. Thus, we have to reject the second hypothesis. Our evidence suggests that firms with SE policies do not impact strongly on environmental reporting if they get a higher firm performance. In other words, a good corporate performance moderates negatively the positive relationship between SE and the disclosure of environmental information, which supports a substitutive role of a greater firm performance with the implementation of SE policies in firms, and not a complementary role, as we predicted. This finding suggests that both firm performance and SE policies mechanisms are substitute more than complementary because when coexisting, have a negative effect on the reporting of environmental information.

According to the control variables, in both models the variable CSR Committee (CSR_COMMITTEE), the proportion of female directors on board (FEM_DIRECT) and the region Europe (EUROPE) present a positive sign and are statistically significant. Therefore, firms domiciled in Europe, with female directors on boards and with a CSR committee are more likely to report information about environmental issues. The remainder of control variables are not significant from a statistical point of view.

Insert Table 6 here

5. CONCLUSION

This study aims to investigate if SE policies encourage environmental reporting in a sample of international firms. Furthermore, we also examine the moderating role played by firm performance on the relationship between SE and environmental reporting.

Our findings show that firms with SE policies are more likely to disclose environmental information. We also find that a better firm performance moderates negatively the relationship between SE policies and environmental disclosure. The coexistence of both mechanisms, SE strategies and a good corporate performance, can be considered as substitute more than complementary tools in environmental issues since their combination reduces the disclosure of environmental information.

The results of the study have several implications. Firstly, this paper sheds new insights into the benefits of implementing SE policies in firms because they are likely to enhance the

reporting of environmental information. However, the interaction of SE strategies with a better corporate performance has a negative effect in environmental disclosure. Our evidence is useful for firms interested in both improving firm performance and disclosing environmental matters because if they have also SE policies will lead to a lesser reporting of environmental information. Thus, companies and firms' managers oriented toward environmental goals in order to engage with stakeholders needs and demands will have to decide if enhancing firm performance or implementing SE policies. Secondly, our evidence may be useful for policy-makers when regulating or recommending about environmental reporting. They should encourage companies involved in environmental issues to be more concerned in implementing SE policies and in moderating the increase in firm performance, because the coexistence of both mechanisms, firm performance and SE strategies, mitigates the reporting of environmental information. Thirdly, this research offers an opportunity to extend past evidence based on stakeholder theory since we address how firm performance moderates the association between SE policies and environmental disclosure. Earlier research is focused on analysing the factors increasing the disclosure of CSR or environmental information, but there is no previous evidence of the moderating role of corporate performance between SE policies and the disclosure of environmental matters, to the best of our knowledge. Finally, stakeholders interested in getting environmental disclosures from firms should take into account if companies have SE policies and if they tend to be profitable firms. In this latter case, the information about environmental issues may be limited.

Our study has limitations that serve as venues for future research. Firstly, we analyse the moderating role of firm performance on the relationship between SE and environmental disclosure by focusing on a sample of international non-financial firms. Future research could extend our research to financial entities. Secondly, this study does not address the effect of the worldwide crisis on the relationship between SE and environmental disclosure. We have not analysed how the worldwide financial crisis could impact on the relationship between SE and environmental reporting. Thirdly, as we deal with a cross-country sample, other researchers extending our research may enrich it by using country-level variables. Finally, future research may also consider to enhance the model proposed introducing some mediating variables such as board composition or female directors, among others, in order to explore their effect on the association between SE and environmental disclosure.

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Table 1
Number of observations by country

| Country | Observations | Percentage | Cum. |
|----------------|---------------------|-------------------|-------------|
| Australia | 696 | 4.14% | 4.14% |
| Austria | 67 | 0.40% | 4.54% |
| Belgium | 150 | 0.89% | 5.43% |
| Canada | 2,151 | 12.80% | 18.23% |
| Denmark | 281 | 1.67% | 19.90% |
| Finland | 202 | 1.20% | 21.10% |
| Germany | 516 | 3.07% | 24.17% |
| Ireland | 319 | 1.90% | 26.07% |
| Japan | 2,129 | 12.67% | 38.74% |
| Netherlands | 286 | 1.70% | 40.44% |
| New Zealand | 151 | 0.90% | 41.34% |
| Norway | 84 | 0.50% | 41.84% |
| Sweden | 605 | 3.60% | 45.44% |
| Switzerland | 497 | 2.96% | 48.40% |
| United Kingdom | 1,948 | 11.59% | 59.99% |
| United States | 6,725 | 40.01% | 100.0% |
| Total | 16,807 | 100% | |

Table 2
Number of observations by industry

| TRBC economic sector name | Number of observations | Percentage of observations | Cum. of observations |
|----------------------------------|-------------------------------|-----------------------------------|-----------------------------|
| Basic Materials | 2,027 | 12.06% | 12.06% |
| Consumer Cyclical | 3,011 | 17.92% | 29.98% |
| Consumer Non-cyclical | 1,227 | 7.30% | 37.28% |
| Energy | 1,346 | 8.01% | 45.29% |
| Healthcare | 1,820 | 10.83% | 56.12% |
| Industrials | 3,592 | 21.37% | 77.49% |
| Technology | 1,326 | 7.89% | 85.38% |
| Telecommunications services | 773 | 4.60% | 89.98% |
| Utilities | 1,685 | 10.02% | 100.0% |
| Total | 16,807 | 100% | |

Table 3
Environmental disclosure items

| Resource use | Emissions | Innovation |
|--|--|---|
| Environment management team | VOC emissions reduction | Eco-design products |
| Environment management training | Particulate matter emission reduction | Noise reduction |
| Environmental materials sourcing | Waste reduction total | Hybrid vehicles |
| Toxic chemicals reduction | e-Waste reduction | Environmental assets under MGT |
| Renewable energy use | Environmental restoration initiatives | Equator principles |
| Green buildings | Staff transportation impact reduction | Environmental project financing |
| Environmental supply chain management | Environmental expenditures investment | Nuclear |
| Environmental supply chain monitoring | Policy emissions | Labelled wood |
| Environmental supply chain partnership termination | | Organic products initiatives |
| Land environmental impact reduction | Targets emissions | Product impact minimisation |
| Resource reduction policy | Biodiversity impact reduction | Take-back and recycling initiatives |
| Water efficiency policy | Emissions trading | Responsible use of environmental products |
| Energy efficiency policy | Climate change commercial risk opportunities | GMO products |
| Sustainable packaging policy | NOx and SOx emissions reduction | Agrochemical products |
| Environment supply chain policy | VOC or particulate matter emissions | Agrochemical 5% revenue |
| Resource reduction targets | | Environmental products |
| Resource reduction policy | | Animal testing in the last 12fy |
| Water efficiency policy | | Animal testing cosmetics |
| Energy efficiency policy | | Animal testing reduction |
| Sustainable packaging policy | | Renewable clean energy products |
| Environment supply chain policy | | Water technologies |
| Resource reduction targets | | Sustainable building products |

Table 4
Variables description

| Variables | Description |
|----------------------------|--|
| ENV_REPORT | The ratio between the aggregation of 58 items focused on environmental issues and the total number of items analysed. If the company discloses information concerning each item, it will take the value 1, and 0 otherwise |
| STAKEHOL_ENGAG | Dummy variable that takes the value 1 if the company explains how it engages with its stakeholders and complies with regulations regarding stakeholder engagement, resolutions or proposals |
| Q_TOBIN | The market capitalization of common stock+ book value liabilities divided by the book value of total assets |
| SIZE | The log of total assets |
| LEV | Debt over total assets |
| B_SIZE | Number of directors on board |
| CSR_COMMITTEE | Dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise |
| FEM_DIRECT | Proportion of female directors on boards = Total number of female directors on boards / Total number of directors on boards |
| B_INDEP | Proportion of independent directors on boards = Total number of independent directors on boards / Total number of directors on boards |
| ASIA | Dummy variable: 1 = If the country is in Asia; 0 = Otherwise |
| EUROPE | Dummy variable: 1 = If the country is in Europe; 0 = Otherwise |
| NORTHAMERICA | Dummy variable: 1 = If the country is in North America; 0 = Otherwise |
| OCEANIA | Dummy variable: 1 = If the country is in Oceania; 0 = Otherwise |
| BASIC MATERIALS | Dummy variable: 1= Basic Materials; 0 = Otherwise |
| CONSUMER CYCLICAL | Dummy variable: 1= Consumer Cyclical; 0 = Otherwise |
| CONSUMER NON-CYCLICAL | Dummy variable: 1= Consumer Non-Cyclical; 0 = Otherwise |
| ENERGY | Dummy variable: 1= Energy; 0 = Otherwise |
| HEALTHCARE | Dummy variable: 1= Healthcare; 0 = Otherwise |
| INDUSTRIALS | Dummy variable: 1= Industrial; 0 = Otherwise |
| TECHNOLOGY | Dummy variable: 1= Technology; 0 = Otherwise |
| TELECOMMUNICATION SERVICES | Dummy variable: 1= Telecommunication Services; 0 = Otherwise |
| UTILITIES | Dummy variable: 1= Utilities; 0 = Otherwise |

Table 5
Descriptive statistics

| Variable | Obs. | Mean | Standard Deviation | Q25 | Q50 | Q75 |
|----------------------------|-------------|-------------|---------------------------|------------|------------|------------|
| ENV_REPORT | 16,807 | 0.253 | 0.184 | 0.078 | 0.255 | 0.412 |
| STAKEHOL_ENGAG | 16,807 | 0.364 | 0.481 | 0.000 | 0.000 | 1.000 |
| Q_TOBIN | 16,807 | 0.740 | 0.478 | 0.551 | 0.682 | 0.837 |
| SIZE | 16,807 | 10.860 | 1.620 | 10.566 | 11.024 | 11.53 |
| LEV | 16,807 | 24.853 | 13.781 | 5.778 | 12.431 | 21.011 |
| B_SIZE | 16,807 | 12.526 | 3.899 | 9.600 | 12.000 | 14.400 |
| CSR_COMMITTEE | 16,807 | 0.633 | 0.514 | 0.000 | 1.000 | 1.000 |
| FEM_DIRECT | 16,807 | 13.748 | 12.080 | 0.000 | 12.222 | 22.000 |
| B_INDEP | 16,807 | 81.604 | 28.393 | 73.333 | 91.667 | 100.000 |
| ASIA | 16,807 | 0.126 | 0.327 | 0.000 | 0.000 | 0.000 |
| EUROPE | 16,807 | 0.294 | 0.457 | 0.000 | 0.000 | 1.000 |
| NORTHAMERICA | 16,807 | 0.528 | 0.450 | 0.000 | 0.000 | 1.000 |
| OCEANIA | 16,807 | 0.050 | 0.245 | 0.000 | 0.000 | 0.000 |
| BASIC MATERIALS | 16,807 | 0.120 | 0.324 | 0.000 | 0.000 | 0.000 |
| CONSUMER CYCLICAL | 16,807 | 0.179 | 0.379 | 0.000 | 0.000 | 0.000 |
| CONSUMER NON-CYCLICAL | 16,807 | 0.073 | 0.280 | 0.000 | 0.000 | 0.000 |
| ENERGY | 16,807 | 0.080 | 0.281 | 0.000 | 0.000 | 0.000 |
| HEALTHCARE | 16,807 | 0.108 | 0.295 | 0.000 | 0.000 | 0.000 |
| INDUSTRIALS | 16,807 | 0.213 | 0.412 | 0.000 | 0.000 | 0.000 |
| TECHNOLOGY | 16,807 | 0.078 | 0.262 | 0.000 | 0.000 | 0.000 |
| TELECOMMUNICATION SERVICES | 16,807 | 0.046 | 0.179 | 0.000 | 0.000 | 0.000 |
| UTILITIES | 16,807 | 0.100 | 0.220 | 0.000 | 0.000 | 0.000 |

Mean, standard deviation and quartiles (25, 50 and 75). ENVIR_DISCL is the ratio between the aggregation of 58 items focused on environmental issues and the total number of items analysed. If the company discloses information concerning each item, it will take the value 1, and 0 otherwise; STAKEHOL_ENGAG Dummy variable that takes the value 1 if the company explains how it engages with its stakeholders and complies with regulations regarding shareholder engagement, resolutions or proposals and 0, otherwise; Q_TOBIN is the market capitalization of common stock+ book value liabilities divided by the book value of total assets; SIZE is the log of total assets; LEV is debt over total assets; B_SIZE is the total number of directors on boards; CSR_COMMITTEE is a dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; FEM_DIR is the proportion of female directors on boards= Total number of female directors on boards/Total number of directors on boards; B_INDEP is the proportion of independent directors on boards= Total number of independent on boards/ Total number of directors on boards; ASIA is a dummy variable: 1= If the country is in Asia, 0=Otherwise; EUROPE is a dummy variable: 1= If the country is in Europe, 0=Otherwise; NORTHAMERICA is a dummy variable: 1= If the country is in North America, 0=Otherwise; OCEANIA is a dummy variable: 1= If the country is in Oceania, 0=Otherwise; BASIC MATERIALS is a dummy variable: 1= Basic Materials, 0 = Otherwise; CONSUMER CYCLICAL is a dummy variable: 1= Consumer Cyclical, 0 = Otherwise; CONSUMER NON-CYCLICAL is a dummy variable: 1= Consumer Non-Cyclical, 0 = Otherwise; ENERGY is a dummy variable: 1= Energy, 0= Otherwise; HEALTHCARE is a dummy variable: 1= Healthcare, 0 = Otherwise; INDUSTRIALS is a dummy variable: 1= Industrial, 0 = Otherwise; TECHNOLOGY is a dummy variable: 1= Technology, 0 = Otherwise; TELECOMMUNICATION SERVICES is a dummy variable: 1= Telecommunication Services, 0 = Otherwise and UTILITIES is a dummy variable: 1= Utilities, 0 = Otherwise.

Table 6
Correlation matrix

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| ENV_REPORT (1) | 1.000 | | | | | | | | | | | | | | | | | | | | | |
| STAKEHOL_ENGAG (2) | 0.572*** | 1.000 | | | | | | | | | | | | | | | | | | | | |
| Q_TOBIN (3) | -0.004 | -0.005 | 1.000 | | | | | | | | | | | | | | | | | | | |
| SIZE (4) | 0.533*** | 0.396*** | -0.024** | 1.000 | | | | | | | | | | | | | | | | | | |
| LEV (5) | 0.144*** | 0.096*** | 0.689*** | 0.278*** | 1.000 | | | | | | | | | | | | | | | | | |
| B_SIZE (6) | 0.345*** | 0.223*** | -0.030*** | 0.550*** | 0.182*** | 1.000 | | | | | | | | | | | | | | | | |
| CSR_COMMITTEE (7) | 0.618*** | 0.423*** | 0.010 | 0.321*** | 0.097*** | 0.216*** | 1.000 | | | | | | | | | | | | | | | |
| FEM_DIRECT (8) | 0.149*** | 0.202*** | 0.031*** | 0.143*** | 0.070*** | 0.135*** | 0.120*** | 1.000 | | | | | | | | | | | | | | |
| B_INDEP (9) | 0.021 | 0.135*** | -0.074*** | 0.139*** | 0.061*** | 0.135*** | -0.003 | 0.389*** | 1.000 | | | | | | | | | | | | | |
| ASIA (10) | 0.219*** | -0.042*** | 0.015 | 0.132*** | 0.053*** | 0.074*** | 0.131*** | -0.434*** | -0.580*** | 1.000 | | | | | | | | | | | | |
| EUROPE (11) | 0.171*** | 0.234*** | 0.102*** | -0.001 | 0.025** | 0.003 | 0.072*** | 0.113*** | 0.144*** | -0.284*** | 1.000 | | | | | | | | | | | |
| NORTHAMERICA (12) | -0.233*** | -0.155*** | -0.236*** | 0.043*** | -0.042*** | 0.114*** | -0.131*** | 0.209*** | 0.313*** | -0.358*** | -0.610*** | 1.000 | | | | | | | | | | |
| OCEANIA (13) | -0.163*** | -0.064*** | 0.212*** | -0.243*** | -0.060*** | -0.285*** | -0.069*** | 0.027*** | -0.017* | -0.137*** | -0.203*** | -0.257*** | 1.000 | | | | | | | | | |
| BASIC MATERIALS (14) | 0.071*** | 0.102*** | -0.049*** | -0.065*** | -0.054*** | -0.060*** | 0.103*** | -0.087*** | 0.012 | -0.013 | 0.026*** | -0.082*** | 0.104*** | 1.000 | | | | | | | | |
| CONSUMER CYCLICAL (15) | -0.068*** | -0.083*** | 0.016 | -0.071*** | -0.020** | -0.009 | -0.058*** | 0.036*** | -0.113*** | 0.005 | -0.012 | -0.009 | 0.035*** | -0.199*** | 1.000 | | | | | | | |
| CONSUMER NON-CYCLICAL (16) | 0.038*** | 0.065*** | 0.049*** | 0.048*** | 0.074*** | 0.082*** | 0.053*** | 0.145*** | 0.029*** | -0.029*** | 0.034*** | -0.006 | -0.002 | -0.132*** | -0.166*** | 1.000 | | | | | | |
| ENERGY (17) | -0.102*** | 0.001 | -0.148*** | 0.037*** | -0.90*** | -0.034*** | -0.009 | -0.060*** | 0.057*** | -0.107*** | -0.080*** | 0.161*** | -0.018* | -0.123*** | -0.154*** | -0.103*** | 1.000 | | | | | |
| HEALTHCARE (18) | -0.069*** | -0.036*** | -0.131*** | -0.051*** | -0.089*** | -0.057*** | -0.051*** | 0.038*** | 0.087*** | -0.046*** | 0.016 | 0.013 | 0.008 | -0.125*** | -0.156*** | -0.104*** | -0.096*** | 1.000 | | | | |
| INDUSTRIALS (19) | 0.038*** | -0.067*** | 0.171*** | 0.006 | 0.111*** | 0.041*** | -0.014 | -0.107*** | -0.070*** | 0.134*** | 0.062*** | -0.130*** | -0.053*** | -0.210*** | -0.262*** | -0.175*** | -0.162*** | -0.164*** | 1.000 | | | |
| TECHNOLOGY (20) | 0.015 | -0.036*** | -0.137*** | -0.049*** | -0.221*** | -0.074*** | -0.065*** | -0.036*** | -0.028*** | 0.041*** | -0.055*** | 0.071*** | -0.069*** | -0.124*** | -0.154*** | -0.103*** | -0.095*** | -0.097*** | -0.163*** | 1.000 | | |
| TELECOMMUNICATION SERVICES (21) | 0.0030 | 0.042*** | 0.080*** | 0.096*** | 0.113*** | 0.055*** | -0.005 | 0.058*** | 0.057*** | -0.021** | 0.045*** | -0.028** | 0.001 | -0.074*** | -0.092*** | -0.062*** | -0.057*** | -0.058*** | -0.097*** | -0.057*** | 1.000 | |
| UTILITIES (22) | 0.086*** | 0.084*** | 0.132*** | 0.157*** | 0.236*** | 0.102*** | 0.063*** | 0.101*** | 0.080*** | -0.040*** | -0.065*** | 0.105*** | -0.250** | -0.093*** | -0.116*** | -0.078*** | -0.072*** | -0.073*** | -0.122*** | -0.072*** | -0.043*** | 1.000 |

ENVIR_DISCL is the ratio between the aggregation of 58 items focused on environmental issues and the total number of items analysed. If the company discloses information concerning each item, it will take the value 1, and 0 otherwise; STAKEHOL_ENGAG Dummy variable that takes the value 1 if the company explains how it engages with its stakeholders and complies with regulations regarding shareholder engagement, resolutions or proposals and 0, otherwise; Q_TOBIN is the market capitalization of common stock+ book value liabilities divided by the book value of total assets; SIZE is the log of total assets; LEV is debt over total assets; B_SIZE is the total number of directors on boards; CSR_COMMITTEE is a dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; FEM_DIR is the proportion of female directors on boards= Total number of female directors on boards/Total number of directors on boards; B_INDEP is the proportion of independent directors on boards= Total number of independent on boards/ Total number of directors on boards; ASIA is a dummy variable: 1= If the country is in Asia, 0=Otherwise; EUROPE is a dummy variable: 1= If the country is in Europe, 0=Otherwise; NORTHAMERICA is a dummy variable: 1= If the country is in North America, 0=Otherwise; OCEANIA is a dummy variable: 1= If the country is in Oceania, 0=Otherwise; BASIC MATERIALS is a dummy variable: 1= Basic Materials, 0 = Otherwise; CONSUMER CYCLICAL is a dummy variable: 1= Consumer Cyclical, 0 = Otherwise; CONSUMER NON-CYCLICAL is a dummy variable: 1= Consumer Non-Cyclical, 0 = Otherwise; ENERGY is a dummy variable: 1= Energy, 0= Otherwise; HEALTHCARE is a dummy variable: 1= Healthcare, 0 = Otherwise; INDUSTRIALS is a dummy variable: 1= Industrial, 0 = Otherwise; TECHNOLOGY is a dummy variable: 1= Technology, 0 = Otherwise; TELECOMMUNICATION SERVICES is a dummy variable: 1= Telecommunication Services, 0 = Otherwise and UTILITIES is a dummy variable: 1= Utilities, 0 = Otherwise. *p-value<0.1 **p-value<0.05 ***p-value<0.01.

Table 7
Multivariate analysis results of the Generalized Method of Moments

| | MODEL 1 | MODEL 2 |
|--------------------------|---------------------|---------------------|
| | Coef. | Coef. |
| | P> t | P> t |
| ENVIR_DISCL(t-1) | 0.360*** (0.000) | 0.365*** (0.000) |
| STAKEHOL_ENGAG | 0.033** (0.016) | 0.193** (0.021) |
| Q_TOBIN | | 0.229** (0.038) |
| STAKEHOL_ENGAG x Q_TOBIN | | -0.219** (0.049) |
| SIZE | -0.006 (0.397) | -0.003 (0.649) |
| LEV | -0.000 (0.527) | -0.000 (0.537) |
| B_SIZE | -0.001 (0.884) | -0.001 (0.892) |
| CSR_COMMITTEE | 0.176*** (0.000) | 0.196*** (0.000) |
| FEM_DIRECT | 0.005*** (0.004) | 0.004** (0.026) |
| B_INDEP | -0.002 (0.185) | -0.002 (0.135) |
| EUROPE | 0.290** (0.027) | 0.362** (0.014) |
| NORTHAMERICA | 0.041 (0.696) | 0.118 (0.347) |
| OCEANIA | -0.088 (0.484) | -0.080 (0.596) |
| BASIC MATERIALS | 0.333 (0.191) | 0.367 (0.168) |
| CONSUMER CYCLICAL | 0.319 (0.269) | 0.369 (0.217) |
| CONSUMER NON-CYCLICAL | 0.147 (0.530) | 0.127 (0.612) |

| | | |
|---|------------------|------------------|
| ENERGY | 0.202 (0.438) | 0.216 (0.478) |
| HEALTHCARE | 0.434 (0.177) | 0.532 (0.110) |
| INDUSTRIALS | 0.230 (0.374) | 0.232 (0.387) |
| TECHNOLOGY | 0.346 (0.105) | 0.334 (0.139) |
| TELECOMMUNICATION SERVICES | 0.357 (0.323) | 0.271 (0.476) |
| Year effects | Yes | Yes |
| Wald χ^2 test | 5144.05*** | 4884.80*** |
| Arellano–Bond test AR(1) (z, p> z) | -1.24 (0.216) | -1.55 (0.120) |
| Arellano–Bond test AR(2) (z, p> z) | -1.35 (0.176) | -1.43 (0.153) |
| Hansen test (chi-square, p> chi²) | 29.68 (0.236) | 19.66(0.765) |

ENVIR_DISCL is the ratio between the aggregation of 58 items focused on environmental issues and the total number of items analysed. If the company discloses information concerning each item, it will take the value 1, and 0 otherwise; STAKEHOL_ENGAG Dummy variable that takes the value 1 if the company explains how it engages with its stakeholders and complies with regulations regarding shareholder engagement, resolutions or proposals and 0, otherwise; Q_TOBIN is the market capitalization of common stock+ book value liabilities divided by the book value of total assets; SIZE is the log of total assets; LEV is debt over total assets; B_SIZE is the total number of directors on boards; CSR_COMMITTEE is a dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; FEM_DIR is the proportion of female directors on boards= Total number of female directors on boards/Total number of directors on boards; B_INDEP is the proportion of independent directors on boards= Total number of independent on boards/ Total number of directors on boards; ASIA is a dummy variable: 1= If the country is in Asia, 0=Otherwise; EUROPE is a dummy variable: 1= If the country is in Europe, 0=Otherwise; NORTHAMERICA is a dummy variable: 1= If the country is in North America, 0=Otherwise; OCEANIA is a dummy variable: 1= If the country is in Oceania, 0=Otherwise; BASIC MATERIALS is a dummy variable: 1= Basic Materials, 0 = Otherwise; CONSUMER CYCLICAL is a dummy variable: 1= Consumer Cyclical, 0 = Otherwise; CONSUMER NON-CYCLICAL is a dummy variable: 1= Consumer Non-Cyclical, 0 = Otherwise; ENERGY is a dummy variable: 1= Energy, 0= Otherwise; HEALTHCARE is a dummy variable: 1= Healthcare, 0 = Otherwise; INDUSTRIALS is a dummy variable: 1= Industrial, 0 = Otherwise; TECHNOLOGY is a dummy variable: 1= Technology, 0 = Otherwise; TELECOMMUNICATION SERVICES is a dummy variable: 1= Telecommunication Services, 0 = Otherwise and UTILITIES is a dummy variable: 1= Utilities, 0 = Otherwise. *p-value<0.1 **p-value<0.05 ***p-value<0.01.