

**CORPORATE SOCIAL AND ENVIRONMENTAL DISCLOSURE AS A
SUSTAINABLE DEVELOPMENT TOOL PROVIDED BY BOARD SUB-
COMMITTEES. DO WOMEN DIRECTORS PLAY A RELEVANT
MODERATING ROLE?**

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Abstract

The aim of this research is to examine the impact of three audit committee characteristics on corporate social and environmental responsibility (CSR) disclosure: the existence of an audit committee, audit committee independence, and audit committee financial expertise. Moreover, this research analyzes the moderating effect of board gender diversity between these audit committees' attributes and CSR reporting. The results of analyzing 13,178 firm-year observations of non-financial companies show that the presence of an audit committee and audit committee financial expertise are positively associated with CSR disclosure. However, a higher proportion of non-executive directors in audit committees has a negative effect on the disclosure of CSR information. These findings suggest that some audit committees' features play an important role in ensuring the reporting of environmental, social, and economic information. Our evidence also indicates that the presence of female directors on boards increases the positive impact of financial expert membership of audit committees on CSR disclosure, while women directors moderate any negative effect of the percentage of independent directors on audit committees on CSR reporting by increasing the latter. In addition, female directors moderate the positive impact of the existence of an audit committee on the disclosure of CSR information by reducing the latter.

Keywords: Corporate social and environmental disclosure, audit committees, audit committee financial expertise, audit committee independence, women directors.

1. Introduction

A worldwide crisis and significant corporate scandals have affected perceptions of the honesty and trustworthiness of managers and the corporate governance system. This has led to increased scrutiny of companies and, thus, greater shareholder demands for better financial, social, and environmental information, and better quality financial statements (Young and Marais, 2012). Today, companies demonstrate interest in both financial performance and social and economic performance.

In this sense, corporate social and environmental responsibility (CSR) activities have become a relevant issue for regulators, investors, stakeholders, and scholars. Previous literature has examined the association between CSR disclosure and some features of the corporate governance field, such as long-term competitive financial returns (Cucari et al., 2018); the assurance of a firm's legitimacy and accountability to its stakeholders (Helfaya and Moussa, 2017); the increase in the quality of environmental disclosure (Iatridis, 2013); and the improvement of corporate efficiency (Xie et al., 2019), among others. CSR is viewed as a process in which firms disclose (voluntarily or mandatorily, depending on the country) social, environmental, and economic information to investors, stakeholders, and society (Dahlsrud, 2008). One benefit of CSR reporting for firms is the enhancement of their reputation (Sun and Cui, 2014; Martinez-Ferrero et al., 2018), because these disclosures contribute to a better society and a cleaner environment. CSR disclosure provides more information (financial and non-financial) to stakeholders (Hackston and Milne, 1996), which helps them to make investment and non-investment decisions (Deegan and Blomquist, 2006). In this regard, CSR has become a central part of corporate governance as an element of both moral and economic value (Cucari et al., 2018), which explains why CSR is considered a strategic decision in firms (Clarke, 2007).

Companies tend to comply with the requirements, regulations, and codes of good governance concerning the disclosure of CSR information. However, the legal system may generate a coercive pressure on companies (Barakat et al., 2015), especially when this system is weak. In this sense, pressures from powerful stakeholders, rather than efficient incentives, may be the drivers of CSR disclosure (Khan et al., 2013). Furthermore, companies may have opportunistic managers whose objective is to use CSR information for their own personal benefit. In this case, companies may establish other internal or external control mechanisms, such as audit committees or auditors, to ensure the rights of stakeholders. Ali and Yusoff (2013) define audit committees as bodies established by boards of directors to review accounting and financial reporting processes and audit financial statements. Audit committees ensure the

integrity of financial reporting through their monitoring and control functions (Fama, 1980; Fama and Jensen, 1983). The main functions of audit committees are to review financial affairs, to ensure the quality of information disclosed by the board, to solve board problems (Vinten and Connie, 1993), and to oversee the disclosure process in general. While there is no set size for an audit committee, it is typically made up of at least three people who should all, ideally, be independent. Maintaining independent audit committee members is crucial to ensuring effectiveness. It is imperative that audit committee members remain objective and function as arbitrators between management, external auditors, and stakeholders. Conversely, the finance function of an audit committee produces reliable and auditable information for external disclosure. The strength of the finance function is therefore critical in supporting the oversight role of the audit committee, which can be severely inhibited by a weak finance function lacking capacity or expertise. In this regard, the existence of an audit committee, its independence, and its financial expertise may be useful mechanisms that affect CSR reporting.

Thus, we aim to answer three research questions: (1) Is the presence of an audit committee associated with CSR reporting? (2) How does audit committee financial expertise impact CSR disclosure? (3) How does the proportion of non-executive directors on audit committees affect CSR reporting? We also explore the moderating effect of board gender diversity on the three key variables of our research: the existence of an audit committee, its independence and financial expertise, and CSR reporting. The study is based on data from the period 2005–2015, providing an opportunity to analyze the impact of audit committee characteristics on CSR disclosure, where the disclosure of non-financial information is considered a critical factor in the strategic policies of firms (Clarke, 2007).

Our study makes several important contributions to the corporate governance literature, particularly to the audit committee field. First, we show that the existence of an audit committee in firms and audit committee financial expertise are positively associated with CSR disclosure, while non-executive directors on audit committees negatively affect the voluntary reporting of CSR information. The existence of an audit committee enhancing non-financial reporting quality, such as CSR reporting, and audit committee independence discouraging the disclosure of CSR information are not new phenomena; they have been analyzed previously, albeit rarely. However, this study provides a new research stream by demonstrating the positive effect of audit committee expertise on CSR reporting; to the best of our knowledge, this has not yet been examined. Thus, we contribute to the current body of literature on audit committees' characteristics and CSR disclosure by providing new evidence of the positive effect of audit committee expertise on CSR reporting. Second, this research contributes to the current debate

about the compulsory presence of female directors on corporate boards. Previous research has explored how board gender diversity affects CSR reporting, but the moderating effect of female directors on boards on audit committee characteristics and CSR disclosure has not received attention by other researchers, as far as we know. Accordingly, our research addresses this gap in the literature by analyzing the moderating effect of board gender diversity on the attributes of audit committees and CSR reporting. In this regard, we find that the positive effect of the existence of an audit committee on CSR reporting is negatively moderated by female directors on boards, while the presence of women directors on boards reinforces the positive role played by financial experts on audit committees in CSR disclosure. Conversely, female directors on boards moderate the negative impact of non-executive directors on audit committees on the reporting of CSR information, because the interaction between women directors on boards and the proportion of non-executive directors on audit committees positively affects CSR disclosure. Thus, having female directors on boards benefits firms when their audit committees are composed of non-executive or independent directors and financial experts, because CSR reporting increases. In contrast, the mere presence of an audit committee discourages the disclosure of CSR information when boards consist of women directors. This may be because female directors consider that an audit committee *per se* is not a sufficiently efficient mechanism to enhance CSR reporting, and that it should be composed of independent and financial experts.

The remainder of this paper is organized as follows. Section 2 reviews past research and describes our hypotheses. Section 3 explains the data collection and methodology of this study. Section 4 presents the results and section 5 offers the conclusions.

2. Literature Review and Development of Hypotheses

From an agency perspective, it could be suggested that the divergent interests and information asymmetries between shareholders and managers appear in situations of separation between the ownership and management of firms (Jensen and Meckling, 1976). This could have several consequences, such as conflict of interest due to moral hazards and adverse selection problems. This theory supports the argument that companies may use different methods (such as voluntary disclosure or audit committees) to reduce agency problems. One of the monitoring mechanisms of corporate governance used to improve the auditing and reporting quality of companies is the audit committee (Fama and Jensen, 1983). For this reason, audit committee characteristics (such as independence or expertise) are relevant factors in the corporate governance field; they enhance corporate reporting (Wiseman et al., 2012) by reducing the

opportunistic behavior of managers and mitigating agency problems (Madi et al., 2014). Therefore, audit committees become a mechanism of corporate governance for stakeholders to mitigate agency costs, align managers' and stakeholders' interests (Wiseman et al., 2012), and, ultimately, enhance the disclosure of environmental and social information. In this regard, CSR disclosure can benefit stakeholders by decreasing information asymmetries between managers and these stakeholders. Through the lens of an agency approach, audit committees are considered an internal monitoring mechanism that can mitigate agency problems and encourage the reporting of CSR information (Said et al., 2009). One role of audit committees is to ensure that companies assume the responsibility of CSR disclosure (Jamali et al., 2008; Kolk and Pinkse, 2010), because audit committees with adequate attributes can work as indicators of firms' quality control and CSR disclosure (Appuhami and Tashakor, 2017).

Consistent with both agency and stakeholder theories, audit committees should commit companies to engaging in environmental and social behaviors in the interests of both stakeholders and society (Hill and Jones, 1992). From this point of view, audit committees should assume the responsibility of CSR disclosure because stakeholders will expect companies to be more transparent and engage in CSR activities. With the CSR information disclosed by firms, stakeholders can assess the reliability, legitimacy, and transparency of firms. A stakeholder approach suggests that firms should be responsible for all stakeholders for moral reasons (Culpan and Trussel, 2005). Further, this approach explains how an organization should interact with its stakeholders to comply with their different expectations (Deegan, 2006). Hence, managers and stakeholders should engage in a dialogue to fine-tune their priorities, including environmental and social information in this dialogue (Deegan and Unerman, 2006). According to stakeholder theory, several agents are interested in firms' attitudes toward CSR issues (Frías-Aceituno et al., 2013).

2.1. The presence of audit committees

Board committees support boards in executing their duties. The most important are audit, remuneration, executive, nomination, and CSR committees, among others. The audit committee is considered an effective tool within a strong corporate governance structure (Cohen et al., 2004; Kend, 2015). Past research has examined the role of audit committees in the improvement of corporate governance standards (Turley and Zaman, 2004, 2007). Audit committees act as delegate committees, undertaking specialized activities of the board and helping to ensure the performance of internal and external auditors (Priantana and Yustian, 2011). An extensive range of studies provides evidence that audit committees enhance firm

performance (Weir et al., 2002), financial reporting quality (Pomeroy and Thornton, 2008), the appointment of high-quality auditors (Cho and Wu, 2014), and earnings management (Larcker et al., 2007), among others.

From an agency perspective, it can be suggested that audit committees are internal governance mechanisms in firms that help to reduce agency problems between shareholders and managers and solve society's social problems through CSR disclosure (Said et al., 2009). In this context, Alotaibi and Hussainey (2016) argue that an effective audit committee tends to disclose more CSR information to reduce agency problems and convince external users that managers act successfully in the interests of both society and the environment. Ika et al. (2017) provide evidence that the effectiveness of audit committees in the supervision of financial statements could improve the disclosure of social information. Stakeholder theory posits that audit committees are considered as delegate committees of corporate boards in charge of safeguarding the interests of stakeholders (Klein, 1998). Khan et al. (2013) find that the presence of an audit committee is positively associated with CSR disclosure. This finding is supported by the thesis that a particular role of audit committees should be to engage with stakeholder expectations.

Audit committees are considered a key element of firms through which CSR orientation is implemented (Jamali et al., 2009; Appuhami and Tashakor, 2017). In this sense, Appuhami and Tashakor (2017) show that the existence of an audit committee (with suitable characteristics) is considered a signal of the quality of the internal monitoring function, as well as a relevant tool for establishing CSR activities.

An increasing number of studies focus on issues associated with the existence of an audit committee and the disclosure of CSR information. In this regard, empirical evidence from diverse studies indicates a positive association between these two variables (Said et al., 2009; Suryono and Prastiwi, 2011; Tommy, 2015; Laksmi and Kamila, 2018). This suggests that the existence of an audit committee is likely to support the disclosure of CSR activities to improve relations with stakeholders and reduce information asymmetry between insiders and outsiders. This leads us to posit the first hypothesis:

Hypothesis 1: There is a positive association between the presence of an audit committee and CSR disclosure.

2.2. Audit committee financial expertise

Audit committee financial expertise is considered a valuable tool for companies. Iyer et al. (2013) define a financial expert on an audit committee as a director who has accounting,

auditing, and financial expertise. In this regard, directors who do not have accounting and financial expertise (sitting on audit committees) are less likely to detect problems in the reporting process. Dhaliwal et al. (2010) report that audit committee directors with financial expertise are essential for understanding the complexity of financial statements and for overseeing corporate reporting processes effectively.

Past research provides evidence that audit committee members with financial expertise ensure financial reporting quality (Sun et al., 2014), improve the timeliness of financial information (Abernathy et al., 2014), improve CSR strategy (Shaukat et al., 2016), and enhance earnings quality (Chen and Komal, 2018) and audit quality (Ghafran and O'Sullivan, 2017). Audit committee financial expertise could detect financial risks in both the short and long term, while avoiding environmental and social risks, which could have significant financial implications for firms (Musallam, 2018).

There are limited studies examining the role of audit committee financial expertise in CSR reporting. Abernathy et al. (2014) provide evidence that audit committees with accounting financial expertise are more effective, because they provide financial information on time. Accordingly, Haji (2015) documents that audit committee financial expertise encourages companies to disclose non-financial information. Helfaya and Moussa (2017) show that audit committee directors with financial expertise tend to maintain a balance between a company's financial and non-financial goals, while putting pressure on managers to respond to the premises of stakeholders related to environmental and social issues. Charir et al. (2018) report that audit committee financial expertise has a positive effect on carbon emission disclosure because of the ease with which carbon emission information can be reviewed and monitored.

The presence of financial experts on audit committees can be essential for strategic decisions (such as CSR reporting), given their relevance in making important decisions and in avoiding and managing risks (Shaukat et al., 2016). Thus, financial experts on audit committees can mitigate agency problems related to the scant flow of information between parties (Bedard and Gendron, 2010), which may improve communication and information sharing between stakeholders and managers—particularly of CSR information. In line with agency theory, audit committees with financial expertise are able to enhance policies related to monitoring and organizational transparency and can help fulfil disclosure requirements (Van der Zahn and Cong, 2019). Based on the above arguments, we expect there to be a positive relationship between audit committee financial expertise and CSR reporting. Thus, we posit the following hypothesis:

Hypothesis 2: There is a positive association between audit committee financial expertise and CSR disclosure.

2.3. Proportion of non-executive directors on audit committees

Audit committee independence is one of the most analyzed characteristics in previous research because it is considered an essential mechanism for monitoring corporate governance (Abbot et al., 2000). Most corporate governance codes from different countries—such as the Cadbury Report (1992), the Unified Code of Good Corporate Governance (2006, 2015), and the Saudi Corporate Governance Code (2006)—recommend that the majority of directors on audit committees should be independent. Based on agency theory, any disparities between the interests of owners and managers and information asymmetries can be reduced by independent audit committees. Pucheta-Martínez and De Fuentes-Barberá (2007) argue that audit committees composed exclusively of independent directors provide better transparency for companies. Carcello and Neal (2003) support the premise that outside directors on audit committees play an important monitoring role by reducing the expropriation of shareholder wealth (Fama, 1980) and by mitigating opportunities for management to act in their own personal interests (Allegrini and Greco, 2011). Further, Jensen (1993) argues that audit committee independence allows for the monitoring of managers' actions to enhance CSR disclosure, therefore reducing information asymmetry and agency problems.

Previous literature has examined the importance of audit committee independence in some fields of corporate governance, such as financial disclosure (Haldar and Raithatha, 2017), audit committee activity (Adelopo et al., 2012), intellectual capital disclosure (Haji, 2015), and firm performance (Kallamu and Saat, 2015). Empirically, the effect of audit committee independence on CSR disclosure is negative (Haniffa and Cooke, 2005), because independent directors might play an ineffective monitoring role due to high workload, a lack of true independence, and scant industry knowledge (Abdul Rahman and Ali, 2006; Azlan Annuar, 2012), in accordance with agency theory. In this sense, Ali et al. (2017) suggest that this negative impact on CSR disclosure might be due to a lack of knowledge about CSR issues, or because non-executive directors are not pressured by stakeholders on issues related to CSR disclosure. García-Sánchez and Martínez-Ferrero (2017) highlight a negative effect of independent directors on CSR disclosure. These authors explore the moderating role of the benefits and costs of disclosure between independent directors and CSR reporting, demonstrating that the low cost of equity capital and high proprietary costs shield independent directors from disclosing more CSR information; that is, these benefits and costs may justify

the negative impact of independent directors on CSR reporting. Al-Jandadi et al. (2013) show that non-executive directors on audit committees do not affect voluntary disclosure of information because they have limited experience on these committees and consequently do not provide reporting quality.

Based on the above arguments, a negative influence of non-executive directors on audit committees on CSR reporting is expected, because they are not specialized in CSR issues and their independence is not always real. Hence, we propose the following hypothesis:

Hypothesis 3: There is a negative association between the proportion of non-executive directors on audit committees and voluntary CSR disclosure.

2.4. The moderating role of female directors on boards

Audit committees are board sub-committees. Consequently, the presence of women on boards may provide important resources to audit committees, such as more information, more human capital, diverse opinions, perspectives, and sensitiveness, all of which might improve audit committee performance when taking decisions and preparing reports (Burke, 1997; Carter et al., 2003). In addition, Huse and Solberg (2006) argue that women are more engaged and involved with social and environmental issues than men, are more diligent, and, ultimately, create a positive environment for decision-making processes. Similarly, several studies have shown that women are less concerned with their personal interests, and can therefore improve the decision-making process and make it more effective (Coffey and Wang, 1998). Webb (2004) and Huse and Solberg (2006) also support the view that women directors are more sensitive to CSR matters. In this regard, Tingbani et al. (2020) show that board gender diversity has a positive effect on the voluntary reporting of information concerning greenhouse gas, which allows firms better to serve stakeholders' interest, gaining accordingly more confidence from not only shareholders, but also from all stakeholders. Furthermore, female representation on boards might enhance boards' behavior and effectiveness (Webb, 2004; Huse and Solberg, 2006). Thus, a greater presence of female directors can provide different points of view, experiences, work styles, and values.

Other studies suggest that female directors tend to ask questions more freely, which improves the effectiveness of communication among directors (e.g., Bilimoria and Wheeler, 2000; Walt and Ingley, 2003). Gul et al. (2011) argue that board gender diversity increases the capacity of boards of directors and their committees to provide better oversight of disclosure and company reports. Previous studies conducted by Gul et al. (2011) and Huse and Solberg (2006), related to accounting and corporate governance issues, show that boards of directors

and audit committees with female directors have higher levels of debates and discussions about difficult issues. These matters often receive less attention when committees and boards consist only of men. These arguments suggest that the presence of women on boards might improve the effectiveness of the control and supervision of audit committees, and might support audit committees to encourage increased CSR disclosure. Bravo and Reguera-Alvarado (2019) argue that female directors in audit committees affect the quality of voluntary disclosure relative to environmental, social and governance issues.

Previous management, psychology, and sociology literature also demonstrates that females are more risk averse and conservative than males (Byrnes et al., 1999; Man and Wong, 2013). In this regard, some authors, such as Eweje and Brunton (2010), find that women present a more ethical opinion than males and, as a result, female directors are likely to be more capable of identifying unethical behaviors. Gul et al. (2007) argue that females not only show greater ethical behavior and risk aversion, but they also locate voluntary information more effectively, which might lead to reduced information asymmetries between female directors and managers. Both conservatism and risk aversion might improve the integrity of the financial reporting process, and the reporting process in general (such as CSR reporting) if there is female representation on boards and sub-committees.

The above arguments and evidence support the point that differences between female and male directors affect the conservatism, decision-making processes, and risk preferences of management within a company. In this regard, board gender diversity can have a moderating effect on the existence of an audit committee, its independence and financial expertise, and CSR disclosure. It can be said that board gender diversity can improve and promote transparency in the reporting of CSR information through firms' audit committees, their independence, and financial expertise. Board gender diversity might reinforce the governance of firms and might lead to increased CSR reporting by encouraging audit committees with independent directors and financial experts to report more CSR issues.

Therefore, the next hypothesis we propose is as follows:

Hypothesis 4: The effect of the existence of an audit committee, audit committee financial expertise, and the proportion of non-executive directors on audit committees on CSR reporting is moderated by the presence of female directors on boards.

3. Empirical Design

3.1. Sample and data collection

The initial sample consisted of 14,036 firm-year observations from 2005 to 2015 (inclusive) collected from the Thomson Reuters database, which provides corporate governance, economic, and financial information. Financial entities were removed from the initial sample because these entities comply with specific accounting rules, which means it would have been more difficult to compare annual financial statements between non-financial and financial companies. Thus, the final sample used in this study consisted of 13,178 firm-year observations from 36 countries (Australia, Austria, Belgium, Bermuda, Brazil, Canada, Chile, China, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, India, Ireland, Israel, Italy, Japan, Jersey, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, Thailand, the United Kingdom, and the United States). Table 1 presents the number of observations by country and their percentages across the total sample. The countries with the highest proportion of observations were the United States with 27.51%, followed by Japan with 13.58%, and the United Kingdom with 9.17%. The Czech Republic and Greece were the countries with the lowest representation in our sample with 0.06% and 0.08%, respectively.

<Insert Table 1>

In relation to sector classification, this study was divided into nine activity sectors in line with the Thomson Reuters Business Classification (TRBC). As is evident from Table 2, the industrial sector represents 21.40%, followed by consumer cyclicals with 18.80%, and basic materials with 14.00%. Telecommunications services is the sector with the lowest representation with 4.00%.

<Insert Table 2>

3.2. Measure development

The dependent variable was the reporting of CSR information, denoted by CSR_SCORE index. To measure the dependent variable, we built an index with 112 items concerning environmental and social issues, in line with the work of Sharma and Song (2018) and Hermawan and Gunardi (2019). Each item took the value 1 if the item considered was disclosed by the firm, or if it was not, it took the value of 0. The 112 items refer to the following seven categories of environmental and social information: (1) resource use, (2) emissions, (3) innovation, (4) workforce, (5) human rights, (6) community, and (7) product responsibility. This information was also collected from the Thomson Reuters database. Similarly, other

researchers have used several categories of items concerning social and environmental matters to construct their CSR indexes: Jizi et al. (2014) focus on four categories, Helfaya and Moussa (2017) on six, and Young and Marais (2012) on eight, among others. Table 3 presents all the items included in the construction of the CSR_SCORE index.

<Insert Table 3>

Our first independent variable was the existence of an audit committee, denoted by AUD_COMT, and measured as a dummy variable that scored 1 if the firm had an audit committee or 0 if it did not (Khan et al., 2013; Wang, 2016). Audit committee expertise (AUD_COMT_EXPERT) was another independent variable, and was calculated with a dummy variable that coded the value 1 if the audit committee of the firm had at least three members and at least one "financial expert" or 0 if it did not (Shaukat et al., 2016). Our final independent variable was the presence of non-executive directors on the audit committee (AUDI_COMT_NONEXE), which was measured as the proportion of independent members on audit committees, in line with the work of Haji (2015). The moderating variable (female directors on boards) was denoted by FEM_DIR_B and was measured as the ratio between the total number of female directors on boards and the total number of directors on boards (Atif et al., 2020).

Concerning control variables, we controlled for firm size (SIZE), which was calculated as the log of total assets. Additionally, we considered return on assets (ROA), which was measured as the operating income before interest and taxes over total assets (Cordeiro et al., 2020), as well as leverage (LEV), calculated as debt over total assets. We also controlled for board size, labeled B_SIZE, measured as the total number of directors on boards. The existence of a CSR committee (CSR_COMMITTEE) was calculated as a dummy variable, which took the value 1 if the company had a CSR committee and 0 if it did not. In addition, we controlled for the industry. Consistent with the work of Gallego-Álvarez and Quina-Custodio (2017), we considered the following nine sectors: basic materials (BASIC MATERIALS), consumer cyclical (CONSUMER CYCLICAL), consumer non-cyclical (CONSUMER NON-CYCLICAL), energy (ENERGY), healthcare (HEALTHCARE), industrial (INDUSTRIALS), technology (TECHNOLOGY), telecommunications services (TELECOMMUNICATION SERVICES), and utilities (UTILITIES), based on the TRBC economic classification. This variable, denoted by SECTOR, was calculated as a dummy variable with the value 1 if the company operated in this sector and 0 if it did not. Finally, the year (YEAR) was also controlled for by considering a set of dummy variables in the model. Table 4 presents the description of all variables used.

<Insert Table 4 >

To check our hypotheses, the following model was estimated:

$$\begin{aligned}
 \text{CSR_SCORE} = & \beta_0 + \beta_1 \text{AUD_COMT}_{it} + \beta_2 \text{AUD_COMT_EXPERT}_{it} + \\
 & \beta_3 \text{AUDI_COMT_NONEXE}_{it} + \beta_4 \text{FEM_DIR_B}_{it} + \beta_5 \text{FEM_DIR_B}_{it} \times \\
 & \text{AUD_COMT}_{it} + \beta_6 \text{FEM_DIR_B}_{it} \times \text{AUD_COMT_EXPERT}_{it} + \\
 & \beta_7 \text{FEM_DIR_B}_{it} \times \text{AUDI_COMT_NONEXE}_{it} + \beta_8 \text{SIZE}_{it} + \beta_9 \text{ROA}_{it} + \\
 & \beta_{10} \text{LEV}_{it} + \beta_{11} \text{B_SIZE}_{it} + \beta_{12} \text{CSR_COMMITTEE}_{it} + \sum_{j=13}^{20} \beta_j \text{SECTORS}_{it} + \\
 & \sum \beta_k \text{YEAR}_t + \eta_i + \mu_{it}
 \end{aligned}$$

The "i" and "t" subscripts represent the company and year, respectively. The coefficients of the regression are β_i , and the random error term (ϵ_{it}) is divided by μ_{it} , which varies among companies over time. The individual effect η_i , which characterizes each company, is invariant over time.

To avoid endogeneity bias (Wintoki et al., 2012), which might provide incorrect estimates, we used the two-step system generalized method of moments (GMM) estimation proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The GMM estimator is more efficient and consistent than other procedures, because it controls for unobservable heterogeneity.

The GMM technique provides the Wald χ^2 test, the Arellano–Bond tests AR(1) and AR(2), and the Hansen test. The Wald χ^2 test showed us the model fitness. The second-order serial correlation, exhibited by the test AR(2), demonstrated whether the second-order serial correlation in the first difference residual was a concern. The rejection ($p > 0.1$) of the null hypothesis of “non-serial correlation” allowed us to conclude that the second-order serial correlation was not a problem. Finally, the Hansen test of over-identifying restrictions showed whether the instruments employed in the model were the most appropriate by the rejection ($p > 0.1$) of the null hypothesis of non-correlation between the instruments and the error term.

4. Results

4.1. Descriptive statistics

Table 5 details descriptive data for the sample. The mean of the dependent variable was 0.252. This score shows that the level of CSR information disclosed by firms in our sample was moderate. Further, 82.50% of firms in our sample had an audit committee (AUD_COMT). In 72.00% of the audit committees there were at least three directors, of which at least one had

financial experience (AUD_COMT_EXPERT), whilst 92.17% of audit committee directors were non-executive (independent directors) (AUDI_COMT_NONEXE). On average, firm size was 9.64 (SIZE) and the return on assets was 6.44% (ROA), while the average leverage was 68.87% (LEV). In addition, the average board size (B_SIZE) was 10 members and 58.07% of firms had a CSR committee (CSR_COMMITTEE). Concerning the variable industry, 14.00% of firms in the sample belonged to basic materials, 18.80% to consumer cyclicals, 9.90% to consumer non-cyclical, 8.66% to energy, 7.80% to healthcare, 21.40% to industrials, 7.80% to technology, 4.00% to telecommunications services, and 6.40% to utilities. Finally, the average proportion of female directors on corporate boards (the moderating variable) was 11.76%.

<Insert Table 5>

The correlation matrix is presented in Table 6. According to this information, none of the coefficients was higher than 0.8, in line with the findings of Kennedy (2008). Therefore, we can conclude that there were no multi-collinearity concerns.

<Insert Table 6>

4.2. Multivariate analysis

In Table 7, we show the three models built in which we explore how the existence of an audit committee, audit committee financial expertise, and the proportion of non-executive directors on audit committees affect CSR disclosure. Moreover, we built three further models to examine the moderating effect of female directors on boards on the existence of an audit committee, audit committee financial expertise, the proportion of non-executive directors on audit committees, and the reporting of CSR information.

Model 1 presents the findings for the impact of the existence of an audit committee on CSR disclosure. The coefficient is positive, as predicted, and is statistically significant. Thus, the first hypothesis is supported, showing that the existence of an audit committee enhances CSR reporting, consistent with the results of Khan et al. (2013). Our evidence accords with the stakeholder approach, which suggests that companies implement corporate governance mechanisms (such as audit committees) as tools to respond to stakeholder expectations (Khan et al., 2013) and control the reporting process (Said et al., 2009; Suryono and Prastiwi, 2011; Tommy, 2015; Laksmi and Kamila, 2018). This evidence shows that audit committees complement the disclosure role of CSR committees, because audit committees also improve CSR reporting. Firms that have not established a CSR committee may encourage CSR disclosure if they have an audit committee. This evidence suggests that audit committees

supervise and enhance the financial reporting process as well as other reporting processes, such as CSR disclosure.

In Model 2, we examine the association between audit committee financial expertise and CSR disclosure. The findings demonstrate that audit committee financial expertise has a positive effect on the reporting of CSR matters, and is significant, as predicted. This evidence supports hypothesis 2. It can therefore be concluded that audit committees with directors with financial experience tend to support greater reporting of CSR information, in line with the work of Helfaya and Moussa (2017). This finding suggests that audit committees consisting of directors with financial expertise seek balance between financial and non-financial goals and put pressure on managers to ensure that stakeholder concerns related to CSR activities are addressed (Haniffa and Cooke, 2005). Our evidence is also supported by Hillman et al. (2000, p. 241), who recommend the inclusion of specialists in corporate structures, namely, “directors who provide expertise and linkages in specific, identifiable areas that support the firm’s strategies.” Audit committees with directors with financial expertise seem to engage more with CSR issues and tend to attract environmental and social capital, which improves firms’ long-term sustainability, for example, through CSR reporting (Helfaya and Moussa, 2017).

In Model 3, we analyze how the proportion of non-executive (independent) directors on audit committees impacts CSR reporting. The coefficient, as predicted, is negative, and it is statistically significant. This evidence allows us to accept the third hypothesis. We demonstrate that a higher percentage of non-executive directors on audit committees discourages the reporting of CSR information, in line with the work of Haniffa and Cooke (2005). This finding may be because non-executive directors on audit committees are more likely to disregard the managers’ deficiencies and increase information asymmetries in relation to non-financial activities. In this regard, non-executive directors on audit committees will align with managers who are less concerned with environmental and social issues. This evidence indicates that non-executive or independent directors are not as independent as might be expected. In addition, the lack of knowledge of non-executive directors on CSR matters might support this finding, or having many executive directors on an audit committee may limit the non-executive director’s decisions, which also shows a lack of real independence of these directors.

In Models 4, 5, and 6, we explore the moderating effect of female directors on boards on the existence of an audit committee, its independence and financial expertise, and CSR disclosure. Model 4 shows the interaction between female directors on boards and the existence of an audit committee, which is negative and statistically significant. This leads us to partially accept the fourth hypothesis. This evidence suggests that female directors on boards negatively

moderate the positive effect of an audit committee on CSR disclosure. Specifically, female directors on boards do not support the decisions of audit committees to disclose more CSR information. Thus, the likelihood of reporting more CSR issues is lower when a firm has both an audit committee and female directors on boards. Both mechanisms (board gender diversity and audit committees) are more substitutive than complementary. Model 5 exhibits a positive interaction between female directors on boards and financial expertise on audit committees, and is statistically significant. Therefore, the fourth hypothesis is also partially accepted. This finding suggests that women directors on boards reinforce the positive association between the financial expertise of audit committees and CSR reporting. Our result supports the premise that women directors on boards and audit committees with directors with financial expertise show greater commitment to the voluntary disclosure of CSR information. In this regard, companies with female directors on boards and audit committee directors with financial expertise have a higher probability of reporting more CSR information. Board gender diversity and audit committee directors with financial expertise are more complementary than substitutive. Thus, female directors on boards support audit committee decisions on CSR disclosure when audit committees have directors with financial expertise. This may be because these directors have financial knowledge and expertise and place more importance on the reporting process (including CSR reporting), whilst female directors rely on the CSR decisions of financial experts on audit committees. Finally, in Model 6, we analyze the moderating effect of women directors on boards between the proportion of non-executive directors on audit committees and CSR disclosure. The effect is positive and significant. Accordingly, in this case, the fourth hypothesis is also accepted. This evidence indicates that the presence of women directors on boards positively moderates the negative impact of non-executive directors on audit committees on CSR reporting. This indicates that firms with independent audit committees should establish boards with female directors because they compensate for the discouragement of CSR disclosure by independent directors on audit committees. It can be said that female directors on boards and independent directors on audit committees are substitute mechanisms. This analysis clearly provides results in line with agency theory. These results confirm that firms do not behave in a similar way regarding CSR reporting when there are female directors on boards. Additionally, our evidence also shows that when firms have audit committees with independent directors and directors with financial expertise, their moderating role is different.

Regarding the control variables, the variable firm size (SIZE) only exhibits a negative sign in Model 1, while board size (B_SIZE) presents a positive sign in Models 1 and 3. The variable of the existence of a CSR committee (CSR_COMMITTEE) is positive and significant

in all six models, showing that these committees encourage CSR disclosure. Regarding industry, the healthcare variable (HEALTHCARE) is positive and is significant in Model 2, while the industrial variable (INDUSTRIALS) is also positive and significant in Models 1, 2, 4, and 6. The basic materials variable (BASIC MATERIALS) offers a positive sign and is statistically significant in Model 1. The remaining variables are not statistically significant.

<Insert Table 7>

5. Conclusion

The aim of this paper is to examine how the existence of an audit committee, its independence, and its financial expertise affect CSR reporting. In addition, we explore the moderating effect of female directors on boards on the presence of an audit committee, non-executive directors on audit committees, directors with financial experience on audit committees, and CSR reporting.

Our evidence highlights how the existence of an audit committee affects CSR reporting. Specifically, the presence of an audit committee can guarantee the impartiality of financial reporting by disclosing CSR reporting to a greater extent. This view is also supported by Khan et al. (2013). Effective audit committees might encourage firms' managers to engage in social and environmental activities by achieving higher CSR disclosure. Our results also suggest that key characteristics of audit committees are significantly associated with CSR disclosure. Specifically, audit committees with directors who have financial expertise positively affect CSR reporting. This evidence is consistent with stakeholder theory, which argues that directors with financial expertise on audit committees tend to balance financial and non-financial objectives as well as pressure managers to respond to stakeholder issues related to CSR disclosure (Helfaya and Moussa, 2017). Furthermore, this finding is in line with an agency perspective, which postulates that audit committees with directors who have financial expertise improve communication between parties and can enhance CSR reporting. Conversely, independent directors on audit committees discourage the disclosure of CSR information; the greater the proportion of non-executive directors on audit committees, the lower the extent of CSR disclosure. This could be explained by non-executive directors on audit committees playing an ineffective monitoring role concerning manager behavior, their decisions being limited by executive directors on audit committees, or their independence not being as real as expected. Our findings also show the moderating role played by female directors on boards regarding the association between audit committees and their attributes and CSR disclosure. Board gender diversity negatively moderates the positive effect of the presence of an audit committee in firms on CSR disclosure. Contrary to this evidence, female directors on boards

strengthen the positive association between directors with financial expertise on audit committees and CSR reporting by improving this disclosure. Further, they moderate the negative impact of non-executive directors on audit committees on CSR disclosure by mitigating this lower disclosure. Thus, these results suggest a relevant moderating role performed by women directors on boards when the relationship between audit committees and their attributes and CSR reporting is explored.

Our evidence has several implications for policymakers, academics, companies, and stakeholders. For policymakers, these results suggest that audit committees can improve their supervisory functions, as they can increase the quality of financial information and the disclosure of CSR information. Thus, policymakers should consider the possibility of regulating the compulsory establishment of audit committees in all firms. Concerning audit committee composition, our findings can also help policymakers to reconsider the minimum number of non-executive directors required and the presence of directors with financial expertise, because these two kinds of directors affect CSR disclosure. While the presence of the former should be kept to a minimum, the proportion of the latter should be as high as possible—the higher the better. It is possible that the monitoring role of non-executive directors, as suggested by past research, is overestimated. Academics should extend our research by considering audit committee attributes other than non-executive directors and directors with financial expertise. Furthermore, researchers might explore the moderating effect of other board characteristics—such as board size, board meetings, board independence, or CEO duality—on audit committees and their attributes and CSR disclosure. Finally, our evidence should be of interest to companies that do not consider the inclusion of non-executive directors in their audit committees, as their impact on CSR disclosure is negative. In this regard, companies should adopt different governance structures to adapt and adjust existing strategies to suit the rapid and drastic changes in the marketplace, stakeholders, and society. Moreover, managers engaging in CSR activities should consider establishing audit committees in their firms, if they are not already present. In addition, managers should take into account certain characteristics of audit committee structure, because not all directors positively affect CSR disclosure (such as non-executive directors). However, these effects on CSR reporting may change if boards have female representation. Therefore, managers should contemplate the optimal combination of audit committee members in firms, including non-executive directors and directors with financial expertise on audit committees, and women directors on boards.

The main limitations of this study are summarized as follows. First, this paper is limited to listed non-financial companies due to the special accounting practices of financial

companies. Second, this paper considers two audit committee features supported by past research. More research addressing other audit committee characteristics will provide more evidence, which will enrich our findings.

Finally, our study could be useful for future researchers interested in expanding the perspectives on audit committees. Further research could analyze the impact of audit committee characteristics on the disclosure of CSR information of non-listed companies or financial companies. Finally, future research could focus on the impact of other board sub-committees, such as CSR committees or corporate governance committees, and their attributes on CSR disclosure.

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Table 1
Number of observations by country

Country	Observations	Percentage	Cum.
Australia	817	6,20	6,20
Austria	41	0,31	6,51
Belgium	97	0,74	7,25
Bermuda	15	0,11	7,36
Brazil	257	1,95	9,31
Canada	1155	8,76	18,08
Chile	110	0,83	18,91
China	342	2,60	21,51
Czech Republic	8	0,06	21,57
Denmark	115	0,87	22,44
Egypt	22	0,17	22,61
Finland	142	1,08	23,68
France	578	4,39	28,07
Germany	407	3,09	31,16
Greece	10	0,08	31,23
Hong Kong	128	0,97	32,21
India	171	1,30	33,50
Ireland	175	1,33	34,83
Israel	19	0,14	34,97
Italy	133	1,01	35,98
Japan	1789	13,58	49,56
Jersey	20	0,15	49,71
Luxembourg	65	0,49	50,20
Mexico	124	0,94	51,15
Netherlands	220	1,67	52,82
New Zealand	53	0,40	53,22
Norway	70	0,53	53,75
Portugal	29	0,22	53,97
Russia	190	1,44	55,41
South Africa	80	0,61	56,02
Spain	211	1,60	57,62
Sweden	261	1,98	59,60
Switzerland	393	2,98	62,58
Thailand	97	0,74	63,32
United Kingdom	1209	9,17	72,49
United States	3625	27,51	100
Total	13,178	100,0	

Table 2
Number of firms and observations by activity sector

TRBC economic sector name	Number of observations	Percentage of observations	Cum. of observations
Basic Materials	1851	14,0	14,0
Consumer Cyclicals	2484	18,8	32,9
Consumer Non-cyclicals	1298	9,8	42,7
Energy	1313	10,0	52,7
Healthcare	1023	7,8	60,5
Industrials	2816	21,4	81,8
Technology	1032	7,8	89,7
Telecommunications services	521	4,0	93,6
Utilities	840	6,4	100,0
Total	13,178	100,0	

Table 3
Corporate social responsibility disclosure

Resource use	Environmental			Social		
	Emissions	Innovation	Workforce	Human rights	Community	Product responsibility
Resource reduction policy	Policy emissions	Environmental products	Health and safety policy	Human rights policy	Employee engagement volunt work	Policy customer health and safety
Policy water efficiency	Targets emissions	Eco-design products	Policy employee health and safety	Policy freedom of association	Corporate responsibility awards	Policy data privacy
Policy energy efficiency	Biodiversity impact reduction	Noise reduction	Policy supply chain health and safety	Policy child labor	Product sales at discount to emerging markets	Policy responsible marketing
Policy sustainable packaging	Emissions trading Climate change commercial risks	Hybrid vehicles	Training and development policy	Policy forced labor	Diseases of the developing world	Policy fair trade
Policy environment supply chain	opportunities	Environmental assets under MGT	Policy skills training	Policy human rights	Bribery corruption and fraud controversies	Product responsibility monitor
Resource reduction targets	Nox and Sox emissions reduction	Equator principles	Policy career development	Fundamental human rights ILO UN	Crisis management systems	Quality mgt systems
Environment management team	Voc or particulate matter emissions	Equator principles or environmental projects	Policy diversity and opportunity	Human rights contractor	Anti competition controversies	ISO 9000
Environment management training	Voc emissions reduction	Environmental project financing	Employees health and safety team	Ethical trading initiative ETI		Six sigma and quality mgt systems
Environmental materials sourcing	Particulate matter	Nuclear	Health and safety training			Product access low price

	emission reduction		Human rights breaches contractor	
Toxic chemicals reduction	Waste reduction total	Labeled wood	Supply chain health and safety training	Healthy food or products
Renewable energy use	e-Waste reduction	Organic products initiatives	Employees health and safety OHSAS 18001	Embryonic stem cell research
Green buildings	Environmental restoration initiatives	Product impact minimization	Flexible working hours	Retailing responsibility
Environmental supply chain management	Staff transportation impact reduction	Take-back and recycling initiatives	Day care services	alcohol
Environmental supply chain monitoring	Environmental expenditures investment	Product environmental responsible use	Employee fatalities	gambling
Env supply chain partnership termination		GMO products	HIV-AIDS program	tobacco
Land environmental impact reduction		Agrochemical products	Internal promotion	armaments
Environmental controversies		Agrochemical 5% revenue	Management training	Obesity risk
		Animal testing in the last 12fy	Supplier ESG training	Cluster bombs
		Animal testing cosmetics	Wages working condition controversies	Antipersonal landmines
		Animal testing reduction		Consumer complaints
		Renewable clean energy products		Customer controversies
		Water technologies Sustainable building products		Responsible marketing controversies
				Product recall

Table 4
Variables description

Variables	Description
CSR_SCORE	The ratio between the aggregation of 112 items focused on social and 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
AUD_COMT	Dummy variable that takes the value 1 if the company has an audit committee and 0, otherwise
AUD_COMT_EXPERT	Dummy variable that takes the value 1 if the company has an audit committee with at least three members and at least one "financial expert" and 0, otherwise
AUDI_COMT_NONEXE	The proportion of non-executive members in audit committees calculated as the ratio between the total number of non-executive directors on audit committees and the total number of directors on audit committees.
SIZE	The log of total assets
ROA	Operating income before interests and taxes over 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
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
FEM_DIR_B	The proportion of female directors on boards

Table 5
Descriptive analysis

Variable	Obs.	Mean	Standard Deviation
CSR_SCORE	13,178	0.252	0.160
AUD_COMT	13,178	0.825	0.199
AUD_COMT_EXPERT	13,178	0.720	0.450
AUDI_COMT_NONEXE	13,178	0.921	0.833
SIZE	13,178	9.643	1.478
ROA	13,178	6.444	8.447
LEV	13,178	14.085	8.056
B_SIZE	13,178	10.898	3.562
CSR_COMMITTEE	13,178	0.587	0.492
BASIC MATERIALS	13,178	0.140	0.347
CONSUMER CYCLICAL	13,178	0.188	0.391
CONSUMER NON- CYCLICAL	13,178	0.098	0.298
ENERGY	13,178	0.099	0.299
HEALTHCARE	13,178	0.078	0.268
INDUSTRIALS	13,178	0.214	0.409
TECHNOLOGY	13,178	0.078	0.269
TELECOMMUNICATION SERVICES	13,178	0.040	0.195
UTILITIES	13,178	0.064	0.244
FEM_DIR_B	13,178	11.764	11.024

Mean and standard deviation. CSR_SCORE is measured as the ratio between the aggregation of 112 items focused on social and 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; AUD_COMT is measured as the dummy variable that takes the value 1 if the company has an audit committee and 0, otherwise; AUD_COMT_EXPERT is calculated as the Dummy variable that takes the value 1 if the company has an audit committee with at least three members and at least one "financial expert" and 0, otherwise; AUDI_COMT_NONEXE is valued as the proportion of non-executive members in audit committees; SIZE is measured as the log of total assets; ROA is calculated as the operating income before interests and taxes over total assets; LEV is measured as the debt over total assets; B_SIZE is measured as the number of directors on board; CSR_COMMITTEE is noted as the dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; BASIC MATERIALS if the company operates in Basic Materials sector and 0, otherwise; CONSUMER CYCLICALS if the company operates in Consumer Cyclical sector and 0, otherwise; CONSUMER NON-CYCLICALS if the company operates in Consumer Non-Cyclical sector and 0, otherwise; ENERGY if the company operates in Energy sector and 0, otherwise; HEALTHCARE if the company operates in Healthcare sector and 0, otherwise; INDUSTRIALS if the company operates in Industrial sector and 0, otherwise; TECHNOLOGY if the company operates in Technology sector and 0, otherwise; TELECOMMUNICATION SERVICES if the company operates in Telecommunication Services sector and 0, otherwise; UTILITIES if the company operates in Utilities sector and 0, otherwise; FEM_DIR_B is the proportion of female directors on boards.

Wald χ^2 test	6196.71 ***	8639.01 ***	1328.85 ***	209.84 ***	262.75 ***	670.60 ***
Arellano–Bond test AR(1) (z, p> z)	-2.73 (0.006)	-2.81 (0.005)	-3.31 (0.001)	-2.59 (0.010)	-3.10 (0.002)	-3.93 (0.000)
Arellano–Bond test AR(2) (z, p> z)	-1.06 (0.288)	0.57 (0.571)	-1.08 (0.281)	-1.52 (0.129)	1.13 (0.258)	-1.17 (0.241)
Hansen test (chi-square, p> chi²)	1.28 (0.200)	7.99 (0.715)	5.91 (0.994)	29.47 (0.000)	20.26 (0.000)	13.82 (0.129)

Multivariate analysis results of the Generalised Method of Moments. CSR_SCORE is measured as the ratio between the aggregation of 112 items focused on social and 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; AUD_COMT is measured as the dummy variable that takes the value 1 if the company has an audit committee and 0, otherwise; AUD_COMT_EXPERT is calculated as the Dummy variable that takes the value 1 if the company has an audit committee with at least three members and at least one "financial expert" and 0, otherwise; AUDI_COMT_NONEXE is valued as the proportion of non-executive members in audit committees; SIZE is measured as the log of total assets; ROA is calculated as the operating income before interests and taxes over total assets; LEV is measured as the debt over total assets; B_SIZE is measured as the number of directors on board; CSR_COMMITTEE is noted as the dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; BASIC_MATERIALS if the company operates in Basic Materials sector and 0, otherwise; CONSUMER_CYCLICALS if the company operates in Consumer Cyclical sector and 0, otherwise; CONSUMER_NON_CYCLICALS if the company operates in Consumer Non-Cyclical sector and 0, otherwise; ENERGY if the company operates in Energy sector and 0, otherwise; HEALTHCARE if the company operates in Healthcare sector and 0, otherwise; INDUSTRIALS if the company operates in Industrials sector and 0, otherwise; TECHNOLOGY if the company operates in Technology sector and 0, otherwise; TELECOMMUNICATION_SERVICES if the company operates in Telecommunication Services sector and 0, otherwise; UTILITIES if the company operates in Utilities sector and 0, otherwise; FEM_DIR_B is the proportion of female directors on boards *p-value<0.1 **p-value<0.05 ***p-value<0.01.

Table 6
Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
CSR_SCORE (1)	1.000																		
AUD_COMT (2)	0.023*																		
AUD_COMT_EXPERT (3)	0.038***	0.333***																	
AUDI_COMT_NONEXE (4)	-0.007	0.033***	0.089***																
SIZE (5)	0.520***	0.007	-0.005	0.009															
ROA (6)	-0.089***	0.051***	0.142***	-0.001	-0.199***														
LEV (7)	0.140***	-0.013	-0.035***	0.009	0.286***	-0.379***													
B_SIZE (8)	0.329***	0.042***	0.012	0.032***	0.502***	-	0.173***												
CSR_COMMITTEE (9)	0.619***	0.013	0.051***	0.001	0.290***	0.084***	0.102***	0.186***											
BASIC MATERIALS (10)	0.033***	0.005	-0.039***	0.015*	-0.059***	-0.073***	-0.047***	-0.063***	0.086***										
CONSUMER NON-CYCLICAL (11)	0.073***	0.009	0.015*	0.003	0.008	0.05***	0.045***	0.063***	0.034***	-0.134***									
ENERGY (12)	-0.041***	0.039***	0.056***	0.005	0.094***	0.044***	-0.097***	-0.015*	0.002	-0.135***	-0.110***								
INDUSTRIALS (13)	0.006	-0.025**	-0.086***	-0.019**	0.002	-0.081***	0.130***	0.038***	-0.012	-0.211***	-0.172***	-0.173***							
UTILITIES (14)	0.057***	-0.004	0.018**	0.014	0.162***	-0.132***	0.213***	0.102***	0.052***	-0.106***	-0.086***	-0.087***	-0.136***						
CONSUMER CYCLICAL (15)	-0.067***	-0.006	0.014*	0.015*	-0.081***	0.028**	-0.032***	0.015*	-0.047***	-0.195***	-0.159***	-0.160***	-0.251***	-0.126***					
HEALTHCARE (16)	-0.045***	-0.022***	0.004	-0.026	-0.077***	0.087***	-0.089***	-0.075***	-0.046***	-	-0.096***	-0.097***	-0.151***	-0.076***	-0.139***				
TECHNOLOGY (17)	0.002	0.004	0.043***	0.014	-0.067***	0.103***	-0.218***	-0.079***	-0.056***	0.1173***	0.118***	-0.096***	-0.097***	-0.152***	-0.076***	-0.141***	-0.085		
TELECOMMUNICATIONS (18)	0.000	0.011	0.024*	-0.032***	0.104***	0.009***	0.112***	0.073***	-0.012***	-0.082***	-0.067***	-0.068***	-0.106***	-0.053***	-0.098***	-0.059***	-0.059***		
FEM_DIR_B (19)	0.209***	0.133***	0.306***	0.013	0.104***	0.100***	0.050***	0.108***	0.136***	-0.097***	0.114***	-0.086***	-0.077***	0.053***	0.073***	0.053***	-0.019**	0.033***	

Matrix Correlations. CSR_SCORE is measured as the ratio between the aggregation of 112 items focused on social and 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; AUD_COMT is measured as the dummy variable that takes the value 1 if the company has an audit committee and 0, otherwise; AUD_COMT_EXPERT is calculated as the Dummy variable that takes the value 1 if the company has an audit committee with at least three members and at least one "financial expert" and 0, otherwise; AUDI_COMT_NONEXE is valued as the proportion of non-executive members in audit committees; SIZE is measured as the log of total assets; ROA is calculated as the operating income before interests and taxes over total assets; LEV is measured as the debt over total assets; B_SIZE is measured as the number of directors on board; CSR_COMMITTEE is noted as the dummy variable that takes the value 1 if the company has a CSR committee, and 0 otherwise; BASIC MATERIALS if the company operates in Basic Materials sector and 0, otherwise; CONSUMER CYCLICALS if the company operates in Consumer Cyclical sector and 0, otherwise; CONSUMER NON-CYCLICALS if the company operates in Consumer Non-Cyclical sector and 0, otherwise; ENERGY if the company operates in Energy sector and 0, otherwise; HEALTHCARE if the company operates in Healthcare sector and 0, otherwise; INDUSTRIALS if the company operates in Industrials sector and 0, otherwise; TECHNOLOGY if the company operates in Technology sector and 0, otherwise; TELECOMMUNICATION SERVICES if the company operates in Telecommunication Services sector and 0, otherwise; UTILITIES if the company operates in Utilities sector and 0, otherwise; FEM_DIR_B is the proportion of female directors on boards. *p-value<0.1 **p-value<0.05 ***p-value<0.01.

Table 7
Multivariate analysis results of the Generalised Method of Moments

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	P> t 	P> t 	P> t 	P> t 	P> t 	P> t
CSR_SCORE (t-1)	0.329*** (0.001)	0.504*** (0.000)	0.515*** (0.000)	0.118 (0.247)	0.463*** (0.000)	0.439*** (0.000)
AUD_COMT	0.121*** (0.001)			0.262*** (0.000)		
AUD_COMT_EXPERT		0.062** (0.045)			0.068* (0.066)	
AUDI_COMT_NONEXE			-0.005* (0.060)			-0.008*** (0.001)
SIZE	-0.035* (0.051)	-0.017 (0.227)	-0.006 (0.577)	-0.016 (0.354)	-0.018 (0.273)	-0.008 (0.353)
ROA	0.004 (0.151)	0.001 (0.536)	0.003 (0.184)	0.000 (0.987)	0.002 (0.369)	0.002 (0.369)
LEV	-0.000 (0.328)	-0.000 (0.386)	-0.000 (0.268)	-0.000 (0.372)	-0.000 (0.901)	-0.000 (0.208)
B_SIZE	0.015* (0.067)	0.009 (0.198)	0.013* (0.059)	0.000 (0.569)	0.007 (0.348)	-0.007 (0.924)
CSR_COMMITTEE	0.102*** (0.000)	0.085*** (0.000)	0.053*** (0.001)	0.015*** (0.000)	0.072*** (0.002)	0.082*** (0.000)
BASIC MATERIALS	0.119*** (0.000)	0.175 (0.516)	-0.053 (0.702)	0.089 (0.823)	-0.128 (0.600)	0.156 (0.457)
CONSUMER CYCLICAL	0.190 (0.578)	0.218 (0.477)	-0.038 (0.826)	0.048 (0.916)	-0.003 (0.991)	0.086 (0.727)
CONSUMER NON-CYCLICAL	0.462 (0.300)	0.388 (0.338)	-0.019 (0.938)	0.836 (0.160)	0.106 (0.780)	0.346 (0.295)
ENERGY	0.202 (0.646)	0.335 (0.381)	-0.169 (0.519)	0.220 (0.705)	0.228 (0.481)	-0.030 (0.924)
HEALTHCARE	0.464 (0.188)	0.534* (0.095)	0.033 (0.865)	0.567 (0.201)	0.163 (0.591)	0.250 (0.313)
INDUSTRIALS	0.881** (0.012)	0.749** (0.018)	0.109 (0.570)	1.536*** (0.003)	0.451 (0.192)	0.560* (0.053)
TECHNOLOGY	0.400 (0.188)	0.335 (0.406)	0.125 (0.594)	0.700 (0.206)	-0.152 (0.673)	0.431 (0.120)
TELECOMMUNICATION SERVICES	0.439 (0.370)	0.525 (0.253)	-0.100 (0.739)	0.459 (0.446)	-0.300 (0.492)	0.220 (0.515)
FEM_DIR_B				0.028*** (0.006)	-0.006** (0.014)	-0.050*** (0.000)
FEM_DIR_B x AUD_COMT				-0.027*** (0.009)		
FEM_DIR_B x AUD_COMT_EXPERT					0.007** (0.013)	
FEM_DIR_B x AUDI_COMT_NONEXE						0.001*** (0.000)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes