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The Relationship Between Corporate Social Responsibility, Board Gender Diversity and Audit Quality: The Greenwashing Approach

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Riguen Rakia[1]

Abstract:

Purpose: *This study makes a valuable contribution by exploring the moderating effect of gender diversity on the relationship between corporate social responsibility and audit quality in European companies.*
Design/Methodology/Approach: *The study is based on a sample composed of 207 European companies over the period 2010-2021. Furthermore, a moderation model is developed in order to examine the gender diversity s' moderating role on the relation between corporate social responsibility and audit quality.*
Findings: *The results show the negative association between corporate social responsibility and audit quality in European firms with greenwashing approach. Our findings argue that the presence of women in the board moderates the relationship between corporate social responsibility and audit quality.*
Practical implications: *Our findings indicate that involving women in the decision-making processes of firms leads to more ethically oriented strategies that consider the interests of diverse stakeholder groups. Therefore, it is crucial for policymakers and governments in leading nations to promote greater integration of women into corporate decision-making roles. For investors, our results show that the presence of women increases a company's commitment to socially responsible practices, thereby enhancing its reputation and reducing opportunistic behavior, especially in response to a high-quality auditor's request.*
Originality/value: *The findings of this study contribute to the literature on audit quality by indicating that corporate social responsibility and the presence of women in the board can play a significant role in improving audit quality, aligning with greenwashing practices.*

Keywords: *Gender diversity, audit quality, corporate social responsibility, greenwashing approach.*

JEL codes: *G34, M42, Q56, D22.*

Paper type: *Research article.*

[1]*Prof., Faculty of Economics and Management of Sfax, Tunisia,*
e-mail: rakiariguen@yahoo.com;

1. Introduction

In recent decades, sustainable development has emerged as a key focus for businesses and their stakeholders. Leaders, researchers, investors, and consumers increasingly recognize that a company's primary goal should extend beyond maximizing profits to include fulfilling responsibilities towards the environment and society. As a result, many companies are now implementing corporate social responsibility (CSR) strategies and engaging in diverse CSR activities to promote sustainable business practices (Ullah *et al.,* 2019; Thalassinos, 2008).

Corporate Social Responsibility (CSR) is an emerging trend in the business world that plays an essential role in maintaining the survival and profitability of companies. It is a highly evolving concept that takes into consideration social, environmental, human rights issues, and the elimination of global social problems such as poverty (Prieto-Carron *et al.,* 2006).

Furthermore, CSR has become a matter of paramount importance as investors, regulators, and customers insist on more transparency from companies. Additionally, the public tends to be more aware of the social and environmental effects of corporate actions, and companies seek the approval of third parties and shareholders, as their continued support is crucial for perceived credibility. Thus, companies have begun to acknowledge their social and environmental responsibilities and manage them as they do their economic responsibilities, aiming to gain stakeholder acceptance.

The evolution of accounting and reporting practices, influenced by the imperatives of CSR, has introduced new challenges for auditors. As companies integrate CSR considerations into their operations, auditors are faced with the complex task of assessing the relevance and reliability of non-financial information. Audit quality is an important element of the information disclosure system, directly affecting the quality of accounting information that informs stakeholders' decisions and actions (Francis, 1984; Liapis *et al.,* 2013).

Numerous studies examine factors contributing to audit quality from the perspectives of audit firms and listed companies, including audit firm size, audit firm or auditor rotation, and the corporate governance structure of listed companies (Zhao *et al.,* 2020). Additionally, several recent studies suggest that personal characteristics of signing auditors are associated with audit quality (Knechel *et al.,* 2015).

The diversity of gender boards of directors has captured the attention of policymakers, businesses, media, and academics in many countries over the past decade. Gender diversity within boards of directors is an important aspect of changes in corporate governance worldwide and is considered a crucial step in addressing the issue of "related tensions" between societies and markets (Dhir, 2015).

Many European countries have adopted laws to promote effective gender quality in leadership positions. Additionally, investors are increasingly considering sustainable valuation of companies in selecting their portfolios. Previous research demonstrates the positive relationship between female board members and companies' social performance. Martínez *et al.* (2020) have shown the growing influence of female directors up to a certain limit, both in the American and European markets, with this influence being higher in Europe. This finding implies that mixed-gender boards favor sustainable corporate behavior. Therefore, policymakers should promote gender policies.

This study aimed to address the following research questions: *does board gender diversity moderate the relationship between corporate social responsibility and audit quality?*

This paper empirically examines the moderating effect of gender diversity on the relationship between corporate social responsibility and audit quality in a sample of 207 European companies from the STOXX 600 index during the years 2010 to 2021. This study contributes to the expanding research on the moderating impact of board gender diversity on the relationship between Corporate Social Responsibility (CSR) and audit quality.

We enhance the existing literature in several key ways. First, by adopting an agency theory perspective, our research complements recent findings on how the presence of female directors curtails opportunistic behavior by managers, thereby bolstering the company’s reputation and requiring higher audit quality. Second, we investigate the influence of board gender as stakeholders on the interaction between CSR and audit quality. Women are particularly effective in serving on various subcommittees, thereby enhancing shareholder protection through improved control mechanisms (Kesner, 1986).

The structure of the paper is as follows. Section 2 presents the theoretical framework. Section 3 describes a review of the literature and the research hypotheses. Section 4 presents the methodology, which takes into account description of the sample, a definition of the variables and the analyses used. Section 5 presents the main empirical results. Finally, concluding remarks are given in section 6.

2. Theoretical Framework

The implementation of Corporate Social Responsibility (CSR) is an effort by companies to benefit their stakeholders (Dewi and Gunawan, 2019). Stakeholder theory posits that firms should consider and represent the interests of all stakeholders who are affected by or can affect the organization (Freeman, 1984).

The stakeholder theory, originally formulated by Freeman (1994), posits that a company is accountable not only to its shareholders but also to all stakeholders who exert significant forces to accelerate a company's performance (Singh and Delios, 2017; Atkins *et al.,* 2018). It asserts that it is crucial for companies to build strong relationships with key stakeholders to maintain and enhance the company's legitimacy (Cho *et al.,* 2019; Ye and Li, 2021; Suryanto *et al.,* 2017).

The underlying assumption of stakeholder theory is that corporate information disclosure is utilized by management as a tool to provide information to various stakeholders (employees, shareholders, investors, government authorities, NGOs, etc.).

Stakeholder theory posits that the board of directors not only represents the interests of shareholders but can also affect or be affected by the achievement of the organization's objectives and other stakeholders, such as employees, customers, and suppliers (Low *et al.,* 2015). According to Carroll (1979), stakeholder theory implies that organizations are viewed as social institutions with fiduciary responsibilities towards shareholders, such as environmental responsibility.

Guix *et al.* (2018) argue that companies primarily assume economic responsibility as well as legal, ethical, and philanthropic responsibilities to satisfy the needs of stakeholders. Similarly, the survival and success of the company depend on its leaders' ability to satisfy its stakeholders.

According to stakeholder theory, companies tend to reward good CSR strategies (Franco *et al.,* 2020), which positively influence firms' financial performance by enabling them to establish strong relationships with stakeholders (Grassmann, 2021). Therefore, CSR constitutes an important strategy through which companies build strong relationships with their stakeholders.

Specifically, through their social commitment, companies enhance the trust of their stakeholders, thus improving market opportunities and prices, reducing transaction costs (Barnett and Salomon, 2006), and enhancing customer satisfaction (Amatulli *et al.,* 2018), as well as employee productivity and engagement (Rupp *et al.,* 2018).

Another theory seems important to our research, such as the resource dependence theory also suggests that a gender-diverse board benefits from a combination of resources that enhances its operational and social performance (Ali *et al.,* 2014). The resource dependency viewpoint, suggests that firms depend on external resources from stakeholders and legitimacy is essential to maintain their support (Pfeffer and Salancik, 1978; Pagkalou *et al.,* 2024).

Resource dependency theory on the other hand is based on the view that in order to survive, Ararat *et al.* (2010) found that female directors are more likely to engage Big4 auditors to enhance the quality of financial reporting and safeguard their

reputational capital. To enhance the client's internal control system, female directors had better understand the distinction between audit services provided by Big4 auditors and others (Mustafa *et al.,* 2018; Balios *et al.,* 2021).

3. Litterature Review and Hypothesis Development

In this study, we integrate the role of CSR in audit quality by examining how the presence of women in the board moderates the relationship between CSR and audit quality. We contribute to this literature by supporting the hypothesis that the presence of women in the board enhances corporate social responsibility, thereby increases the demand for a high audit quality.

3.1 Corporate Social Responsibility and Audit Quality

A large and growing body of literature has investigated the relationship between CSR and audit quality. In this context, auditing has become a more complex procedure as sustainability assurance increases auditors' tasks. On the other hand, the auditing process is easier when leaders are known to be honest and ethical, but the question remains how to certify solvency and measure risks and auditing efforts. The observed audit price, or alternatively audit fees, is defined by a company's risk and future changes in its economic performance (Malhotra *et al.,* 2015).

Furthermore, a number of cross-sectional studies suggest an association between audit fees and client business risk, client size, transaction complexity, and audit hours (DeFond and Zhang, 2014). Thus, Issa and Fang (2019) demonstrate that gender diversity within boards of directors is positively associated with the level of CSR reporting. In emerging markets, Yasser *et al.* (2017) find a significant relationship between gender diversity within boards of directors and increased adoption of CSR. In this context, Bristy *et al.* (2020) emphasize the importance of considering gender to better understand how companies address the link between corporate social responsibility and financial performance.

Previous studies on the impact of non-financial/sustainable information have primarily focused on capital market participants such as investors and analysts. These studies generally conclude that non-financial information is useful (Tsan *et al.,* 2023) and that the integration of non-financial/sustainability and financial information into a single report (i.e., integrated reporting) progressively provides value-relevant information to investors and analysts (Caglio *et al.,* 2020).

If sustainability disclosures are financially significant, they also impact how financial statement auditors treat information. This impact is evident when professional audit firms engage in corporate social responsibility (CSR) initiatives to reposition their reputation as experts in climate change, diversity, and consumer trust, which has been affected by scandal (O'Dwyer *et al.,* 2021), and where the audit

profession is under pressure to "play its role" in ensuring sustainability issues are appropriately reflected in annual reports (GPPC, 2022).

Empirical research shows that socially and environmentally responsible companies are less likely to engage in financial statement and actual profit manipulation (Chih *et al.,* 2008; Kim *et al.,* 2012; Litt *et al.,* 2013), are less aggressive in tax avoidance (Hoi et al., 2013), may issue bonds at lower costs (Ge and Liu, 2015), and receive better credit ratings (Attig *et al.,* 2013). Indeed, audits being external governance mechanisms, higher quality audits lead to greater monitoring and better control of tax evasion (Jin and Lei, 2011).

Consistent with the hypothesis of financial information transparency, we expect socially responsible companies to demand high-quality audits from external auditors because these companies adhere to higher ethical standards, are more concerned about their reputation, and provide detailed information, characteristics that enhance the transparency of financial reporting practices (Al-Shaer, 2020; Kim *et al.,* 2012; Pérez-Cornejo *et al.,* 2020; Wang *et al.,* 2018). Finally, López-Puertas-Lamy *et al.* (2017) found a positive relationship between CSR performance and audit fees for a sample of international companies with relatively high CSR performance.

According to Bernardi and Stark (2018), levels of CSR and environmental disclosure have relevance in terms of value for informed market participants (Sharma et al., 2018). There is a positive association between environmental initiatives and audit fees. Companies with socially responsible initiatives pay lower audit fees (Chen *et al.,* 2012).

A more recent study, conducted by Burke et al. (2019), utilizes RepRisk's ESG risk data to examine auditors' response to clients' ESG reputation risk. The research results show that auditors either resign from the audit or increase their fees in response to clients' exposure to ESG risk. However, they do not examine the reasons for the increase in audit fees.

It is important to address this gap because higher audit fees could either reflect greater auditing effort or simply represent a risk premium that auditors charge clients with poor ESG practices. Auditors may charge higher fees to at-risk clients due to the effort required to audit their financial statements, but this additional effort does not necessarily translate into better audit quality (DeFond and Zhang, 2014).

In line with the hypothesis of opportunistic financial reporting, there is expected to be a negative association between CSR and the demand for high-quality audits. Companies may use CSR activities to obtain reputation assurance, which grants them the "license to operate" regarding certain socially irresponsible activities such as opportunistic financial reporting (Petrovite, 2006).

In the context of agency theory (Jensen and Meckling, 1976), which recognizes audit as one of the primary monitoring mechanisms to mitigate the problem of information asymmetry, limit opportunistic behaviors, and enhance CSR performance and disclosure (Chung *et al.,* 2005; Agyei-Mensah, 2019; Appuhami and Tashakor, 2017; Habbash and Alghamdi, 2017; Barakat *et al.,* 2015).

Similar to Bouaziz (2012) and more recently Ado *et al.* (2020), auditors from the Big 4 are considered more trustworthy and invest relevant resources to enhance audit quality and facilitate the dissemination and success of good practices such as CSR (Bacha *et al.,* 2021; Kolsi *et al.,* 2021). By hiring Big 4 auditors, socially responsible companies signal that they are more concerned about ethics, transparency, and reliability (Xiao *et al.,* 2004).

Research conducted by Hillegeist (1999) and Shibano (1990) posits that greater audit effort translates into higher audit quality. This body of evidence, along with the audit risk model, suggests that when clients present increased risks, auditors will design tests to gather additional evidence, with the idea that greater effort will increase the chances of detecting significant anomalies (Bell *et al.,* 2008; Bell *et al.,* 2001; Lyon and Maher, 2005). Thus, greater audit efforts should lead to higher-quality financial statements. It can be argued that ESG risks may result in higher client risk, which can increase the risk of significant anomalies and the likelihood of restatements.

Another study focusing on the Korean audit market found that as a company performs better, audit fees eventually become higher. Companies with excellent CSR ratings pay higher audit fees. The reasons supporting these conclusions are that audit fees are not determined based on auditor evaluation results and, secondly, excellent Korean companies pay higher fees due to their higher financial standards, which increase the audit effort for thorough auditing (Kim and Kim, 2013).

Furthermore, López Puertas-Lamy *et al.* (2017) found a U-shaped relationship between companies' CSR performance and audit fees. This result suggests that there is an optimal level of CSR performance that minimizes auditors' assessment of the risk of significant anomalies, which in turn reduces the need for increased auditor effort, hence auditors charge much less to companies when their CSR performance is at the optimal level.

Given that audit quality is one of the most important aspects of financial information quality, it is assumed that socially responsible leaders will demand high-quality audits from external auditors to ensure the quality of financial statements. Consistent with the hypothesis of transparent financial information, Asif *et al.* (2020) found a positive and statistically significant relationship between CSR and the demand for high-quality audits in a sample of publicly traded companies in the United States, United Kingdom, and European Union (EU) from 2002 to 2016.

In all areas of corporate social responsibility, they have an obligation to exercise discretion in order to achieve socially responsible outcomes. Regarding the quality of financial reporting and CSR, research findings have been mixed, with some scholars reporting negative correlations (Carey *et al.,* 2017; Petrovits, 2006; Prior *et al.,* 2008), while others believe there is a positive relationship (Hong and Andersen, 2011; Kim *et al.,* 2012).

Based on the findings of previous research, socially responsible companies tend to select higher-quality auditors and may therefore charge higher fees; CSR performance may also have an indirect positive impact on audit fees through audit quality (Saaed *et al.,* 2022).

Thus, an ethical perspective on CSR implies a positive relationship between audit fees and CSR performance, whereas an opportunistic perspective on CSR suggests a negative relationship between audit fees and CSR performance (Du et al., 2020). According to the theories, empirical literature and research setting, we state the following hypothesis:

Hypothesis 1: The corporate social responsability has an impact on the audit quality.

3.2 Corporate Social Responsibility, Audit Quality and Gender Diversity

The importance of board composition, particularly the presence of women on boards, is believed to influence corporate responsibility performance and has garnered significant interest from researchers. Wu *et al.* (2021) found a significant positive relationship between gender diversity on boards and corporate social responsibility performance.

Empirical findings also showed a significant moderating effect of gender parity score. The relationships between corporate social responsibility and gender diversity would be stronger in firms located in countries with higher gender parity scores compared to firms in countries with lower gender parity scores. This implies that female status is a crucial moderator indicator of the relationship between corporate social responsibility and gender diversity.

Additionally, Wahid (2019) found that gender diversity on boards was associated with a reduced likelihood of financial manipulation. These results align with the hypothesis that women perform better in oversight roles. Similarly, Oradi and Darjezi (2019) explored the relationship between the presence of women on boards and the impact of financial restatements.

They found that gender diversity on boards increases the likelihood of hiring well-qualified auditors and thus reduces the likelihood of overrepresentation. Earley and Mosakowski (2000) suggest that heterosexuals tend to communicate less frequently

because they are less likely to share the same opinion. In this regard, Oradi and Darjezi (2019) explored the relationship between the presence of women on boards and the impact of financial restatements. They show that gender diversity on boards increases the likelihood of hiring good auditors, thereby reducing the likelihood of retirement.

This finding is consistent with that of Lai *et al.* (2017) who found that women serving on US boards actively contributed to audit quality by demanding more audit efforts and selecting highly qualified auditors.

Rosener (1995) highlights the skills and capabilities of women in managing conflicts and uncertainty, demonstrating that women know how to solve problems. Women are more effective in addressing the needs of various stakeholders within organizations (Hillman *et al.,* 2002) and focus more on social and ethical business issues (Bear *et al.,* 2010).

A limited but significant number of studies have shown that women serving on boards of directors have a positive impact on corporate engagement and thus also on non-financial performance, specifically organizational sustainability (Galbreath and Jeremy, 2011). Indeed, Harjot *et al.* (2014), after more than a decade of research on American companies, analyzed that board diversity is positively correlated with overall corporate social responsibility strength. Additionally, Gupta *et al.* (2015) found that gender diversity enhances corporate social responsibility. Similarly, Kruger (2009) studied that companies with a high proportion of women on boards of directors have a positive effect towards CSR.

According to Yarram and Adapa (2020), positive and negative dimensions of CSR are not related to gender diversity when there is symbolic representation of women on boards of directors. However, companies that have improved gender parity undertake more positive CSR activities and reduce negative or controversial activities that impede CSR.

Based on resource dependence theory, gender diversity on boards of directors would have a positive relationship with CSR (Martinez *et al.,* 2019; Tapver *et al.,* 2020; Yasser *et al.,* 2017; Jizi, 2017; Macaulay *et al.,* 2017; Biswas *et al.,* 2018; Ibrahim and Hanefah, 2016). Recent work has revealed that female directors on boards of directors are not significantly related to sustainability disclosure (Argento *et al.,* 2019).

Alazzani *et al.* (2017) found that diversity within boards of directors enhances company social performance but not environmental performance. They also argued that the cognitive frameworks of female directors may also influence decision-making processes within the board of directors. In other words, increased representation of female directors on boards of directors could influence how decisions are made. Female directors are more likely to value interdependence,

kindness, and tolerance (Adams and MRR Funk, 2012), which can bring different insights and perspectives and foster collaboration among members.

Thus, we argue that an increased presence of female directors on boards of directors can influence not only how information is considered in decision-making but also how decisions are made. García Lara *et al.* (2017) discovered reasons why women make better monitors, including their greater risk aversion. Within the theoretical framework of resource dependency theory, we argue that gender diversity brings a greater variety of skills to the board of directors.

Diversity allows for a healthy mix of knowledge and experiences to enhance the decision-making process of the board of directors. Lu and Herremans (2019) found that gender diversity is positively associated with corporate environmental performance scores, primarily in sectors most impactful on the environment.

Therefore, they provide valuable guidance to companies striving to improve both gender diversity on their boards of directors and their environmental performance. Mustafa et al., (2018) found that diversity within the board of directors was linked to the propensity for risk acceptance and auditor changes.

Female directors enhance the effectiveness of the board of directors' monitoring function; thus, they have a strong tendency to hire a high-quality auditor to protect their reputation and maintain the trust of the organization's stakeholders (Ilaboya and Lodikero, 2017). Hiring quality auditors will improve a company's internal control systems, significantly reducing information asymmetry and positively influencing the reliability of accounting information (Simunic, 1980; Gul et al., 2008).

Despite the above claims, researchers have argued that female directors sitting on an organization's board of directors do not influence audit quality (Mustafa, Chen-Ahmad and Chandren, 2017; 2018). They argued that female directors have no say in selecting an organization's auditor. This could be due to their low representation on the board of directors. However, Gul *et al.* (2008), Chapple, Law, Kent, and Routledge (2012), and Kuange (2011) have supported that the presence of women on the board of directors has a positive and significant influence on audit quality. According to the theories, empirical literature and research setting, we state the following hypothesis:

Hypothesis 2: Board gender diversity moderates the relationship between corporate social responsibility and audit quality.

4. Research Design

This paper used a sample of 207 European companies. This number is limited due to the exclusion of publicly traded financial and related companies (banks, insurance companies). The need to exclude these companies from the sample is justified by the

fact that all these institutions meet specific criteria regarding the legal control of their accounts due to the specificity of their financial data. These companies were observed over a period of 12 years from 2010 to 2021. The data were collected from the Thomson Reuters ASSET4 database (Datastream). Additionally, it should be noted that these companies included in our sample operate in various sectors (industrial, commercial, and services).

Table 1. *Sample selection*

Sample	Number of firms
Initial sample	600
Financial Firms	108
Missing Firms	285
Final Sample	207
Duration of Stady	2010/2021
Total Observations	2484

Source: *Own study.*

4.1 Measurement Variables

4.1.1 Dependent variable: Audit quality

Previous studies use several proxies to measure audit quality. In their synthesis paper on audit quality measures, DeFond and Zhang (2014) proposed a framework in which they classified comprehensive audit quality measures previously used into two categories: outcome-based measures and input-based measures. The first category includes proxies that are consequences of the audit process, such as significant anomalies (Lennox and Pittman, 2010) and the opinion on the going concern (Menon and Williams, 2010). However, the second category includes proxies directly related to decisions made by the board of directors or audit committee based on observable data such as auditor size (Wang *et al.,* 2008) and audit fees (Abbott *et al.,* 2003).

For this study, to measure audit quality, we chose to use the method adopted by (Carcello *et al.,* 2002; Aldamen *et al.,* 2018; Mnif and Cherif, 2020). Indeed, these Authors have used the natural logarithm of audit fees to measure the demand for high-quality audits. Audit fee data were collected from the Thomson Reuters ASSET4 (Datastream) database.

4.1.2 Independent variable

- ✓ ***Corporate social responsability:*** This study mesures the CSR performance using score across three dimensions (social, environmental, and governance) calculated by Thomson Reuters Eikon Asset4 for each company. The CSR disclosure score is a means of providing information to users for better understanding of the company's risks and opportunities associated with social expectations and potential investments (Giannarakis, 2014). Thomson

Reuters Eikon Asset4 provides an annual CSR score ranging from 0 to 100 points for each company. Thomson Reuters' (ASSET4) CSR score is an overall company score based on information related to environmental, social, and corporate governance pillars (Zeng, 2021; Bacha *et al.,* 2021). For this study, we measured corporate social responsibility performance using average scores of the social and environmental dimensions of Asset4 ESG (Saeed *et al.,* 2022). The environmental score (CSR_E) is based on factors such as the impact of company business practices on land, air, and water, including living and non-living natural systems and ecosystems (missions reduction, resource conservation, and environmentally beneficial product innovation). The social score (CSR_S) is based on factors such as customer, employee, and societal trust and loyalty in the company (community involvement, diversity, human rights, job quality, health and safety, training, and development). Audit quality is considered an important governance element likely to limit opportunistic behaviors of managers; for this reason, only social and environmental performance will be used.

- ✓ ***Gender diversity:*** Gender diversity is considered a moderating variable between corporate social responsibility and audit quality. Various authors have measured gender diversity in various ways, such as Tahir *et al.* (2020) and AL-ABSY *et al.* (2020). In this study, we measure female directors by the percentage of women on the board of directors (Adhikari *et al.,* 2019). This variable is supported by empirical evidence such as Torchia et al. (2011), who asserted that the ability to form alliances and coalitions should give women more power to assert their preferences.

4.1.3 Control variables

- ✓ ***Firme Size:*** Several previous studies have emphasized the importance of the relationship between firm size and audit quality. Indeed, according to DeFond (1992), size significantly explains the choice of an auditor belonging to an international network. In other words, as the firm size increases, it is more likely to be audited more effectively by a higher-quality auditor due to the availability of human and financial resources within these firms. Thus, according to the audit approach, Simunic (1980) justifies that a company holding numerous assets, inventories, and receivables requires more diligence from the auditor. There is, therefore, a positive relationship between firm size and audit quality. Audit size is measured by the natural logarithm of the total assets of the company.
- ✓ ***Performance:*** According to Kent (2006) and Skinner and Srinivasan (2010), there is a significantly positive relationship between this variable and proxy audit fees for audit quality. Also, Lajmi *et al.* (2011) found a positive and significant association between performance and the audit quality index. Therefore, there is likely a positive relationship between performance and audit quality. Performance is measured by net income divided by total assets (Mafrolla and D’Amico, 2016).

- ✓ ***Market to book:*** Companies with higher M/B ratios may hire high-quality auditors as a signaling mechanism to the market, indicating the reliability of their financial statements and their commitment to transparency (Titman and Trueman, 1986).
- ✓ ***Free cash-fow:*** Superior audit quality may be associated with more extensive procedures, and auditors may adjust their fees based on the level of effort required for companies with significant available cash flows. Companies with high FCF or growth have high audit fees and higher debt balances, FCF agency fees (Griffin *et al.,* 2009).
- ✓ ***Financial loss:*** Companies facing losses or financial difficulties may face higher audit fees due to increased efforts and risks associated with their audits. However, if difficulties push the company to be more price-sensitive, fee pressures could occur, potentially compromising audit quality (Simunic, 1980). Financial loss is a dummy variable that takes the value one if the company has recorded negative profits during year t, 0 otherwise (Du *et al.,* 2020).
- ✓ ***Debt:*** Debt can be considered a contractual feature as it is seen as a solution to shareholder-manager conflicts (Jensen and Meckling, 1976). In turn, the external auditor is tasked with reducing agency conflicts through their verification of the credibility and reliability of the company's financial and accounting statements. Thus, the more indebted the company, the more agency conflicts increase, the more useful it is to resort to quality audit by ensuring the sincerity of financial information as well as compliance with contractual clauses (Piot, 2003; Velury *et al.,* 2003).
- ✓ ***Company Complexity:*** The accumulated complexity of a company can make auditing more challenging as it could increase the risks of errors or fraud. Thus, auditors may require more time, specialized skills, and resources to conduct a high-quality audit. Hay *et al.* (2006) often found that audit fees increase with the complexity of the company. This suggests that auditors invest more resources to address complexity. Complex businesses may also have more elaborate information systems that require additional audit processes (Carson, Simnett, and Vanstraelen, 2016).
- ✓ ***Inventory Ratio:*** This could prompt auditors to pay particular attention to inventory management and valuation, given their importance to the company's financial position (Johnstone et al., 2004). If inventory represents a significant proportion of total assets, this could increase the complexity of auditing this item

4.1.4 Model and estimation method

To test my hypothesis, we estimate this model as described below:

$$\boldsymbol{AQ_{i,t} = \beta_0 + \beta_1 CSR_P_{i,t} + \beta_2 Taille_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MTV_{i,t} + \beta_5 FCF_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 END_{i,t} + \beta_8 COMPLEX_{i,t} + \beta_9 INV/TV_{i,t} + \sum_{n=i} \beta_i YEARS_{i,t} + \varepsilon_{i,t}} \quad (1)$$

Table 2. *Variables measurement*

Type of variables	Variables	Measurements retained by reference to previous studies
Dependent variables	Audit quality	Natural logarithm of audit fees
Independent variables	Corporate social responsibility	This is a score developed by ASSET4 which consists of a series of items which measure the social and environmental performance of companies.
	Environmental performance	This is a score made up of a series of items that count the environmental performance of the company developed by ASSET4.
	Social performance	This is a score developed by ASSET4 which consists of a series of items that measure the social performance of companies.
Moderating variable	Gender Diversity	This is the percentage of women on the board of directors.
Control variables	SIZE	atural logarithm of the company's total assets for the current year
	The Performance	Net income divided by total assets.
	Book value	It is the book value of equity divided by the market value of equity.
	Free cash-flow	Net income less accruals divided by total assets.
	Loss financière	it is a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise.
	Leverege	Total debt divided by total assets.
	complexity	This is the sum of total inventory and accounts receivable, scaled by total assets.
	Inventory ratio	C'est l'inventaire total ferme de l'année en cours divisé par le total de l'actif.

Source: *Own study.*

Equation (1) allows the estimation of the main effects of CSR. According to hypothesis. To examine the proposed hypothesis, that the impact of CSR on the qudit quality is more important in firms with gender diversity on the top management team. We estimate equation, which includes woman executive and we expect that β3 (WE*CSR) is positive in model (2). According to hypothesis 2, we estimate the model (2) as described below:

$$\boldsymbol{QA_{i,t} = \beta_0 + \beta_1 RSE_P_{i,t} + \beta_2 DG_{i,t} + \beta_3 RSE_P_{i,t} * DG_{i,t} + \beta_4 Taille_{i,t} + \beta_5 ROA_{i,t} + \beta_6 B/MV_{i,t} + \beta_7 FCF_{i,t} + \beta_8 LOSS_{i,t} + \beta_9 END_{i,t} + \beta_{10} COMPLEX_{i,t} + \beta_{11} INV/TV_{i,t} + \sum_{n=i} \beta_i YEARS_{i,t} + \varepsilon_{i,t}} \quad (2)$$

The study uses generalized least squares regression (GLS) with Stata 15 to investigate the moderating effect of gender diversity on the relation between corporate social responsibility and audit quality.

5. Empirical Results

5.1 Descriptive Statistics and Correlation Analysis

Table 3 presents descriptive statistics of all the variables. The average of audit quality (AQ) is 8.484 and the standard deviation is equal to 1.493. Its minimum and maximum values are 0 and 15.392 respectively. This implies that the audit quality in the companies of our sample is very low. This result can be explained by the diversity of the companies in our sample belonging to different countries.

Descriptive statistics show that the performance of corporate social responsibility in our sample (CSR_P) has an average value of 63.196 with a relatively low standard deviation (17.375) compared to the mean. We also observe that the social performance of the companies ranges between 1.495 and 96.96. This implies remarkable commitment and integration of these companies into socially responsible practices.

Descriptive statistics show that the gender diversity of the companies in our sample (BGD) has an average value of 25.471 with a relatively low standard deviation (12.812) compared to the mean. We also observe that gender diversity ranges between 0 and 66.67. This implies remarkable commitment and integration of these companies into socially responsible practices.

Table 3. *Descriptive statistics*

Variables	N	Mean	SD	Min	Max
AQ	2484	8.484	1.493	0	15.392
CSR_P	2484	63.196	17.375	1.495	96.96
BGD	2484	25.471	12.812	0	66.67
SIZE	2484	16.303	1.565	12.138	20.939
ROA	2484	7.522	7.579	-53.22	97.06
B/MV	2484	3.401	4.131	-62.3	43.58
FCF	2484	1.965	5.869	-22.472	79.169
LOSS	2484	0.071	0.257	0	1
LEV	2484	0.242	0.149	0	1.007
COMLEX	2484	3.154	5.869	2.101	4.674
INT/TA	2484	0.426	1.199	0	13.972

Note: *AQ : audit quality ; CSR_P Corporate social responsability ; BGD : the percentage of women on the board of directors. ; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets.*
Source: *Own study.*

5.2 Correlation Analysis

Table 4 reports the correlations among the variables. As a rule of thumb, a correlation of 0.70 or higher in absolute value may indicate a multicollinearity issue (Zhang et al., 2020). The results show that the highest correlation coefficient of 0.610 appears between AQ and SIZE. There is no multicollinearity problem as no correlation coefficients are greater than 0.70.

Table 4. *Pearson correlations for independent variables*

Variables	AQ	CSR_P	BGD	SIZE	ROA	B/MV	FCF	LOSS	LEV	COMPLEX	INV/TA
AQ	1										
CSR_P	0.3344	1									
BGD	0.2182	0.3305	1								
	0.000	0.000									
SIZE	0.610	0.4670	0.2970	1							
	0.000	0.000	0.000								
ROA	-0.1392	-0.1574	0.0122	-0.211	1						
	0.000	0.000	0.5433	0.000							
B/MV	-0.0851	-0.0902	0.0549	-0.182	0.4518	1					
	0.000	0.000	0.0062	0.000	0.000						
FCF	0.1889	0.0323	0.0553	0.2140	0.0926	0.0493	1				
	0.000	0.1073	0.058	0.000	0.000	0.0141					
LOSS	0.0641	0.0581	-0.017	0.0473	-0.4094	-0.1432	-0.0879	1			
	0.0014	0.0038	0.3795	0.0185	0.000	0.000	0.000				
LEV	0.1483	0.1898	0.1043	0.2249	-0.2636	-0.0325	-0.0457	0.0455	1		

	0.000	0.000	0.000	0.000	0.000	0.1059	0.0228	0.0235			
COMPLEX	0.5103	0.2624	0.1469	0.5800	-0.0370	-0.0354	0.2749	0.0268	-0.0477	1	
	0.0000	0.0000	0.0000	0.000	0.0651	0.0778	0.0000	0.1825	0.0174		
INV/TA	0.2585	0.1316	0.1292	0.3419	0.0018	-0.0664	0.0622	0.0191	-0.0692	0.5069	1
	0.0000	0.0000	0.0000	0.0000	0.9294	0.0009	0.0019	0.3404	0.0006	0.0000	
VIF	1.23	1.38	1.18	2.0	1.65	1.32	1.13	1.22	1.20	1.96	1.39

Note: *AQ : audit quality ; CSR_P Corporate social responsability; BGD: the percentage of women on the board of directors; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.*
Source: *Own study.*

According to Table (4) below, the values of the Variance Inflation Factor (VIF) range between 1.13 and 2.0, which demonstrates that they are greater than 2, which is the critical value. In this regard, the average VIF is 1.45, implying the absence of multicollinearity problems among the variables in our models. Therefore, it is important to conduct multivariate analysis.

5.3 Results and Discussion

Based on the results obtained from Table 5, we observe the existence of a negative association between corporate social responsibility (CSR) and audit quality. In fact, the estimated coefficient for this association is equal to (-0.0041), with (z= -3.55; p = 0.000). Thus, the CSR variable weakens audit quality. This result indicates that corporate social responsibility negatively and significantly influences audit quality in the firms of our sample. This implies that socially responsible companies are less likely to demand high-quality audits.

Consequently, this result confirms those found by several authors, such as Du *et al.,* (2020), who found that audit fees are negatively associated with CSR performance, suggesting that auditors charge lower audit fees to companies with higher CSR performance. In the same context, Sevrikozi and Tzika (2017) found a negative association between CSR and audit fees for companies located in countries with a well-structured framework for sustainable reporting. Indeed, companies with socially responsible initiatives pay lower audit fees (Chen *et al.,* 2012).

These companies are supposed to use a socially responsible image to conceal opportunistic behavior by managers. In fact, these companies engage in unethical

practices, such as opportunistic financial reporting (Prior *et al.,* 2008). Applying agency theory, the opportunistic perspective of CSR suggests that companies may engage in CSR for reasons other than ethical considerations, such as concealing irresponsible corporate behavior (Kang *et al.,* 2016).

Previous studies show that companies may engage in CSR for opportunistic reasons, as a shortcut to enhance their reputation and increase sales (Yoon *et al.,* 2006), or to promote the personal interests of executives at the expense of other stakeholders in the company (Surroca and Tribo, 2008). The results suggest that firms may be more motivated to use CSR activities to mask their opportunistic behaviors and corporate misconduct rather than for genuine ethical reasons. This reflects a greenwashing strategy, implying that these firms might employ CSR as a façade to conceal opportunistic actions.

These results are obtained through the associated control of other variables that previous literature suggests affect the association between corporate social responsibility and audit quality. According to table (5), the coefficient related to firm size is positive and significant (coef= 0.7688; p = 0.000). The results show that larger companies seem to resort to high-quality external auditors. This result is consistent with Piot (2004), who found a positive and significant relationship between audit effort, measured by fees charged or by the number of hours worked for the certification of accounts, and firm size as measured by turnover.

Similarly, for the variable Return on Assets (ROA), the results show a positive but not significant relationship with our explained variable (coef =0.0026; p = 0.376). This implies that performance has no effect on the audit fee process for the companies in our sample.

The same table indicates that the coefficient related to Market to Book (M/B) is positive and significant in explaining audit quality (coef = 0.0205; p = 0.000). This suggests that this variable is a determinant factor in explaining audit quality. The same table indicates that the coefficient related to financial loss is positive and significant in explaining audit quality (coef = 0.2429; p = 0.001). These results suggest that deficit companies are risky and require intensive audits (Carcello et al., 2002). Financial loss is a determinant factor of audit quality.

Table 5. *Results of regression analysis*

Variables	Coefficient	Z	P>Z
CSR_P	-0.0041	-3.55	0.000***
SIZE	0.7688	47.35	0.000***
ROA	0.0026	0.89	0.376
B/MV	0.0205	4.18	0.000***
FCF	-0.0007	-0.22	0.823
LOSS	0.2429	3.19	0.001***

LEV	-0.1998	-1.53	0.125
COMLEX	2.14	4.96	0.000***
INV/TA	-0.0631	-3.63	0.000***
Constant	-3.8825	-16.09	0.000***
Wald chi2	4581.47		
(p-value)	(0.0000)		
N-Obs	2484		
R between			

Note: *AQ : audit quality ; CSR_P Corporate social responsibility; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.*
Source: *Own study.*

The results presented in Table 6 document the relationship between corporate social responsibility (CSR), gender diversity, and audit quality. The estimation of the statistically significant coefficient of audit quality indicates that CSR is negatively associated with audit quality in companies with a high percentage of women directors. In companies with a high proportion of women on the board of directors, the effect of CSR is significant and positive in a test of the sum of coefficient estimates on audit quality and CSR*BGD (sum of coefficient estimates =0.0088857; Z=2.18).

These results further support the idea that Lara *et al.* (2017) discovered reasons why women are better monitors, notably their greater risk aversion. Indeed, there are several possible explanations for this result (Damak, 2018; Gul *et al.,* 2011; Wahid, 2019) have shown that the presence of women on the board of directors enhances the monitoring process and leads to more effective boards of directors. In the same vein, female board members are less tolerant of unethical opportunistic behaviors and are more active and better monitors than their male counterparts; they can enhance the overall capabilities and effectiveness of boards of directors in terms of oversight (Luo *et al.,* 2017).

Specifically, the presence of a woman on the board of directors increases a company's commitment to CSR practices, improving its reputation, reducing opportunistic practices, and demanding higher audit quality. In fact, female directors have different perceptions, thoughts, and ideas that could affect companies' sustainability initiatives and reporting (Bakar *et al.,* 2019). In the same context, Yusof *et al.* (2019) revealed that the impact of board diversity has a positive relationship with CSR performance among companies.

Applying resource dependence theory, companies that rely on external units for their resources and have a diverse board of directors have the potential to enhance board effectiveness. In fact, there will be more shared resources, influencing performance, in this case, CSR reports (Bear *et al.,* 2010).

Furthermore, gender diversity increases a company's commitment to CSR practices, thereby enhancing its reputation and reducing opportunistic practices, thus requiring higher-quality audits. In the same vein, Zulfikar *et al.* (2020) argue that resource dependence theory applies to women's participation in the management team, and many researchers agree that female executives offer a unique advantage to companies.

Based on stakeholder theory, women are less likely to accept opportunistic behavior, which has a positive effect on their monitoring ability and independence (Bernardi and Arnold 1997; Krishnan and Parsons 2008; Thorne *et al.,* 2003). They are more concerned with relationships and helping others (Betz *et al.,* 1989), less likely to accept opportunistic behaviors (Bernardi and Arnold 1997; Krishnan and Parsons 2008; Thorne *et al.,* 2003), and less concerned with their personal interests (Arlow 1991).

Therefore, women are more likely to restrain signaling opportunistic behaviors that occur for self-representation purposes (Kim *et al.,* 2017) and are particularly attentive to stakeholder concerns (Sun *et al.,* 2015). Also, women exhibit less overconfidence than men (Lundeberg et al., 1994). Consequently, the presence of women on the board of directors will yield a high-quality audit report.

The results suggest that female directors limit managerial opportunistic behavior. As a result, the company's reputation is enhanced, requiring higher audit quality. Therefore, gender diversity moderates the relationship between social responsibility and audit quality.

Table 6. *The moderating effect of borad gender diversity on the relationship between corporate social responsibility and audit quality*

Variables	Coefficient	Z	P>Z
CSR_P	-0.0059	-2.78	0.005***
GBD	-0.0069	-1.44	0.150
CSR_P*GBD	0.0088	2.18	0.008***
SIZE	0.7738	46.70	0.000***
ROA	0.0027	0.93	0.353
B/MV	0.0211	4.28	0.000***
FCF	-0.0006	-0.21	0.837
LOSS	0.2427	3.18	0.001***
LEV	-0.1969	-1.51	0.130
COMLEX	2.0908	4.84	0.000***
INV/TA	-0.0636	-3.64	0.000***

Constant	-3.8239	-15.08	0.000***
Wald chi2 (p-value)	4581.47 (0.0000)		
N-Obs	2484		
R between	0.668		

Note: *AQ: audit quality; CSR_P Corporate social responsability; GBD: Bord Gender Diversity: the percentage of women on the board of directors. ; SIZE : Firme Size : Logarithme naturel of total assest ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ;Loss ; a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ;LEV : Total debt divided by total assets ; COMPLEX ; the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.*
Source: *Own study.*

6. Conclusion

The present paper addresses, through an empirical approach, the effect of gender diversity on the relation between CSR and audit quality, by examining whether and how female in the board affect the relation between CSR and audit quality.

This study makes a significant contribution to the existing literature on audit quality by empirically examining the impact of women's presence on corporate boards on the relationship between corporate social responsibility (CSR) and audit quality for European firms. The findings of this study confirm the importance of socially responsible corporate engagement, measured through two independent dimensions (environmental and social), in influencing audit quality. This is explained by the fact that CSR engagement by companies plays a crucial role in implementing best practices, particularly in financial transparency.

The theories used in this study include resource dependence theory, stakeholder theory, and agency theory. These theories help understand how the presence of women on corporate boards can enhance corporate governance, improve information quality, and increase profitability. According to stakeholder theory, non-financial reporting is as important as financial reporting because it provides essential information to stakeholders other than investors.

The results of this study highlight several controlled variables that influence audit quality, including firm size, performance, book-to-market value, financial losses, indebtedness, firm complexity, and the ratio of inventory to total assets.

It is also emphasized that companies may adopt a socially responsible image to conceal unethical activities, thereby reducing the demand for high-quality audits from external auditors. However, the presence of female directors limits this

opportunistic behavior by managers, thereby enhancing the company's reputation and necessitating higher audit quality.

The findings of this study can be useful to stakeholders preparing non-financial reports and investors interested in sustainable investment opportunities. Furthermore, this research fills a gap in the literature by linking CSR standards to audit quality and gender diversity, providing significant insights for future research in this field.

This study has certain limitations, which also provide new avenues for future research. For instance, the measurement of audit fees can vary across different contexts, and we utilized the approach outlined by Velte (2020). This choice led to the exclusion of other methods for assessing audit quality.

Additionally, the research sample includes companies with heterogeneous characteristics, particularly regarding sector diversity and firm size. Furthermore, based on our results, several directions for future research are possible. Firstly, investigating gender diversity within audit teams could provide insights into how companies approach and report their CSR initiatives. Secondly, Future research should therefore concentrate on the investigation of the relationship between CSR reporting, CSR committee and audit quality.

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